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Intellectual Capital as a Basis for the Region Economic Development

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Abstract: In the current economic conditions rapidly developing economy based on knowledge. Intellectual assets of the company are one of the main factors affecting the valuation of companies. The growth of investment attractiveness of the business is directly dependent on changes in the structure of intangible assets. Therefore, the procedure assessment of intellectual capital requires new approaches and needs for scientific advice, based on a study of stable trends and patterns of development of this type of capital. The study defines intellectual capital are the main methods of assessment. Conducted calculations integral valuation of the value of intellectual capital (q-Tobin) for largest companies in the Samara region which in turn determine the level of economic development of the region.

Key words: Evaluation of human resources, management model, intellectual capital, methods of assessmen, q-Tobin, intangible assets

INTRODUCTION

In today's society intellectual capital it determines the competitiveness of economic systems is a key resource for their development. In the process of creation, transformation and use of intellectual capital involved the totality of commercial enterprises, state and municipal institutions-all subjects of market relations. The level of economic development of the Samara Region is determined by the quantitative and qualitative evaluation of a variety of factors one of which is intellectual capital (Ajupov *et al*., 2015a-c).

In light of the stated objectives of innovation development, the problem of the formation, accumulation and effective use of intellectual capital economy subjects becomes particularly important. It is especially important to take into account the intellectual capital of the regions in the development of their socio-economic development programs because firstly the regions that are the subjects of competitive relations and secondly the intellectual capital of the region is a factor in economic growth and well-being factor in the growth of the region's population (Ajupov *et al*., 2016; Ozernov *et al*., 2016; Geraskin *et al*., 2016).

The aim of this research is to define a factor in the level of economic development of the Samara region on the basis of the calculation of the integral value of the valuation of intellectual capital (q-Tobin) largest companies in the region. In accordance with the purpose of research, it is necessary to solve a number of problems:

- The study of the theoretical aspects of the definition of intellectual capital
- Consideration of the basic methods of valuation of intellectual capital
- Allocation of the largest companies in the region and carrying out calculations q-Tobin for these companies

You can allocate a sufficient number of Foreign scientists studying the issues of intellectual capital: K. Vig, T. Lloyd, P. Drucker, P. Akkof, J. Menzer, L. Prusak, E. Brooking substantiated the importance of systematic formation and use of knowledge in the economy of society. A. Toffler, Daniel Bell, E. Maasud pointed to the importance of the creation and dissemination of information technologies. T. Schultz and G. Becker created the theory of human capital. M. Polanyi, J. Novak, X. The Takeushi drew attention to the use of tacit knowledge worker. Theory of learning organization developed Adzharis K., P. Senge, D. Tees. P. Strassman and K.E. Sveybi made a significant contribution to the methodology of evaluation of intellectual capital (Ajupov *et al*., 2015, 2016).

Many definitions of intellectual capital are of a collective character: Brooking (1996) characterizes the intellectual capital as "a term for the combined intangible assets for the operation of the company" Professor A.N. Kozyrev gives the following definition: "This is first of all, the people and the knowledge they

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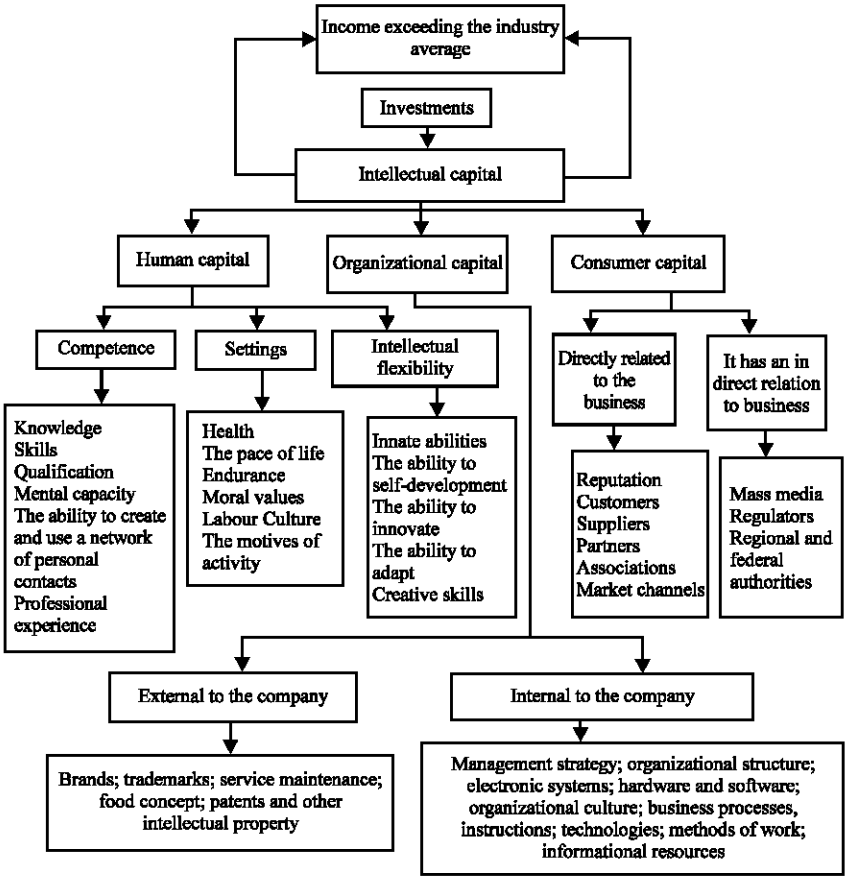

Fig. 1: The structure of the intellectual capital

possess as well as their skills, communication and everything that helps to effectively use them"; Bontis (2004) treats intellectual capital as "hidden value of people, enterprises, societies and regions that are current or potential sources of well-being".

Analysis of different approaches to the study of the essence of intellectual capital, allows to allocate its main characteristics.

Intangibility: Knowledge and creativity of people, the company's image, moral values although, able to influence can not be reliably recorded and reproduced.

Non-additivity: Resources related to intellectual capital, not necessarily increase just from the fact that the funds invested in it.

An increasing marginal returns: Created with the value of intellectual capital increases with the applied and generated intellectual capital. Recently, I spread a uniform approach to the elements of intellectual capital. Virtually all researchers in determining the elements of intellectual capital are three areas of its components: human capital organizational capital and customer capital (Fig. 1).

Human capital: A set of components such as the qualification, motivation, teamwork, experience and skills that are necessary for professional activity and contribute to the growth of labor productivity in enterprises as well as generate income of their owner (Ajupop *et al*., 2016; Medvedeva *et al*., 2016).

The owner of human capital are employees of the company. When they leave the organization, their experience, knowledge and competence go with them. Thus, in the traditional accounting human resources are treated as expenses of the enterprise as well as part of the intellectual capital theory, labor companies are regarded as the creators and almost the main source of income of the enterprise (Pavlova *et al*., 2016).

Organizational capital, sometimes referred to as internal or structural capital is that part of the intellectual capital of the enterprise which distinguishes it from other organizations and increases its value in the market:

technology, systems and management strategy, internal business processes. This organizational capacity of the enterprise which are responsible for efficient use of human capital. An important element of organizational capital is a company's ability to innovate and improve their internal business processes.

Organizational capital is divided into an innovative and process. Innovation capital comprises everything that creates the basis for updates and the company's success in the future as well as intellectual assets. Process capital includes formal exchange of experience within the company procedures, the use of information technology.

Consumer capital in some sources, it is called internal or client money is capital which consists of stable relations and relations with clients, contractors and consumers. It is formed in the process of interaction with customers.

The boundaries between the three main types of intellectual capital are conditional. Some of the elements of intellectual capital can be attributed to the equal right to one or another kind of intellectual capital. Human organizational and customer capital are interrelated and interact with each other.

Investing in each of them individually is not sufficient. They need to interact, creating a synergistic effect which will increase the cross-effects of some types of assets on the other. For example, consumer resources can enhance the prestige, the ability to attract new customers. Properly lined up organizational resources with the transfer of knowledge from one employee to another, through a mentoring system, a single structural unit or project to another, through the exchange of experiences procedure reduces the dependence of the enterprise tacit knowledge and the human factor, increases the efficiency of the use of knowledge. Competence of people contribute to a more precise formulation of the objectives of the organization as well as stimulate the development of new ideas and projects. Consumer interaction organizational and human resources is transformed into financial capital.

In organizations with a strong intellectual capital, uses more modern and innovative equipment and technology staff have higher qualifications and manufactured products are characterized by high competitiveness and bring the company's profits, higher than the average industry. Indeed companies operating in the same macro-economic environment which are equally technically and technologically equipped, often the results are very different activities. The main reason for this is the different level of intellectual capital and the efficiency of its use.

Experts point out that today has considerable human capital which translates into a high level of education and increasing the financing of innovative industries. However organizational and consumer capital is underdeveloped.

It is necessary to develop all the components of intellectual capital in order to obtain a significant synergistic effect in terms of the growth of the country's intellectual capital.

MATERIALS AND METHODS

The main purpose of assessment of intellectual capital is the need to ensure sustainable development of the organization. Intellectual capital is the basis for the business growth of the organization. Therefore, the evaluation of intellectual capital allows more articulate a long-term strategy of the organization in a constantly changing environment. There are several approaches to the evaluation of intellectual capital. In the case of assessing the quality and efficiency of investments in tangible assets, the result can be easily obtained by calculation while the assessment of investment in intellectual capital is complex and ambiguous.

In management theory and practice, there are about 25 methods for measuring intellectual capital, grouped in 4 Groups of methods: direct measurement; market capitalization; return on assets; scoring.

Direct intellectual capital methods: This category includes all methods based on the valuation of the individual elements of the intellectual capital. After evaluation of individual components of intellectual capital, displayed its integral evaluation within the company.

Market capitalization methods: It calculates the difference between the market capitalization of the company and the shareholder's equity. The resulting value is regarded as the value of its intellectual capital. This group seeks to evaluate methods of intellectual capital on the basis of the gap analysis which occurs between the market value of the business and its value on the balance sheet, making this method similar to the method for assessing the business reputation of the company. The disadvantages include a convention determining the intellectual capital, since this value also includes factors such as goodwill and partnership companies.

Return on assets methods: In this case, the calculated ratio of the average company's earnings before taxes for

a certain period to the tangible assets of the company which is then compared with the figures for the industry as a whole. Next, the obtained difference is multiplied by the value of tangible assets of the company. The result is an average additional income from the use of intellectual capital. Then, using the methods of direct capitalization or discounting the resulting cash flow is calculated the value of the intellectual capital of the company. Unlike the previous method is to identify the financial impact of intellectual capital. In this case, it is not determined by the analysis of the market value and by measuring the company's ability to consistently provide higher profitability indicators than its competitors and ultra-high yield due to the presence of hidden intellectual assets. This group is focused on the methods of analysis of the effect and has a common drawback: the share of intellectual capital it is not exactly defined.

Scorecard methods: These methods are not intended to produce monetary value of intellectual capital. There is identification of various elements of intellectual capital on the basis of indicators and indices which are determined by counting the points and points. The main disadvantage of this group of methods is that the assessment results are for informational purposes and do not allow a monetary valuation of intellectual capital. Classification of methods of intellectual capital estimates are presented in Table 1.

Using q-Tobin in the next section of this study to explain the fact that all of the above methods, this method allows you to assess the intellectual capital on the basis of a minimum amount of public information about the activities of the leading companies of the Samara Region.

Among the various methods of evaluating the intellectual capital of the integral evaluation method-q-Tobin is one of the most simple and reliable. Tobin ratio is the ratio of market value to the replacement cost of its tangible assets:

$$Q=\frac{K}{A} \quad (1)$$

Where:

K = Market capitalization of the company
A = The value of net assets of the company

Q>1 then the object has a high intellectual capital or human resources if Q<1 then low. As you know, the market value of any company can be determined based on the data of its capitalization or by buying it. If the market value of the company significantly exceeds the value of its tangible assets which means that the market is highly "estimates" of its intangible assets: the talent of staff, efficiency of management, business reputation.

This ratio has a significant drawback, since the market value of companies depends on external market conditions. It is therefore possible to use Tobin on two different occasions. You can compare companies in the same industry, in this case an assessment of intellectual capital industry. You can also evaluate companies in various fields of activity concentrated in one geographical area. In this case, we can talk about the level of evaluation of the intellectual capital of some of the selected areas.

Table 1: The classification of intellectual capital evaluation methods

Methods groups	Methods	Contents
Direct intellectual capital methods	Models cost (cost model)	The method of replacement cost valuation of the object is the summation of the cost to create intellectual capital, a similar evaluation of the object, at market prices prevailing at the date of valuation, taking into account the wear evaluation object
		The method of replacement cost is the summation of the costs at market prices prevailing at the date of assessment to create an object that is identical to assess the project, using identical materials and technologies, taking into account the wear evaluation object
		Method of initial cost is the summation of the historical (initial) cost, restated to reflect present conditions, taking into account the index of price changes in the industry
	Good will valuation method using index of business activity	Used multiplicative model according to business value element of business activity indicators
	The income approach	Cost is determined by calculating the present value of future cash flows over the remaining economic life of the intangible assets. Gain is determined by methods advantages profit advantages in cost
	Cash (monetary) model	Determine the present value of future salary (or other income) employees of the organization
Market capitalization methods	Methods for evaluation of intellectual capital on the basis of financial indicators	Methods of assessing the effectiveness of investment in intellectual capital, business organizations, based on the ratio of two values: X (difference between capitalization of the organization and the cost of replacement of its real assets minus liabilities) and Y (investments in intangible assets)

Table 1: Continue

Methods groups	Methods	Contents
	q-Tobin	Compare the market value of the asset to the cost of replacement. Compare the market value of the organization with its carrying amount A modified approach is based on an existing q-Tobin. At the same time as we approach the market price of the company should be considered a price that is based on stock market data as well as the approach to the assessment of real assets replacement is recommended to use a figure of net assets
	The method of cash flow discounting	The cost of intellectual capital is determined by calculating the present to the present value of the expected future benefits
	Rated-express method	Cost is determined by the price of purchase and sale transactions of similar intangible assets as amended differentiate features analog assets and the asset being valued (direct sales comparison approach) or based on royalty rates (royalty method)
	The method of excess profits	Intellectual capital is estimated as a discounted (current) value of the excess return (profit) organization in comparison with its competitors
Return on Assets methods.	Evaluation method of intellectual capital using ROA	The actual average income for the last 3 years minus (the value of its fixed assets, multiplied by the industry average return on fixed assets) divided by the coefficient reflecting the cost of capital for companies
	Valuation of intellectual capital on the basis of performance information	The method: determination of the net income of the organization which can be attributed to the skill and intelligence management
Scorecard methods	Balanced performance table	The table of key indicators of the organization is formed, their indicative processing is carriedout with the purpose obtaining an effective integral indicator
	Monitor intangible assets	Intangible resources are estimated on the system of indicators, arranged in a matrix where one axis stand competence of personnel, internal structural characteristics of the organization and customers and on the other axis-growth (updated) efficiency and stability.
	Balanced scorecard	Provided 4 blocks of indicators: financial (increase enterprise value for owners, sales growth, productivity of capital) client (value proposition for customers-price, quality, time, functionality, service, customer relationships, brand) internal processes (innovative processes as increasing market power, client management processes in order to increase value for customers, operational processes-achieving the operational excellence processes associated with the management and the environment the formation of responsible citizenship); training
	IC-Index method	IC-index: the technique of the "second generation", aimed at building a comprehensive picture of the value of the company. IR-index attempts to combine a number of different indicators into a single index and link changes in intellectual capital with changes in the market. The approach brings together strategy, non-financial performance, finance and value added

Table 2: The results of q-Tobin for the leading companies of the Samara region in 2015

Company	Assets (mln.rub.)	Capitalization (mln.rub.)	q-Tobin
JSC "Novokuibyshevsk oil processing plant"	101288.0	100275.100	0.99
JSC "Kuibyshev oil processing plant"	96723.6	111232.100	1.15
JSC "Syzran oil processing plant"	68764.3	66013.700	0.96
JSC "AVTOVAZ"	161133.0	27392.600	0.17
JSC "KuibyshevAzot"	58414.2	179915.700	3.08
JSC "Togliatti Azot"	78369.1	438867.100	5.60
JSC o "Aviakor"	37189.3	13760.100	0.37
JSC o "Zhigulevskoe beer"	894.5	1279.100	1.43
JSC "Samara metallurgical plant"	22437.6	32085.800	1.43
GM-AVTOVAZ	15345.2	5524.300	0.36
The mean value of q-Tobin	-	-	1.554

RESULTS AND DISCUSSION

Table 2 provides estimates of Tobin's ratio for the largest organizations of the Samara Region in 2015. Analyzing the data in Table 2, it is possible to trace trends in the value of Tobin's sphere of activity of the company. The highest values are observed in the chemical industry companies, the coefficient values are in the range 3.08-5.6. Next is the enterprise of the metallurgical complex and the production of alcoholic beverages, the Tobin ratio is 1.43. Fuel and energy complex-refineries are part of Rosneft have low value of the coefficient a bout 1. The lowest observed in Tobin's largest domestic automaker AVTOVAZ, the coefficient value is 0.17. In general, the

Table 3: q-Tobin leading companies in 2015

Company	q-Tobin
British petroleum	2.53
Eastman kodak	5.04
Philipp morric	5.14
Times ink.	6.56
Bristol mayers	8.52

Table 4: The mean value of q-Tobin for Russian companies

Date	Characteristics of the macroeconomic situation	The mean value of q-Tobin
1.07.2014	Before the fall of the national currency	1.88
1.01.2015	During the economic downturn	0.58
31.12.2015	Stabilization of the market situation	1.17

value of q-Tobin leading companies in the Samara Region is far behind on the value of q-Tobin similar profile of activity in the USA and Europe. Table 3 and 4 show the value of this ratio for some Western companies.

Tobin's figures depend on the housekeeper's status in the country and region of the company. Table 4 shows the mean value of Tobin's ratio for the period 2014-2015, taking into account the macroeconomic situation in the Russian Federation.

A significant backlog of q-Tobin for companies of the Samara region of the world companies can be attributed to several factors: domestic companies insufficiently evaluated in comparison with Western companies of similar profile because they are not attractive from an investment point of view. Russian companies have insufficient attention innovation and accordingly do not pay attention to a large extent on improving competitiveness and business activity.

CONCLUSION

Business growth and diversification of the economy is impossible without investment in intellectual and including in human capital. Investments in intellectual capital gives significant in terms of for a long time and the integral on character economic and social effect. However, it is influenced by a wide range of external factors, macroeconomic.

A sharp drop in oil prices on world markets and subsequent behind this sharp fall of the national currency is seriously reduced the capacity of many Russian enterprises and including, the Samara region. Many companies in 2015 significantly reduced key performance indicators: revenue, profit margins. The crisis has had a significant impact on demand in virtually all sectors of the economy, so it was expected and a sharp drop in the coefficient of Tobin. This demand determines the ability to use as a consumer of capital and intellectual capital.

At present, Russia's economy is entering a period of stabilization as a consequence, increases the average value of Tobin's. If a comparison of the average value of q-Tobin in the whole country and the leading companies of the Samara Region, the value of the coefficient in the region is 32% higher than the average for companies in the country, indicating a relatively high level of economic development of the Samara Region as the Russian Federation. For the top 10 enterprises of the Samara area the following features have been identified.

Fuel and energy complex have a high capitalization ratio and Tobin have below average, due to their high carrying value. The chemical industry has a relatively high capitalization and Tobin are significantly higher than the average value due to their relatively low carrying value.

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