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## COMMERCIALIZATION OF INTELLECTUAL CAPITAL AND METHODOLOGY OF ITS MANAGEMENT

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**Theoretical-Methodology Elements of Managing Inclusion of Outcomes of Intellectual Activities Into the Industrial Turnover.** The issues of commercial management of intellectual capital are one of the most difficult and actual problems. Possibility of achieving final positive outcomes of innovative and investment activities of native knowledge-consuming enterprises depend greatly upon successful solution of this problem.

It shall be mentioned that researchers of commercialization issues of these so-called "Invisible Assets" in the most cases belong problems of commercialization of intellectual property with it. **Under commercialization of intellectual property we consider the process of involving into the economical turnover or own commercial activity.**<sup>1</sup> In numbers of sources they indicate the term "Commercialization of Intellectual Capital", though there is no definition to it.<sup>2</sup> Consequently, processing methodology of managing commercialization of intellectual capital, is timely.

**The Concept and Peculiarities of Commercialization of Intellectual Property.** It shall be mentioned that outcomes of intellectual property itself are not of any economical value without their respective use. Such utilization may be provided either in own commercial activity or by transferring right on it to the third party, or in combined form. According to the specialists, it is the process of market realization of intellectual property that is of great interest, considering formation of intellectual market and provision of income of the company by means of influencing upon them.<sup>3</sup>

General economical and legal principle of transferring property right to the object of intellectual property considers complete or partial transfer of property right by this latest to any individual or legal entity. Any person is entitled to use intellectual property only in accordance with licenses of the owner's approval and other documents. Herewith, using outcomes of intellectual activity together with those of commercial activities, in the production process is important term to effectiveness of business and, respectively, it is the subject of managing, planning, analyzing, assessment and so on. It shall be mentioned that local enterprises in our country do not use existed intellectual resources even at the minimal level. The level of their involvement (duration of the state from processing to exploitation) is extremely low as well.

In this regard, systemic analyze of organization-legal problems is of specific practical interest upon practical realization of innovative activities of the enterprise (as basic range of industrial production), as effective regulation of own relations make basic means of forming market relation in industry and finally define purposefulness of innovative activities of the enterprise.

**Actuality of solving named issues is defined by the fact that quality of processing complex problems scientifically is extremely minor and low.** Reason: transferring to the market economy made innovations into the content of social and industrial relations, as well as forming industrial and civil legal relations unknown to the social practice of the industry.

For example: invention rights existed during decades in social industrial relation today are practically totally changed with patent rights harmonized with international norms. It became necessary to change whole law in the field of protection and utilization of creation of outcomes of intellectual activity (objects of industrial property, copyrights and confidential information), including scientific-research and experimental construction processing. Outcomes of intellectual activities become legal component of one of important objects of commodity-cash relations and property complexes (of enterprises and organizations).

In the property of the company and the enterprise (balance, accounting) "immaterial fixes assets" (H.A.C.), which were unknown earlier have been formed and used more often, assessment activities are processed, including those from the purpose of property rights of the enterprise.<sup>4</sup> Right of intellectual property is included in the industrial

<sup>1</sup> Commercialization of Intellectual Property: Problems and Solutions. Editorial I.M. Fonshein and V.G. Zinova. M.: Zel O, 1996. pg. 175 (in Russian).

<sup>2</sup> Brooking E. Management of Intellectual Capital: Problems and Solutions. <http://www.intercapital/brooking.php> Intellectual Capital - Strategic Potential of a Company. Under Edition of T.M. Orlova. M.: Publishing House "Social Relations", 2003. pg.184 (in Russian); Sullivan Patrick H. Profiting from Intellectual Capital : Extracting Value from Innovation. John Wiley & Sons, Inc, 1998. pg. 336; Fletcher A., Cuthrie J., Steane P., Roos G. Valuing a blood service from the perspective of the stakeholder. Hamilton, Ontario, Canada, January, 14-16, 2007; Joia L.A. Using intellectual capital to evaluate education technology projects. Journal of intellectual Capital, 2000. 1.; Teece D.J. Managing intellectual capital: Organizational, strategic and policy dimensions. Oxford: Oxford University Press, 2004; Hudson W.S. Intellectual capital: How to build it, enhance it, use it. New-York Wiley, 2007.

<sup>3</sup> Intellectual Capital – Strategic Potential of the Company. under Edition of T.M. Orlova. M., 2003. pg. 189 (in Russian); Commercialization of Intellectual Property: Problems and Solutions. Group of Editors N.M. Fongshtein and V.T. Zinova. M., 1996. pg.175 (in Russian); Commercialization of Technologies: theories and practice. M.: Monolit 2002, pg.269 (in Russian); Sullivan Patrick H. Profiting from Intellectual Capital : Extracting Value from Innovation. John Wiley & Sons, Inc, 1998. pg.336; Rool J., Roos G. Measuring your company's intellectual performance. Long Range Planning, 2002. Vol. 3. pg. 419; Roos G., Edvinsson L., Rool J. Intellectual Capital: Navigating the New Business Landscape. London. Macmillan Press Ltd, 1997.

<sup>4</sup> Itami H. Mobilizing Invisible Assets. Cambridge, Mass.: Havard Universiti Press, 1987; Brooking A Intellectual Capital: Core assets for the third millennium enterprise. London: Tom p sor Business Press. 1996; Bainbridge A., Jacobsen K., Roos G., 2001.

Nominal Capital and it is used as part of industrial and company property. New forms of registering transfer of rights on using separate objects are formed and developed as well pursuant to the concession and trust and management agreements. Transferring to the market economy in the system of production relation had no place in the similar practice, by means of state monopolize of legal rights of outcomes of labor and means of production.

To our mind, the problem of involving outcomes of scientific-technical activities and objects of intellectual property into the commercial turnover direction, which provide balancing rights and legal interests of the subjects of legal relations and creation of intellectual property, stimulation of legal processes and processes of utilization as well as rising competitive abilities of products of native manufacturers on such basis.

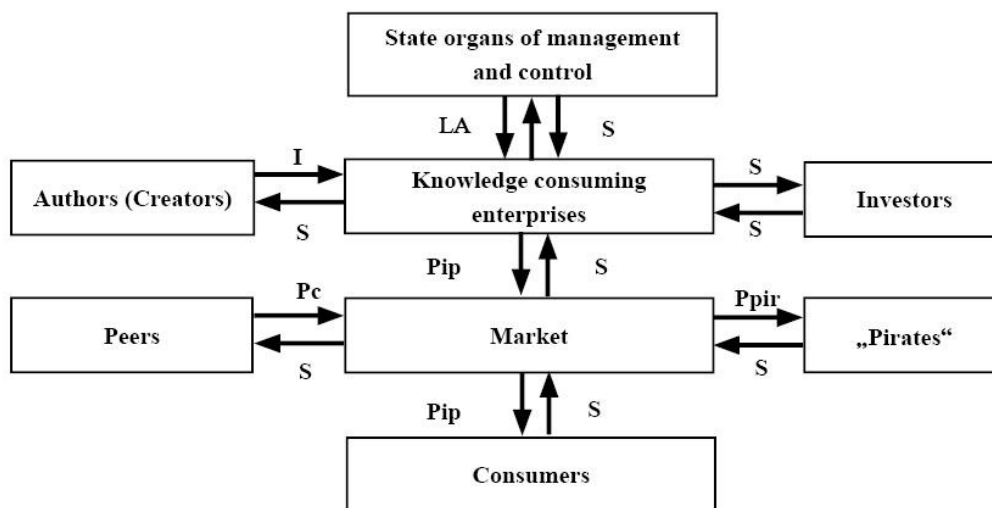
Besides this, codification of intellectual property shall be provided on good time pursuant to the international law. Task of processing projects of legal acts is actual as well, which foresees provision of balance of legal relations of the rights of the subjects and legal interests, as well as creation of intellectual property, legislative protection and state stimulation of utilization processes and thus rising competitive abilities of products of manufacturers.

Besides this, codification of intellectual property in compliance with international laws shall be provided on good time. Task of processing projects of legal acts is actual as well, which foresees improvement of legal relations in the field of science and technologies of creation, legal protection and utilization objects of intellectual property and outcomes of scientific-technical activities. Processing of normative acts are to be accelerated, which will take into account definition of the method of using outcomes of scientific-technical activities pursuant to state contracts, protection of state interests and provision of national safety upon commercial (economical) utilization of intellectual property.

Under the conditions of developed market relations, intellectual property becomes important object of the property of legal entities, enterprises and companies, through which property, commodity and cash relations in the field of legal protection and utilization of new knowledge and information. Commercial turnover of intellectual property at the level of commercial subject (enterprise, organization, entrepreneur) makes economical-legal model of social market of intellectual property (outcomes of intellectual activities). Mechanism of effective commercial turnover through rights of the subjects of legal relations and balance of legal interests provides totality of demand on outcomes of intellectual activities and distribution, development of scientific-technical studies, production and utilization of new competitive goods and services, and thus stimulation of the process of scientific-technical progress and rise of the country economy.

To our mind, analyze of civil-legal relations of commercial turnover of intellectual property in the activities of an enterprise and an organization is characterized with specific complexity, namely, the problems of inclusion into the commercial turnover of intellectual property and their utilization in the form of participants of civil turnover, are expressed in the form of legal, economical, financial, technical and social relations formed at different periods between different subjects having different interests. Herewith, separate subjects of investment activities of own interests are to be separated; the analyze of their mutual relation shall be provided in the process of commercialization of intellectual property as well in order to find the ways of effective regulation.

In the process of innovative activities general scheme of mutual influence of basic subjects of market relation during commercialization of intellectual property may be represented in the following way (Fig. 1).



**FIG. 1. Mutual relation of subjects and objects of market relation during commercialization of intellectual (commercial) property**

Convectional signs:  
 LA – legal and normative acts I – Intellectual property  
 \$ – Financial sources Su – Used products (service)

Intellectual capital analysis as a strategic tool. Strategy and Leadership Journal 2004. 29.04. pg. 21-26; Marr B., Chatrkel J. Intellectual capital at the crossroads: managing, measuring, and reporting of IC. Journal of Intellectual Capital (editorial), 2004. 5(2): pg. 224-229 and so on.

Pip – Products on the basis of intellectual property

Pc – Products of peers Ppir – “Pirate products”

Pursuant to this Figure, as subject of market relations of intellectual innovative activities of property commercialization are:

- Bodies of state management and control;
- Enterprises, which provide creation of new technologies and their usage in innovative activities;
- Authors of new technologies on the basis of intellectual activities (objects of copyright, commercial property, commercial secret – objects of know-how);
- Investors, who participate in creation of intellectual property and its utilization in commercial cycle through organization of their financing and manufacturing of new commercial products;
- Peer-manufacturers, who manufacture (render) competitive products (services), on the basis of own processing or other objects of analogue intellectual properties;
- So-called “Pirate” manufacturers, who provide unauthorized utilization of the objects of intellectual activities of the enterprise and manufacture forged products.

Practical collision of the interests of separate subjects participating in the innovative activities and provision of control of the objects of market relations may be provided at the consumer market of products and service. This is at the market where the problems of commercialization of intellectual property are detected the most. Development and matching of their interests take place at the same place. Pursuant to the character of revealing, they separate three basic aspects of interrelation:<sup>5</sup>

**1) Technical**, which is directly related with material and intangible objects of commercial production of products and service on the basis of intellectual property;

**2) Financial-economic**, related with consuming of the products of innovative activities and their distribution in accordance with financial means.

**3) Social-legal**, related with moral and legal norms (laws) and trends. It shall be necessarily foreseen (fulfilled) in commercial activities.

During commercialization of intellectual property, relations may be grouped in the following way pursuant to the relations of legal entities:

- Enterprises – bodies of state management and control;
- Enterprises – Authors (creators) of the objects of intellectual property;
- Enterprises – investors;
- Enterprises – manufacturer-peers;
- Enterprises – manufacturer – “Pirates”;
- Enterprises – consumers.

Herewith, out of the given groups each requests separate discussion and processing of special activities (methods of approach), from the point of regulation of the problems of interrelation, pursuant to the situation of the competing market, taking into account strategies of conduct and tactics of the enterprise at the market. Any of the named groups of interrelation may be basis (and this is necessary) to process activities of regulating relations under adequate specific market situation, provide trustful protection and effective (optimal) utilization of intellectual property. Such activities may be necessary to include:

- legal activities (forced activities) i.e. protection of the rights and interests of authors and their legal successors (protection of patent monopoly) with the force of state laws. This considers punishment of manufacturer – “Pirates” for unauthorized utilization of the objects of commercial property;
- economical activities (activities of economical content). They mean conscious and voluntary selection of the rules of individual conduct on the basis of economical purposefulness, as well as official utilization of authorized priorities of official tax benefits and new technologies;
- moral-ethic activities, based on promotion of the rules of social condemnation of unauthorized utilization of “Fair Business” and intellectual properties of others;
- Contractual activities, based on accurate processing of agreements and transactions favorable to the enterprise, as well as voluntary undertaking of contractual liabilities of cooperation in partnership and innovative business domain and during joint activities;
- Activities of registering intellectual property as ownership (object of property) of the enterprise through inventorying, documentation of outcomes of intellectual activity and those of assessment and accounting;
- It shall be mentioned that during commercialization of intellectual property existence of documents and correctness of their filing, which prove the right of the enterprise on the object of intellectual property are of principle importance; as accounting documents of the enterprise reflect its valuables with the right of ownership or utilization.

Thus, **during practical realization of commercialization of intellectual property in innovative activities it is necessary to separate groups of relations among separate subjects of market interrelation, to form organizational and legal problems formed during these relations under specific market conditions and to select adequate and relatively effective versions for every separate group of relation.**

**Analyze of the Forms of Commercialization of Intellectual Property.** Under the conditions of the economy oriented towards innovative development are not only important factors of competitiveness of knowledge

<sup>5</sup> Novoseltsev O.V. Method of Approach to the Assessment of Intellectual Property. // Intellectual Property, 1998. №4. pg. 2-8 (in Russian); Quinn J.B. The intelligent enterprise: Knowledge and servicebased paradigm for industry. The Free press, 1998. pg. 17; Hudson W.J. Intellectual capital: How to build it, enhance it, use it. New York, Wiley, 2003. pg. 80.

consuming products, but also they play the role of the objects of “sale and purchase” at the same time and they support formation of the market of intellectual property.

Pursuant to the commercial directions of the activities of commercial subjects, managers and respective specialists of knowledge consuming enterprises often are to select relatively profitable form of economical turnover of outcomes of intellectual property. To solve this goal we consider it to be necessary to conduct marketing study of the market of intellectual property; maximally trustful assessment of market value of the outcomes of intellectual activity and processing of the strategy of representing intellectual products at the market.

In the Figure 2 there are basic forms of economical turnover of the objects of intellectual property listed: authorized person is entitled to use the object of intellectual property at his discretion, to sell or concede the right on it to others, to allow any interested person use the object of intellectual property under special conditions.

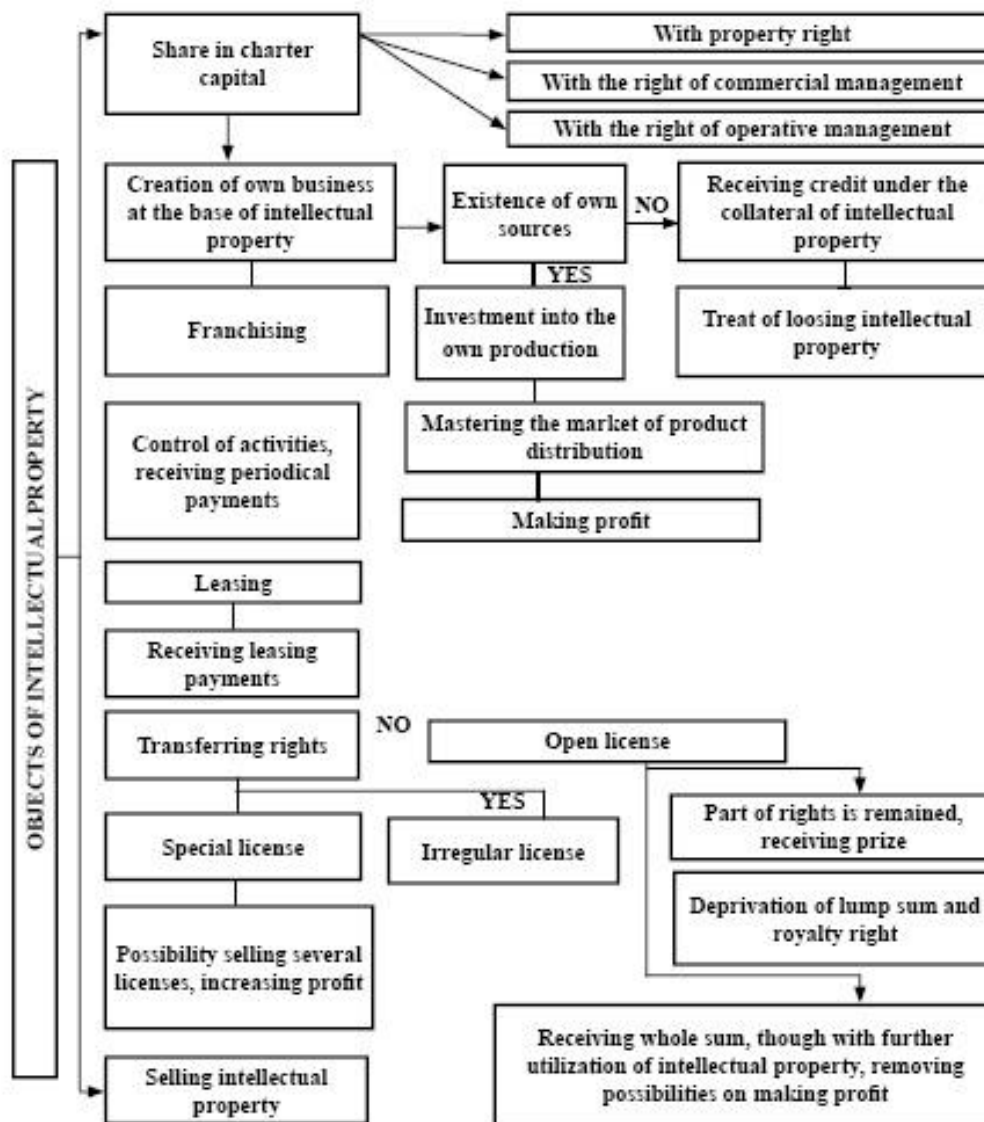


FIG. 2. Economical forms of turnover of the objects of intellectual property

Intellectual property and intellectual activities in the developed countries are totally and strictly protected and are regulated by law. Here are some of them:

- Reduction of competitiveness and monopoly activities at the commodity markets;
- Patent Law of the country;
- Name of trademarks, service signs and the place of forming goods;
- Legal protection of the software of data processing machines and databases;
- Legal protection of typology of integrated microcircuits;
- Copyright and combined rights;
- Selective achievements;
- Legal protection of scientific-research, experimental-construction and technological works in the line of military, specialized and double importance;



- For the purpose of including objects of scientific-technical activities and intellectual activities into the field of science and technologies;
- Activities of the first line from the point of protecting state legal interests, in the process of including outcomes of special and double importance to the scientific-research, experimental-construction and technological activities;
- Using outcomes of scientific-research activities and so on.
- Of course, owner of the right on the object of intellectual property on the basis of analyzing different variations selects the most perspective one among them, herewith, it is necessary to analyze real possibilities of their utilization, to assess possibility of commercial success, as well as their conformity with following criteria:

- Patent pureness of items;
- Perceptiveness;
- Conformity of technical level of processing with the requests of market.

Here is analyzing the form of economical turnover of the object of intellectual property from the point of estimate economic benefit.

Possibility of using the objects of intellectual property in the form of the share made to the nominal capital of the company shall be foreseen in the codes and laws of every country considering joint-stock companies and this is so, the law in the developed countries foresees following: the share in the nominal capital may be transferred with the right of the property, commercial management and operative management. When they include the object of intellectual property into the nominal capital of the company with the property right, the owner of the object of intellectual property transfers the property right under the ownership of the enterprise. In return for this, it receives following compulsory rights towards the enterprise:

- Making part of the profit (dividends);
- Participation in management of the enterprise through general meeting of participants;
- Receiving liquidation quote in case of liquidation of the enterprise;
- Introduction with accounting information considering activities of the eEnterprise.

Upon involving of the object of intellectual property into the nominal capital with the property right, the enterprise may own, manage and use it. In such case the enterprise is entitled to alienate the object of intellectual property to other persons, transfer it to others though maintaining property right. Upon transferring property right on the object of intellectual property to the nominal capital the owner loses its right on this object, though he/she keeps receiving dividends in accordance with the contributions.

The enterprise receiving the object of intellectual property under management is entitled to use, sell or lease it, as well as mortgage and enter it to the nominal capital of other commercial society and partnership in the form of the share. The owner investing the object of intellectual property with the right of commercial management in the nominal capital is illegible to receive it back. He/she is able to do it when the object of intellectual property is invested into the nominal capital of another enterprise with the right of operative management.

Upon creation of own products, manufacturer of knowledge consuming products using intellectual property is required to accumulate important sources in the beginning; in such case the owner of the object of intellectual property incurs large expenditures on marketing studies, organization of production, making ways to the products at the market, distribution of trade network and channels of its creation, though, in case of success, placing new product to the market makes it possible to compensation of expenditures incurred during the period following specific period and making important profit, and this will support further development of production.

The object of intellectual property is made by means of scientific-technological progress, which becomes available by means of leasing or long-term renting. In practice they lease, in the first place, technological devices, expensive machineries, equipments, and construction and data processing machines, vehicles of course made at the level of invention and protected with patent.<sup>6</sup>

According to the definition of the experts of international organization of intellectual property, **franchise is the agreement according to which the person having processed system of providing specific activities (authorized person, franchiser) entitles another person (franchisee), use this system in compliance with the requests of the owner of franchise in return for specific fees.**<sup>7</sup> Pursuant to the terms of franchise, the system is the package of agreements consisting of the rights on the objects of intellectual property to be used by the franchisee. "The franchise is the system of contractual relations on the basis of which a large and well-known company confers small, independently acting or newly founded enterprise with special rights, which gains specific expression during manufacturing of goods of specific kind and rendering services in granting the right of using trademarks."<sup>8</sup> It unites rights on commercial samples, names of forms, trademarks, technologies of know-how. Franchise, in such case, is transferred the rights for specific period and makes important income from its commercial activities.

Under specific conditions upon transferring rights from the persons entitled for the object of intellectual property to the legal entities and individuals, they are given the right of using special rights. As a rule, agreements on granting rights and licenses make legal grounds to transferring special rights.

**License contract** is the agreement according to which one party (licensor) owns special right on intangible object and is in the role of the seller, and another party (licensee) tries to receive (purchase) the right of the licensor on utilization.

Upon transferring the rights on the object of intellectual property during processing conditions of the license agreement, economical elements of the agreement shall be agreed together with the legal requests. They are in close

<sup>6</sup> Stuart T.A. Intellectual capital: The New Wealth of organization. L, 1997. pg. 65.

<sup>7</sup> Lukicheva L.I. Management of Intellectual Capital. M.: Omega-L. pg. 422 (in Russian).

<sup>8</sup> Asatiani R. Explanatory Dictionary of Modern Economy. Tb. Publishing firm "Siakhle", 2009; pg. 355-356 (in Georgian).

connection and organically fill each other. Trading licenses is used during internal commercial operations and in separate countries it effective condition for raising economy and competitiveness of own goods at the foreign market. Thus, market of licenses is commercial exchange of the rights on the objects of intellectual property that is **between the owners and users of the system of economical relations.**

Pursuant to the volume of rights of license agreements three basic kinds are used in international practice: simple, special and complete.

**Upon license agreement of simple kind** the licensor issues and, at the same time, maintains the right of using invention or Know-how. Herewith, he/she is eligible to transfer this right to other interested persons as well with the same condition. **Upon license agreement of special kind** the licensor is given special right of using invention and the licensee is no more eligible to grant it to other persons or companies with the similar condition. **Upon license agreement of complete kind** the licensor lets the licensee every right of the inventor during whole term of the agreement.<sup>9</sup>

In each such agreement the rights on using the subject of license may be different, which lets effective foreseeing of own interests upon transferring rights to the licensor. License agreements are classified pursuant to the size of the rights transferred to him/her, as well as their protection. In the Figure 3 there is classification of license agreements pursuant to specific number of signs.

Validity period of licenses are limited by vital cycle of the objects of intellectual property with the process of moral wear.

Global practice of commercialization of the outcomes of intellectual activities proves that there are large demand n patents and inventions at the market. This is natural, as this latest is placed to the market as the instrument of taking monopoly power, excluding competitiveness in production and using patented objects in the commercial turnover by other persons.

Selling the objects of intellectual property means refusal of authorized person on making profit from further using of intellectual property, though it guaranties receiving every sum foreseen by the agreement.

Thus, Selection of formulas of economical turnover of the objects of intellectual property is a complex task. Its solution conditions correct comparison and conformity of numbers of alternatives, as it depends greatly upon it making maximal profit from utilization of outcomes of intellectual activities.

Notwithstanding the fact that there is quite stabile system of institutions of protecting the rights of intellectual property, as global, so national economies annually receive colossal loss from the side of illegal sector due to violation of special rights.<sup>10</sup> Following kinds of unfair competition may be distinguished in practice:

- falsification of the products of peers;
- false advertisement;
- Damping;
- Industrial espionage and so on.

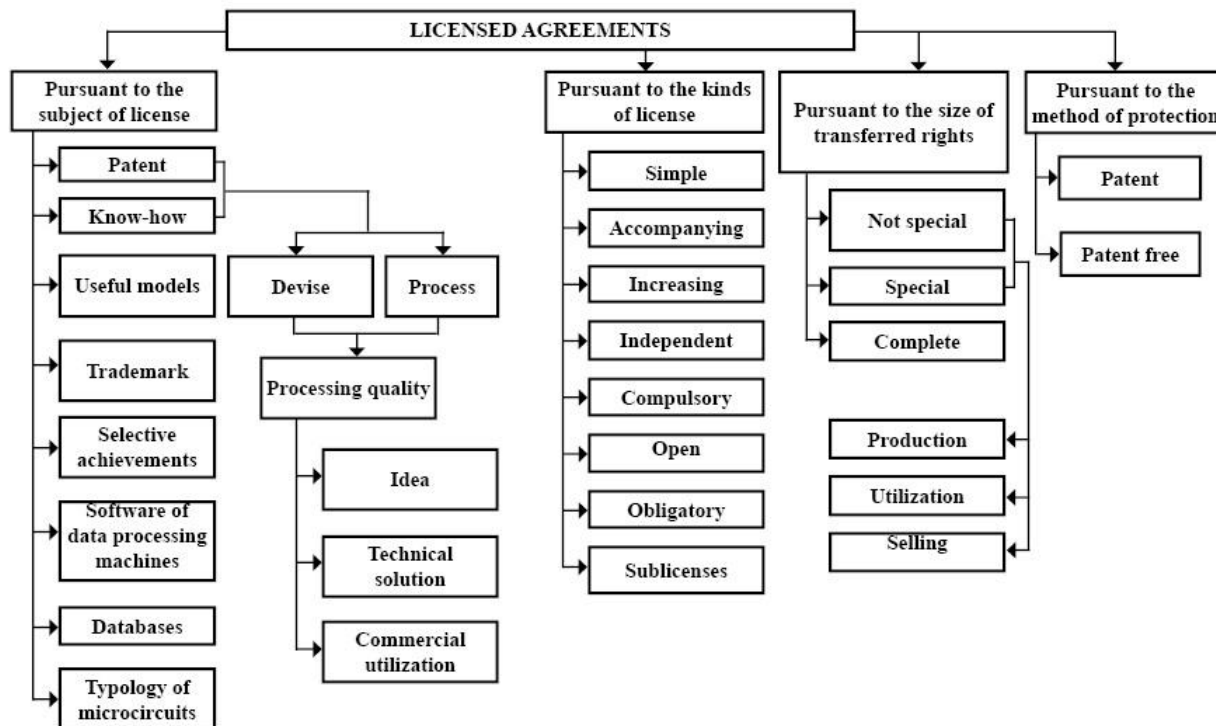


FIG. 3. Classification of license agreement

<sup>9</sup> Asatiani R. Explanatory Dictionary of Modern Economy. Tb. Publishing firm “Siakhle”, 2009; pg. 179 (in Georgian).

<sup>10</sup> Feigelson V.V. Intellectual Property and Intereconomical Activities. M.: INITS Rospatenta, 2001. pg. 119 (in Russian).

On average so-called “intelligence” expenditures on intellectual property amounts to 1.5% of trade turnover of large concerns<sup>11</sup> (30 men at the company Mitsubishi are occupied with patents, 50 – with technologies and so on and expenditures on security amounts to 10-15% of industrial expenditures. Annual loss of American business due to divulgence of commercial secrets amounts to 4 billion US Dollars in average).<sup>12</sup>

One of the theorists of neointuitionism and new economical history, American economist D. Horth (Nobel laureate in 1993) describes the problems related to utilization of intellectual property in the following way: “development of the rights on intellectual property outlined complicated problems of the compromises between pluses of assessment and measurement of ideas, as well as rising private norms of advantages of new inventions and minuses of monopoly reductions of production due to granting special rights during specific period of time”.<sup>13</sup>

Solving problems set by Horth took place in the process of commercialization of intellectual property. It is also related by the formation of the market of the objects of intellectual property (as confirmation of rising effectiveness of the system of intellectual property relations) in different countries in the second part of the 19th century.

In summary commercialization of intellectual property has following practical priorities:

- Owners of intellectual property may be the founders of companies, by means of making contributions to the nominal capital of the enterprise of the objects of intellectual property without paying real cash sources;
- It becomes possible to receive incomes by means of transferring the right for using intellectual property;
- Intellectual property may be used in the form of the lease upon raising credit;
- Intellectual property provides protection from peers during taking new products to the market, as well as protection from unfair competition;
- Intellectual property creates advertising image from the point of information of legal protection of manufactured products, as well as upon working in accordance with the licenses of well-known producers;
- Intellectual property makes it possible to reduce profit tax by means of reducing expenses on the taxed base of depreciation of intangible assets and creation of the objects of intellectual property;

The process of being engaged in commercial and industrial turnover of the objects of intellectual property conditions assessment of its market value. Pricing on hard assets, namely, the objects of intellectual property, are much difficult than that on other market elements and they are actively discussed by scientist, economists and practitioner specialists. Evaluation of intellectual property is relatively independent domain of modern studies; scientific apparatus is in the process of permanent development and needs further improvement. The field of the value of intellectual capital, which is made of the objects of intellectual property, is relatively learnt. Transferring intellectual capital into the most important factor of production granted larger importance to the necessity of such evaluation. Besides this, evaluation of intellectual capital became foundation to the management of commercialization of intellectual capital; it means not only commercialization of special rights, but also consists of every aspect of attracting commercial profit. In this regard, we considered it to be necessary to discuss every essential methodological method of approach towards evaluation of the value of intellectual capital and definition of direction of processing methodologies of dynamic assessment of its value.

**Methodological Approaches Towards Assessment of Market Value of Intellectual Capital.** For today there are several tens of methods of assessment of market value of intellectual capital processed.<sup>14</sup> Great number of competitive methods of approach towards assessment of intellectual capital speaks of the fact that assessment of untouchable, invisible, intangible “items” is quite difficult and, herewith, possibilities of using traditional method of evaluation is reduced as well and possibilities of using traditional method of assessment is reduced as well. Herewith,

<sup>11</sup> Roos G. Rike S; Fernstrom I. Valuation and reporting of intangibles-state of the art in 2004. Learning and Intellectual Capital, 2005. pg. 21-48.

<sup>12</sup> Same, pg. 52.

<sup>13</sup> Horth D. Intellectual capital: The New Wealth of organizations. Doubleday. New York, 1997.

<sup>14</sup> Stuart T. Intellectual Capital. New Source for the Welfare of the Company. New Postindustrial Wave in the the West. Antology. Under edition of V.A. Inozemtseva. M.: Akademia, 1999. pg. 497 (in Russian); Horrington D., Esselind K.S., Nimvegen Kh. V. Optimization of Business Processes. Documentation, Analyze, Management, Optimization, SPb. Azbuka. 2002. pg. 328 (in Russian); Edvinsson L. Malone M. Intellectual Capital: Realizing Your Company’s True Value by Fiding It’s Hiddei Roots. New York: HarperCollins Publishers, 1997; Edinsson L. Malone M. Visualizing Intellectual Capitalin Scandia. Scandia, 1994; Hunter L, Wedstert, Wyatt A. Masaring Intangible (apita): A. Review of Current Practice, 2005. Luthy D: Intellectual Capital and its Mea-urement. Asian Pasific Interdisciplinary Research in Accounting Conference. (APIRA), Osaka (Japan) 1998; Skurme D. Capitalizing on Knowledge. Frome-busines to K-business. Oxford, 2001.pg. 455; Stuart T. A. Intellectual Capital: The new Wealth of Organizations. L, 1999. pg. 65-78; Sudaz sanam S. Sorwar G. Marr B: Valuation of Intellectual Capital and Real Option Models. PMA Intellectual Capital Sumposium, Cranfield (Canada), 2003; Sullivan Patrick H. Profiting from Intellectual Capital: Extracting from Inovation. John Willeg & Sons. Inc, 1998. pg. 366; Sullivan Patrick H. Value driven Intellectual Capital. How to convert intangible corporate assets into market value. John Willey & Sons. Inc, 2000. pg. 562; Sveiba K. E. Intellectual Capital and Knowledge management. <http://www.sveiby.com. an/> Intellectual Capital. html; Sveiby K.E. Intellectual Capital and Knowledge Management, 1998; Teece David J. Managing IntellectualCapital: Organizational. Strategic and Policy Dimensions. Oxford Universit Press, 2000. pg. 300; Van den Berg H. A. Model of Intellectual Capital Valuation. A. Comparative Evaluation.In: Kambhammettu S. ed. Basines Performanca Measurement: Intellectual Capital ValuationModels. Hyarbydad, India, Le Magnus Universiting Press, 2005, pg. 121-158; Wiig K. Assesment of the State of Intellectual Capital in XY Corp. /Working Paper, Knowledge Research Institute, Inc, 1999. #4 pg. 17-23; Williams M. Is Intellectual capital Performance and disclosure practices related? McMasters intelctual Capital Conference, Hamilton. Ontario, 2001.

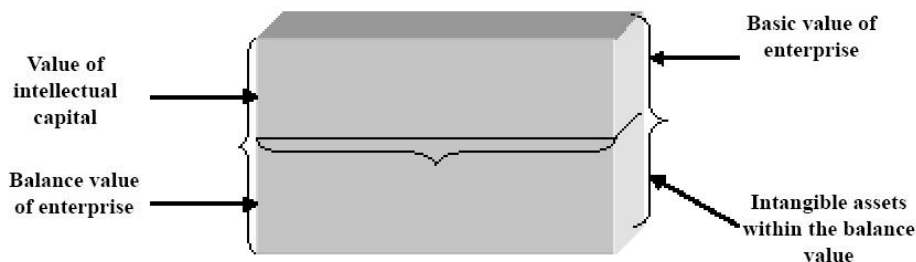


number of methodological approaches reflects different opinions of their authors about essence of intellectual capital, its basic structural components, as well as basic goals of evaluation of intellectual property (Fig.4).

Different understanding of the essence of intellectual capital may be related with how widely it is defined.<sup>15</sup>

**With narrow meaning intellectual capital is final, not excluded, undivided and at the same time usable social wealth, welfare.** With wide meaning, intellectual capital consists of ability of workers to understand, use and involve more effective methods of providing activities of organization. Thus, distinction between wide and narrow meanings of intellectual capital exists in the fact that in the first case intellectual capital consist not only confidential, but also undisclosed knowledge (habits, experience, creative possibilities) and to some extent it is not at the same time usable from the point of the firm of the wealth.

Several characteristics to intellectual capital may be distinguished, which conditions complexity of its evaluation and processing respective universal methods of approach.



**FIG. 4. Model of forming market value of intellectual capital**

**1. Indefiniteness** – this is fundamental feature of any process of forming new knowledge. This feature is related with the fact that the process of creating new knowledge, as a rule is singular, and past circumstances and experience may not be trustful foundation to its evaluation. In such situation the value of new knowledge will become only after using it.

**2. Inappropriability** – this is principle possibility of copying separate elements of intellectual capital with minimal expenses to the imitator. Knowledge, as a commodity, as a rule, is characterized with important nonrefundable costs and minor limited expenses, which reduce its value for initial owner in case of copying by imitators.

**3. Inseparability** – in regard with the fact that information is inseparable, the purchase is illegible to purchase information needed only for him/her and is to purchase whole block, which included surplus information.

Cost of intellectual capital may be discussed as private organization for the owner and public – for whole society. Social value of separate elements of intellectual capital is related with additional valuables, which lets its using by other members of society. Such understanding of the issue is somehow related with “consumer surplus, excess” within the bounds of traditional microeconomic theory, though differing from ordinary definition we speak about so-called “non-tradable goods”.

Distinction between two valuables shall not be extremely large, if social value of intellectual capital overcomes greatly its private value, which is the stimuli of increasing the value of intellectual capital by its owner and this is a natural phenomenon, as greater part of additional value mastered by the society. In such case innovative activity of the entrepreneur for creation of new intellectual product has no motivation.

If private value of intellectual capital overcomes the social one, due to total appropriation of the outcomes of intellectual activities by the owner of intellectual capital the society suffers losses: this situation conditions for the society unmaking profit for long period. In such case diffusion potential of innovation is decreased. Thus, **optimal balance is needed in which interests of the owner of the society of intellectual capital**; herewith, appropriation of the outcomes of intellectual activities will take place by both parties. Notwithstanding above conditions, they discuss serious methodological difficulties from the point of evaluation of social value of intellectual capital.

We may distinguish following from the factors of making income from intellectual capital:

**1. Non-competitiveness (possibility of widening)** – this is fundamental peculiarity of the assets based on knowledge. Its essence consists in the fact that it may be several times used without reduction of its value. Such assets are characterized with the “effect of increasing scale”, when the valuable is increased by means of its using.

**2. Net effect** – the assets based on knowledge are characterized with additional net effect. Profit at network markets is increased in accordance with the size of the net. Thus the value of network elements of intellectual capital may be increased several times at such markets.

Following factors of reducing the value of intellectual capital are discussed as well:

**1. “Partial uniqueness” and external effects (externality)**, every element of intellectual capital is practically characterized with quite vague right of property. If net effect is positive sides of intellectual capital, impossibility of excluding remaining economical agents from utilization of intellectual capital reduces its value to the owner.

**2. The risk characterizing intellectual capital.** Intellectual capital is characterized with nonrefundable losses, which is the reason of rising risk, notwithstanding the fact that there are traditional mechanisms of reducing risks; it is yet used limitedly.

<sup>15</sup> Hunter L., Webster E., Wyatt A. Measuring Intangible capital: A Rewiew of Carrent Practice. 2005. pg. 91.

**3. Illiquidity.** There are no sufficiently liquidated markets of the components of intellectual capital, which provide interested persons with exact market information about values. Such condition is related with low limited expenses of production of intellectual capital, as well as asymmetric nature of information.

Besides this, evaluation of the value of intellectual capital is complicated with existence of following distinguishing characteristics:<sup>16</sup>

**1. The Law of increasing returns.** It is characterized with the fact that upon using the knowledge i.e. upon exchanging it with another person, its value is not reduced (as it takes place in case of material assets), but, on the contrary, increased. This feature is analogue to “non-competitiveness”, though in such case the accent is made on increasing of the value of assets, in case of its formalization. It is evident, that declared knowledge in other equal conditions are more expensive than covered ones as they may be used by other consumers.

**2. Context specific.** This characteristic is related with mutual-connection and mutual relation of separate elements of intellectual potential. In such case the value of intellectual capital, as unified system of components, is increased in comparison with separate elements.

Intellectual capital, as special form of capital, on the one hand, is characterized with positive effects of the scale and, on the other side, with so-called “partially special” risked and not liquidated nature. The mentioned condition sets special demands towards the methodology of assessment of the value of intellectual capital.

Pursuant to the formal axioms of classical theory of assessment<sup>17</sup> outlines following demands of the methods of evaluation of social property (CC), as well as intellectual capital:

**1. Complexity.** If the company plays the role of evaluated system, when components foreseen by the methodology shall completely describe the system. This practically means:

- attributes of indexes shall be strictly defined;
- assessment shall accurately reflect every resource foreseen by the system;
- assessment shall completely reflect every way and means of their utilization by the system.

In other word, used methodological approach shall completely conform to the target object.

**2. Definiteness.** The index is deemed to be acceptable if its content doesn't consist of the idea belonging to another index. In other words double accounting shall be excluded.

**3. Independence.** Test on independence means that changing of data including other attributes is not spread rapidly on assessment of indexes. In other words, every other indexes influence upon meaning of target index.

**4. Conformity.** Demands touch upon transferring to quantitative, numerical connections. This means that the meaning of the index in the empirical system shall be completely reflected in the system of numerical relations (in which assessment is realized).

**5. Scale.** For validity assessment and following totality, they shall be assessed through ratio scale.

Above mentioned theoretical demands are able to construct ideal system of assessment, though sometimes outcomes do not conform to practical reality, for example, when their utilization takes place to reflect profitability of assessment system.

Some authors distinguish own specific criteria of analyzing intellectual capital assessment model, they are:

**1. Temporary orientation on past and future.** The methods oriented on the future differ with priorities, as they are provided with the information used for making decision, when the methods oriented on historic information have no such possibilities.

**2. System dynamic** – flow (process) or drain (resource) models.

**3. Casual direction** – reason or outcome. If there is trustful empirical statement adequate to the model, i.e. if growth of intellectual capital gives rise to improvement of the rates of financial indexes in the terms of the model, the model is the reason and if on the contrary – it is the outcome. For the most part of existed models there are no such empirical statements.

Herewith, we have discussed several peculiarities of complexities existed in the assessment of the value of intellectual capital. Let us discuss analyses of methodological approaches of intellectual capital assessment.

In some literary source it is mentioned that value model of intellectual capital, as expression of intellectual priorities of the company, and they are as follows:

$$V_{ic} = V_c - (CA - V_iA), \quad (1)$$

Where  $V_{ic}$  is the value of intellectual capital;

$V_c$  – market value of the company;

$CA$  – Sum of balance;

$V_iA$  – cost of intangible assets in content of balance value.

Analyze of several less known models of the value of intellectual capital makes it possible to express following criteria characteristics of used approaches (Table 1).

There are two basic methods of approach towards assessment of market value of intellectual capital: of expenditures and incomes. Method of comparison, as a rule, is useless for the objects of evaluation, liquid markets of elements of intellectual capital and so on, as there is no complete analogy at all.

Pursuant to the expenses approach in the investment capital means participation of every investment.<sup>18</sup> This approach conforms to the principles of accounting. Though pursuant to the established rules in traditional accounting, important part of investments in intellectual capital are discussed not as investments, but current expenses.

<sup>16</sup> Roos, G., Pike S., Fernstrom L. Valuation and reporting of intangibles State of the art in 2004. Lcaring and Intellectual, Capital 2005. pg. 21-48.

<sup>17</sup> Skurme D. Capitalizing on Knowledge. From e-business to K-business. Oxford. 2001. pg.455.

<sup>18</sup> Hunter L., Webster E., Wuatt A. Measuring Intangible Capital: A. Review of Current Practice, 2005. pg.115.

It shall be mentioned that this is not quite so, as pursuant to the international accounting standards, part of evaluation of traditional forms foresees predictions, assessment of future and so on. For example, assessment of debtor debt takes place by taking into account expected level of non-refunding of debts. Especially, when goal of accounting is not assessment of market price of assets, but it is issuance of initial information confirming evaluation of possibilities.

Herewith, “Nonofficial” methods of assessment of the value of intellectual capital are characterized with conformity of approaches of incomes and expenditures, and this complicates their utilization in practice and receiving officially recognized status by them. Most part of the methods of assessment of the value of intellectual capital in fact makes totality of nonfinancial and financial indexes. Groups of separate indexes, as a rule, provide operational character of separate elements of intellectual capital. Basic fundamental problem related with utilization of such nonfinancial indexes is that it is impossible to learn how this latest reflects expenses made on creation of such assets, if they make future values for organization (its reason or outcome), as there is no method of separating these two effects, it becomes doubtful to use such instruments analytically.

Table 1

Criteria characteristics of several models of assessment of intellectual

	Temporary orientation		System dynamic		Causal direction	
	In the past	In the future	Reserve	Flow	Reason	Effect
<b>Economic Value Added (EVATM)</b>	+		+			
<b>Market Value Added (MVA)</b>	+		+			
<b>Tobin’s Q Ratio</b>	+		+			
<b>The Balanced Score Card</b>	+		May be included	May be included	Insufficient statements	+
<b>Skandia’s IC Navigator</b>	+		Mostly	Partially included	Insufficient statements	+
<b>Intellectual Capital Services’ IC-IndexTM</b>	+		Mostly	Partially included	Insufficient statements	+
<b>The Technology Broker’s IC Audit</b>	+		Mostly	Partially included	Insufficient statements	+
<b>Sveid’s The Intangible Asset Monitor (IAM)</b>	+		Mostly	Partially included		+
<b>Real Option Theory</b>			Both	Both		
<b>Citation-weighted Patents</b>	+		+		+	

Basic internal objective of assessment of the value of intellectual capital pursuant to this or that kinds is making norm of income. This problem is the carrier of two natures. On the one hand, it is necessary to discuss expenses (investments) in the elements of intellectual capital; on the other hand, profit made by the company from investment shall be renewed as well. Distinction between these two values is the norm of profit on investments.

On the basis of analyzing theory and practice of evaluation of intellectual capital conclusion may be made about basic reasons of evaluation of intellectual capital:

- Necessity of formulation of the strategy of enterprise;
- Evaluation of fulfillment of strategy;
- Making decision about diversification and widening;
- Aiming to the prize for creation of intellectual assets;
- Information of external interested persons about market value of the enterprise.

Due to diversity of assessment of the methods of evaluation of intellectual property, as well as intellectual capital and other models processed for solution of various managerial tasks, the goal of their typology becomes prior as well as separation of general signs though various methodological approaches. In the most cases criteria of typology is methodological totality and not essential distinction of the models, for example, in one of the first works about analyze of evaluation of intellectual capital there is following typology of the methods of assessment of the value of intellectual capital offered:<sup>19</sup>

1. Component-by-component – uses different measurement units for separate components of intellectual capital. This approach is supported by every nonfinancial model.

2. Ratable – evaluation of intellectual capital is provided in aggregative way, without assessment of the value of separate component.<sup>20</sup>

In the further period they offered four groups of evaluation of intellectual capital:

- Direct intellectual capital method based on direct monetary assessment of various component of intellectual capital;

<sup>19</sup> Luthy D. Intellectual Capital and its Measurement. Asian Pacific Interdisciplinary Research in Accounting Conference (APIRA) OSAKA (Iapan). 1998.

<sup>20</sup> Williams M. Is intellectual capital performance and disclosure practices related? McMasters Intellectual Capita Conference. Hamilton, Ontario. 2001. pg.15.

- Market capitalization method evaluates distinction between market and balance prices;
- Pursuant to the asset profitability methods distinction between average sectional profitability of the assets and profitability of the enterprise there is additional effectiveness generated by intellectual capital;
- Indicator method evaluates various indexes and indicators and, which probably influence upon the size of intellectual capital. Evaluation is not provided in case.

Given classification is understandable and it makes it possible to analyze practically every model of evaluation of intellectual capital. Such situation conditioned wide spreading and utilization of typology for analyzing and evaluation of every different methodological approach.

**Characteristic of the Methods of Evaluation of Intellectual Capital.** Let us discuss the essence of methodological approaches of evaluation of intellectual capital listed above.

**1) Market-to-book ratio and Tobin's Q.** This is the method of interrelation of market and balance price of the enterprise (market-to-book ratio). It is the most spread method of defining size of intellectual capital due to its simplicity and availability. Special nature of such model is that intellectual capital makes distinction between the size of its market value and its balance value, (indexes are taken from financial accounts). Interaction of two values are, ordinarily used to avoid macroeconomic factors (for example, the level of interest rate), which provide similar influence upon changing of market price of the company (capitalization).

**Tobin's Q.** This is analogue ratio with the distinction that they use in the value not balance price of assets (nominal value by deduction of accrued depreciation), but renewable value – cost of the firm assets under the conditions of its changing at the market.

Thus, advantages of the mentioned methods of approach are:

- Complexity;
- Utilization of trustful nominal data for participation;
- These indexes is convenient upon comparison of similar companies, which function at the same market having similar base of material assets;

**Following may be separated out of disadvantages of approaches:**

- Methodical approach doesn't foresee complexity of external factors, which influence upon market value of the enterprise;
- Conceptual contradiction of methodical approach, as numerator and denominator in the given subjection make different calculation procedures; balance value reflect accounting principles obtained in the company, and market value is reflection of current business and strategic methods of approach of the enterprise (in other words, distinction between balance and market values reflects not only the size of intellectual capital, but also towards expected strategies and future profit. This is the factor which has no direct relation with intellectual capital; it is impossible to separate these two effects in methodologies);
- Using these two methods is impossible for closed company;
- Herewith, it is impossible to use mentioned method of approach in traditional economy, which have no developed financial markets and where fundamental certification of market price is doubtful.
- Practical complexity of assessment of the recovery value (for Tobin's Q)

**2) Technology Broker** (audit of intellectual capital). The model of auditing intellectual capital offers monetary expression of intellectual capital and its components (author of the model is Brooking).<sup>21</sup> Intellectual capital is characterized by four basic elements: as merging of market asset, intellectual property, human asset and infrastructure assets.

Audit of intellectual capital begins with answering 20 question-statements composed by intellectual capital-indicator. Outcomes of this test reveal the necessity of management of intellectual capital of the company and introduction of special methodologies for their evaluation. After this they offer conduct of additional tests for the components of separated intellectual capital.

Pursuant to the model of the Author (Brooking), the value of intellectual capital for separate companies wholly depend on its objectives and the status of the operation market of the company. After completion of audit, i.e. testing, monetary assessment of the components of intellectual capital is provided through the method of expenditures and those of marketing or income. It is not necessary to use monetary value of formal criteria of using this or that method.

Following may be separated out of the positive sides of the mentioned method of approach:

- Audit of intellectual capital is instrumental model, which, pursuant to the authors opinion, exists in the ready forms;
- Somehow empirical approbation of methodic.
- Following are foreseen to be the disadvantages of the Approach:
- Contradictory transfer from qualitative index to the quantitative (monetary) one;
- Subjectivity of audit testing and composition of questions.

**3) Scandia Navigator.** Scandia - this is Sweden insurance and financial group. Together with annual financial accounting of 1994 the Company started publishing of the material "Visualizing Intellectual Capital in Scandia" and they kept publishing it till 2003. Reporting of last years included special section dedicated to the human capital. The essence of basic principles and methodic of building the model is represented in the work of L. Edvinsson and M. Malone.<sup>22</sup>

Conceptual model of Scandia Navigator is represented in the Fig. 5.

<sup>21</sup> Brooking E. Management of Intellectual Capital: Keys to the Success in New Millenium. SPb, Piter (in Russian).

<sup>22</sup> Edvinsson L., Malone M. Visualizing Intellectual Capital in Scandia. Scandia, 1994; Edvinsson L., Malone M. Intellectual Capital: Realizing Your Company's True Value by Finding its Hidden Roots. New-Yourk: Harper Collins Publishers, 1997.

They separate five focus sides in the mentioned model, they are: financial, customer-related, procedural, renewal and development, and that related with human capital. Each of them conforms to the element of intellectual capital. Financial side is added for the purpose of provision of financial perspectives of intellectual capital. Human capital is in the center of the Navigator, which underlines its main role in the Company.

**Human capital** is defined as totality of knowledge of separate employees of the Company, as well as innovations and abilities. It also includes valuables, culture and philosophy of the Company. Human capital may not belong to the company.

**Structural capital** includes hardware and software, database, organizational structure, patents, trademarks, everything that supports growth of productiveness of employees. Structural capital also provides relations with basic customers of the capital of the customer and the company. For assessment find the structure of a company capital in the Fig. 6 below.<sup>23</sup>

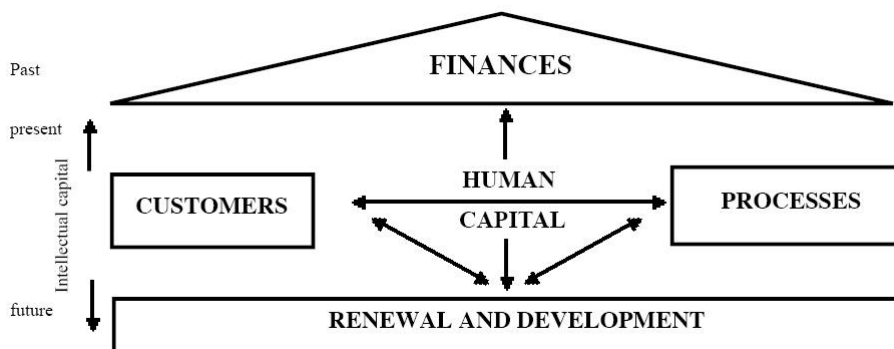


FIG. 5. Conceptual model of Scandia navigator

**Intellectual capital**, this is the sum of human and structural capitals. Pursuant to the opinion of Scandia Navigator, human capital includes experience of applied nature, organizational technologies, as well as relations with the customers and professional habits, which provide competitive priority of Scandia at the Market.

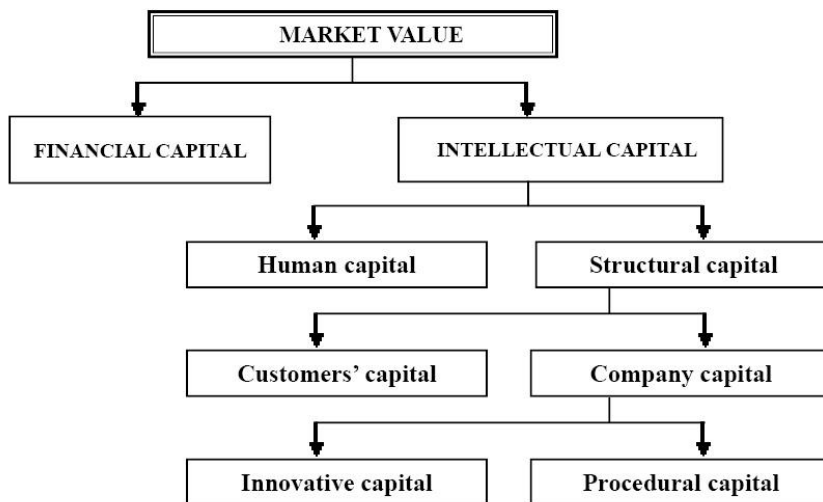


FIG. 6. The structure of the company capital

Key indicators of Scandia are represented in the Table 2.

Table 2

Basic Indicators of Scandia	
<b>Finances</b>	Income/quantity of workers (\$) Income from new customers/income (%) Income from new operations (\$)
<b>Customers</b>	Wasted days on attendance of purchasers (day) Conformity between sold and closed contracts (\$) Attracted purchasers/lost purchasers (%) .
<b>Processes</b>	Quantity of the employees of enterprise capital (staff/men)

<sup>23</sup> Edvinsson L., Malone M. Visualizing Intellectual Capital in Candia: Scandia, 1994.



	IT – capacity – capacity of processors (tactic capacity) Time of processing (hour)
<b>Renewal and development</b>	Index of satisfaction of employees (%) Expenditures of training/administrative costs % Average age of patents (month, year)
<b>Human</b>	Number of managers having higher education (human) Staff turnover (%)

Scandia Navigator includes 91 new intellectual and 73 traditional capital-indicators, including absolute and monetary indicators and even outcomes of the Survey. Monetary indicators are combined with utilization of determined weighs for the purpose of making total value of intellectual capital of the Company (C). Relative rates of assessment of incompleteness are aggregated with the ration of effectiveness of intellectual capital (i). Organizational intellectual capital makes C produced on i.

Following may be deemed to be advantages of offered methods of approach:

– Above-mentioned is one of the first systematic attempts of forming taxonomy of assessment of intellectual capital;

- Special attention is paid to the customer capital;
- Includes wide range of organizational structure and different aspects of business-processes;
- Disadvantages of the Approach:
  - Through separate organization of several indicators may have alternative interpretation;
  - Using balance method of approach, which doesn't foresee dynamic flows inside the company;
  - Constructs of structural capital are not totally logical;
  - Part of the indicators cross each-other and evaluate one and the same aspects;
  - Extremely great number of the used indicators makes true utilization of the model in practice more difficult.

**4) EVA and MVA.** The model Economic Value Added (EVATM) was represented by consulting company SternStewart, as perfect model of assessment of effective activities of the company; it provides budgeting of capital expenses, financial planning of communication with shareholders, setting goals, variables of the mechanisms of prizing managers and so on/ EVA model was formed as improved model of MVA, taking into account specifics of modern accounting.

MVA is difference between the sizes of cash resources funded by the investors upon establishment of the company and current values of those resources, which may be made in case of selling the shares belonging to the investors. Basic disadvantage of MVA model is that it foresees every result made after establishment of the Company. Thus, MVA is accumulated resources, which do not reflect current reality. Essentially, EVA is brand model of economical profit of EVA. In 1890 A. Marshal made grounds to it; above models contradict with modern methods of accounting.

$$EVA=(ROIC-WACC) \times \text{invested capital}$$

$$ROIC= \frac{NOPAT}{\text{Invested capital}}$$

EVA is the difference between net operative expenses (after payment of taxes) and the value of capital (as joint-stock capital, so debt capital). Totally, objective of EVA calculation is to make the profit, which is close to monetary outcomes and this norm shall be compared with the capital base, which is also expressed in the terms of cash equivalents.

**Positive sides of mentioned method of approach are:**

- Clear and logic methodology;
- Possibility of using for closed companies;
- Utilization of audited financial data;
- Conformity with basic principles of accounting.

Disadvantages may be:

- Absence of conformity with assessment of intellectual capital. Both methods evaluate effectiveness of general activities of the enterprise, and intellectual capital is evaluated only indirectly (MVA is often used to evaluate general market price of intellectual capital);
  - Weak empiric support, which confirms relation between size of EVA and that of market value (special statistic studies prove that EVA predetermines the size of market value and this is provided worse than profit of accounting).

**5) Intangible Asset Monitor (IAM)** – HMA monitor. IAM makes two-dimensional model of financial and non-financial indicators. According to the opinion of the creators, they reflect the size of intellectual capital and effectiveness of its utilization. Conceptual basis to IAM methodology is dichotomy of four models of clear/unclear knowledge. It is represented in the Fig. 7.

	<b>Unclear knowledge</b>	<b>Clear knowledge</b>
<b>Unclear knowledge</b>	<b>Socialization</b>	<b>Externalization</b>
<b>Clear knowledge</b>	<b>Internationalization</b>	<b>Combination</b>

**FIG. 7. Methods of transferring knowledge**

Author of the model Sweiby separates following basic groups of intellectual capital: <sup>24</sup>

- External structures (brand, relation between suppliers and purchasers);
- Internal structures (management, corporative structure, scientific-research and experimental-construction works and so on);
- Individual competences (education, experience).

For every group of elements they separate three groups of indexes: growth and renewal (i.e. amendment); effectiveness and stability. Sweiby recommends separation of two or three relatively important indicators for each elements of intellectual capital. General matrix shall not be more than one page.

Offered method is considered to be the instrument of strategic management. In this regard, creators of the model offer general structure of the model and its specifics and exact assessment shall be defined in accordance with the context.

Consequently, IAM is the instrument of implementation and control of strategy oriented towards growth of intellectual capital and its effective utilization. In general form HMA monitor is given in the Table 3. <sup>25</sup>

Advantages of HMA monitor are:

- Conformity of strategic objectives and tasks (management and assessment of intellectual capital is discussed to be integrated process of rising effectiveness of activities) of the company;
- Somehow empirical support and probation. Sweden Company Chelem was evaluating intellectual capital through IAM methodologies during several years.
- Disadvantages of the method, at the Author's point of view, are:
- Existence of the scheme of material motivation in the model;
- Complexity of the model and great expenditures of introduction;
- Strong relations of fundamental elements of the model with corporative culture of the company;
- Subjectivity of indicator selection.

Table 3

Indicators	Intellectual Activated Competences		
	External structures	Internal structures	Individual components
Growth/innovation	<ul style="list-style-type: none"> <li>• Increasing number of employees</li> <li>• Growing the role of market</li> <li>• Satisfaction of employees, i.e. the quality</li> </ul>	<ul style="list-style-type: none"> <li>• Investments into intellectual capital</li> <li>• Time on scientific-research and experimental-construction works</li> <li>• Conduct of personnel</li> </ul>	<ul style="list-style-type: none"> <li>• Consumers supporting growth of competence</li> <li>• Growth of average professional competence (share)</li> <li>• Turnover of competence</li> </ul>
Effectiveness	<ul style="list-style-type: none"> <li>• Income on one purchaser</li> <li>• Sales on one agent</li> </ul>	<ul style="list-style-type: none"> <li>• Share of administrative personnel</li> <li>• Sales on one worker</li> </ul>	<ul style="list-style-type: none"> <li>• Added value on one worker</li> <li>• Amendment of the share of high-competent workers</li> </ul>
Stability	<ul style="list-style-type: none"> <li>• Repeated orders</li> <li>• Age structure of sales</li> </ul>	<ul style="list-style-type: none"> <li>• Age of the company</li> <li>• Share of "newcomers"</li> </ul>	<ul style="list-style-type: none"> <li>• Staff turnover</li> </ul>

**6) Knowledge Capital Earning (KCE)**, author of the model is American specialist in accounting B. Levi (999).<sup>26</sup>

Calculation procedure has following form:

1. rationing of profit is, as a rule, intermediated according to several years, for the purpose of evoding extraordinary and occasional events;
2. separation of rational profit into two components: a) related with material assets and financial investments;
- b) related with utilization of determined indexes of profitability of intellectual capital (for material and financial assets);
3. the component made from utilization of intellectual capital is calculated as balanced value.
4. dependence of KCE upon respective discount rate makes it possible to make the value of intellectual capital. Numerically, the idea of mentioned method of approach is of the following form:

<sup>24</sup> Nonaka J., Takeuchi H. The Knowledge Creating Company. New York: Oxfrond Univertitu. Press, 1995.

<sup>25</sup> Sveiby K.E. Intellectual Capital and Knowledge Managment, 1998. pg.82.

<sup>26</sup> Lyev B. Intangible Assets: Management, Measurement, Accountability. M.: Kvinto – Consulting, 2003 pg.240 (in Russian)

$$\text{Intellectual capital} = \frac{\text{Rational profit}}{\text{Discounted rate of intellectual capital}} - \frac{\text{Profit of material-financial assets}}{\text{Discounted rate of intellectual capital}}$$

Advantages of the mentioned model are:

- Numbers of empirical support;
- Conformity of traditional methods with calculation of goodwill.
- Out of disadvantages following are to be remarkable:
- Reduction of admission of opportunities for separation of profit into two components;
- Significant subjectivity of selecting “normal” profitability of material/financial assets, as well as “normal”

norm of discount;

- Impossibility of defining the values of separate elements of intellectual capital.

**7) Value Chain Scoreboard.** This method has been offered by B. Levi in 2001.<sup>27</sup> Different from other – Knowledge Capital Earnings, Value Chain Scoreboard, this model is analytical system of assessment of intellectual capital. Its objective is identification of separate components of processes, which influence upon creation of the value. According to B. Levi’s point of view, objective of such information system is provision of development of basic forces defining the processes of making decision, as inside the company, so - at the capital market. Such forces are:

- increasing participation of democratization-individuals at the capital markets;
- externalization – increased demand on accounting external factors in the management or the company.

Consequently, VCS is not specially intended for evaluation of intellectual capital, though it is determined to satisfy demands on information of wide range of the participants of capital market (of individual investors and partners of corporations) in order to provide effectiveness of the market.

**Value Chain** is fundamental innovative process inside the company and it conforms to the market stages of innovative cycle. It begins with serving new products or detection of processes and consequently it moves to the stage of processing these innovations and they define technological possibilities on commercialization of new products and services of production (Fig. 7.8.).

Advantages of this methodological approach are:

- Accounting of innovative cycle inside the model;
- Utilization of numbers of unique non-financial indexes;

Among disadvantages following are noticeable:

- Incomplete methodological processing;
- Existence of some empirical support.

**8) Value Added Intellectual Coefficient** – methodology of VALC model, which was processed in 1998 by Ante Pulic. It makes calculating base to provide wide empirical studies. Basic relation inside the model has following form:<sup>28</sup>

$$VIAC = CEE_i + HCE_i + SCE_i \quad (2)$$

They say in the Work that the higher VAIC index is, the more effectively the Company wastes own resources. At the first stage of calculations they provide calculation of additional value:

$$VA_i - I_i + D_{pi} + D_i + T_i + M_i + R_i + W_{Si} \quad (3)$$

Where  $I_i$  is interest payments;

$D_{pi}$  – accrued depreciation;

$D_i$  – Paid dividends;

$T_i$  – Corporative payments;

$M_i$  – Capital stock of monetary shareholders in the net profit of daughter companies;

$R_i$  – Net Profit

$W_{Si}$  – Total expenditures in remuneration

$CEE$  is relation between general additional value and general number of used capital. The capital used here is defined as net asset value of the company. Consequently,

$$CEE_i = \frac{VA}{CE_i} \quad (4)$$

Where  $CEE$  – is effectiveness of used capital;

$VA_i$  – added value;

$CE_i$  – balance value of net assets of the company.

Pursuant to some other models of intellectual capital,<sup>29</sup> it is considered that total expenditures on salaries make indicator of human capital of the company. In this regard,  $HCE$  is deemed to be relation between additional value and expenditures of remunerations:

$$HCE_i = \frac{VA}{CE_i} \quad (5)$$

<sup>27</sup> Same.

<sup>28</sup> Pulic A. Measuring the Performance of Intellectual Potential in Knowledge Economy, 1998.

<sup>29</sup> Edvinsson L., Malone M. Intellectual Capital: Realizing Your Company’s True Value by Finding Its Lidden Roots. New York: Harper Collins Publishers, 1997.

Where  $HCE_i$  is effectiveness of human capital;  
 $HC_i$  – total expenditures on human expenditures.  
To calculate SCE, it is necessary to calculate total size of structural capital. In VAIC methodology we mean that the distinction between additional value and human capital is close to the structural capital of the company:

$$SC_i = VA_i - HC_i \quad (6.)$$

Where  $SC_i$  is Structural capital of the company

Consequently, 
$$SCE_i = \frac{SC_i}{VA_i} \quad (7.)$$

**Advantages of offered method of approach are:**

- VAIC is standard assessment of effectiveness of intellectual capital, during which there is great choice of studies (as pursuant to the states, so – the fields);
- Nominal tasks of VAIC methodologies are based on information verified by the auditor;
- **Basic disadvantages of the Modal are:**
- Most part of the elements of intellectual capital are evaluations taken from financial accounts of VAIC;
- Trustfulness of nominal outcomes is related with trustfulness of the data of accounting;
- There is weak empirical verification of effectiveness of intellectual capital;
- There is weak empirical verification of connection of the effectiveness of intellectual capital pursuant to VAIC method and between financial outcomes.<sup>30</sup>

**9) Citation-weighted patents.** American Company Dow Chemicals is the first corporation to start using the patents on citation indexes, as several values of intellectual capital of the company; it also uses these approaches in practical activities and distributed aggregated information to external consumers.

It shall be mentioned that utilization of patent information in economical studies for mechanical processing upon making convenient form took place. First studies by using patent statistics took place in the USA in 1960. Great number of various economical studies confirmed existence of significant relation between patent indexes and growth of market values of the company.

It shall be mentioned that they started using patent information in economical studies upon making convenient form for mechanical processing. First studies by using patent statistics were started in the USA in the 60s of last century. Great number of various economical studies proved existence of significant connections between patent indexes and growth of market value of the company.

It was established that general number of patents of the Company is not the index of its innovative success, as distribution of patent valuables is asymmetric. Little number of patents masters significant number of value, when remaining part of patents is unable to cover expenses make on provision of patent protection. In this regard, they offered to use in-weighted value instead of general number of patents. In the following applications in the studies of information considering citation of patents is based on the following admissions:

- Investors of the company have rational expectation for dependence upon reserves of knowledge of the brought value of future profit of the company;
- Valuable technological knowledge inside the company is characterized with generation of future patents.

Thus, pursuant to such admissions, working hypotheses is that citation of patents is indicators of private values of the rights related with patents and that is why it provides correlation of general value of the Company.

Positive sides of mentioned method of approach are:

- wide empiric support of basic hypotheses of the model;
- Reliability of nominal data.

Disadvantages are:

- only one aspect of intellectual capital is discussed;
- there is specific methodological objection (for example, it is not clear how to assess citation in the patent application itself);

– if we can say so, the model is extremely “historical”; i.e. to form initial indication on this or that patent, at least several years shall pass (in this regard, it is difficult to use the model at the basis of separate organizations).

**10) The Value Explorer.** The Method has been processed by the auditory department of the company of the Netherland KPMG Knowledge Advisory Service (KAS), at the order of the Ministry of Economy, pursuant to the project learning new methods of approach towards assessment of intellectual assets. Until 2003 the method has been used several times by some consulting companies.<sup>31</sup> The method Value Explorer is built on the basis of the concept of basic competence used for identification of strategically important components of intellectual capital inside the enterprise. The Method is five-step model, realization of which needs:<sup>32</sup>

1. identification of the components of intellectual capital through composition of basic competences of the company;
2. Assessment of the value through questionnaires, through which it will be possible to evaluate reliability and stability of competitiveness, potential and separate basic competencies of additional value;

<sup>30</sup> Firer S., Wiliams M. Intellectual Capital and Traditional Measures of Corporate Performance, 2001. pg.85.

<sup>31</sup> Anderisson D. Implementing the KPMG Value Explorer. Critical Success Factors for applying IC. Measumrent tools. Journal of Intellectual Capital, 2005. 6(4). pg. 474-488.

<sup>32</sup> Bontis N., Dragonett N., Jacobsen C., Roos G. THT KNOWLEDGE TOOLBOX: A Review of tle Tools Available to Measure and Manage Intangible resources. European Managment Journal 1999. 17(4): pg. 2-21.

3. Financial evaluation of intellectual capital against predicted rationed profit, through distribution by components;

4. Processing plan of activities for management, as well as recommendations in direction to improvement of management of intellectual capital on the basis of provided work;

5. and processing accounting sample considering status of intellectual capital for management.

**Advantages of the mentioned methods of approach are:**

– This is integrated method of approach, i.e. every element of intellectual capital is discussed in total, as existed potential basic competent resource;

– This is instrumental methodology, i.e. the method was involved into practice several times, which allowed authors of the project to separate critical factors and involve them successfully;

– Ig has strategic direction, as the method, in the first place, is formed for improvement and optimization of management of intellectual capital.

**Disadvantages of the method of approach are:**

– Insufficiently defined diagnostic part – separation of key competences form creative process;

– The method will not be suitable for distribution of information considering intellectual potential to the external customers;

– Transfer from qualitative evaluation to the quantitative index is provided.

**11) Balanced Scorecard (BSC)** – the system of balanced indexes. BSC is one of the most famous systemic models from the point of using of nonfinancial indexes in strategic planning.<sup>33</sup> It was processed through large scaled studies by Harvard Business School in the 90s of 20th century. Its creators are Kaplan and Norton. Processed model are widely used in practice today.

BSC is the system of evaluation of the activities of the company through four dimensions. Financial dimensions use traditional indexes of accounting. Dimensions of customers use indexes of identification of focus groups of the customers, as well as general marketing indicators (satisfaction of consumers, level of reclamation and so on). Measurement of internal business-processes is, in the first place, based on the idea of value chain and finally, measurement of renovation and growth of personnel related indicators, as well as training inside the company and the system directed to the distribution.

Though, according to the point of view of the creators, this is not simple financial and non-financial data, but logically related complex. This is the means of systematic transfer of strategic goals of realizing strategies, management and organization. After identification and formalization of strategy, they separate basic factors of strategy map, and special indicators are processed on their basis.

**Advantages of the Model:**

– Systematic method of approach – the concept is widely worked and represented from commencement of involvement at every stage, till making profit out of compensation mechanism;

– Wide empiric approbation.

**Disadvantages are:**

– Comparative strictness;

– Insufficient attention towards human capital: organization workers are discussed in the content of renovation and growth together with the systems of intellectual potential (knowledge is discussed as physical substance).<sup>34</sup>

**12) Model of real options.** The theory of real options provides assessment of possibilities in relation with the existence of intellectual capital into specified organization.

Grounds to real option are nonfinancial actions (different from financial options). Real option provides procurement of investments or possibility of their selling, in material and intangible and nonfinancial assets, for example, investments into scientific-research and experimental-construction works may be discussed as call-option, as it may give rise to procurement, that is, investment into creation of production capacity. Thus, any initial investment gives rise to the growth of investments through possibilities may be discussed as Call-option.

Ordinarily, they use here methods and approaches to be used utilization in the model of Black-Schultz (BSOPM); which is based on traditional theory of assessment of financial options. They use non-financial data in the form of data of the model. According to BSOPM the value of European Call-Option is calculated with following formula:

$$C = SN(d_1) - R_e^{-rt} N(d_2)$$

$$d_2 = \frac{\ln \frac{S}{i} + r \left( r + \frac{1}{2} \delta^2 \right)}{\sqrt{\delta^2 \cdot t}} \quad (8)$$

$$d_2 = d_1 - \sqrt{\delta^2 \cdot t}$$

Where, S is market price of basic assets;

E - the value of using option (Strike);

<sup>33</sup> Jacobsen K., Roos G. Management in a complex stakeholder organization. monash Mt Eliza Business Review 2 2006. 2(1). pg. 82-93; Fernstrom L., Pike S., Roos G. Understanding the truly value creating resources, International of Learning and Intellectual Capital, 2005. 1(1). pg. 105-120;

<sup>34</sup> Bontis N., Dragonett N., Jacobsen C., Roos G. THT KNOWLEDGE TOOLBOX: A Review of the Tools Available To Measure and Manage Intangible resources. European Management Journal 1999. 17(4): pg. 2-21.



$r$  – annual risk-free percentage rate;  
 $\delta$  – analytical disperse of continuous profitableness of market asset;  
 $t$  – time to fulfill option.

Herewith, according to BSOPM, basic allowances may be formed in the following form:

– The values on market assets have lognormal distribution with permanent mathematic expectation and disperse (though BSOPM may be provided with normal distribution, which is represented in the form of the time function);

- There are no transaction costs and payments. Each asset is completely separately.
- There is no risk-free arbitrage possibilities;
- Sale of assets is continuous;
- Investors may raise loans or borrow resources with total risk-free interest rate;
- Short-term risk-free interest rate is permanent in time.

BSOPM model may be used in practice.<sup>35</sup> In such case variables of Black-Shultz formula for real options are noted in the following way:

$C$  – First stage of inventories;

$S$  – Brought price of the second stage of investments;

$t$  – Time before taking decision pursuant to the second stage, i.e. time, during which second stage of investment may be provided;

$X$  – Brought price of expenditures at the second stage of investments.

**Intermediate expenditures** – these are expenses, which shall be realized in order to maintain possibilities of second stage of investments (for example rent, costs on support and so on).

$\delta$  – Volatility of the value of the second stage of investments.

It shall be mentioned that the elements of intellectual capital may be discussed as real options, though their basic part make real options created by the enterprise.<sup>36</sup> Examples to it may be:

- Agreement on relations, such as joint enterprises, alliances, licensed agreements or simple informal connections (social capital of the company);
- Investment to the human capital: education, teaching and training, obtaining additional skills and so on;
- Investments into informational technologies;
- Investments to create unique organization culture, which rises flexibility of consideration, knowledge, creativeness and so on;
- The practice and methods of new possibilities of growth, utilization of such possibilities;
- Intellectual property;
- Scientific-research and experimental-construction works.

At the same time using BSOPM model for evaluation of real option is characterized by numbers of methodological reductions, as most part of allowances of the model is unfulfilled for real options. Part of input data, such as, volatility of basic assets of income, it is hard to be evaluated in practice for nonfinancial assets, so that significant distinction between financial and real options makes assessment less reliable pursuant to BSOPM.

**Advantages of the model:**

- The model foresees strategic flexibility and ability of corrections of intellectual capital;
- Impossibility of using BSOPM upon evaluation of real options;
- Weak empiric support of the model for evaluation of real options.

Thus, processing of methodologies of managing commercialization of intellectual capital shall be provided on the basis of developing the theory of evaluation of intellectual capital and to take into account every aspect of its utilization.

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