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SECTION 7. INNOVATIVE ECONOMY

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7.1 Intellectual capital management in the process of innovative enterprise development

The concept of knowledge management is gradually gaining popularity in both academia and business circles. The reason for this is obvious: being in fundamentally new economic conditions, enterprises and other economic organizations are simply forced to look for new models and management technologies to ensure successful long-term development. When access to traditional resources becomes open, borders between economic regions and systems almost disappear due to the active use of information and communication technologies, classical approaches to competitiveness do not work, objectively there are prerequisites for finding new sources of competitive advantage, and above all - in domestic the environment of the organization, which is reflected in the concept of knowledge management. At the same time, the potential for realizing knowledge management capabilities for enterprise development remains largely untapped. This is due to the fact that currently not fully developed practical approaches to the management of intellectual capital, which allow to implement comprehensive management programs.

In general, it is important to analyze and evaluate the current position of Ukraine in the world market; identifying the strongest competitive advantages of the country's domestic potential in the field of innovation and intellectual capital and bringing it in line with external opportunities in order to increase Ukraine's competitiveness in national and international markets. To assess the state of Ukraine in the world market at the moment is presented appropriate carrying out analysis positions countries in authoritative international rankings. For analysis It is important to take into account the following ratings.

The Global Competitiveness Index, which measures the ability of countries to ensure a high level of well-being of their citizens, assesses a set of institutions, policies

and factors that characterize the sustainability of economic development in the short and medium term;

Innovative component of the Global Competitiveness Index - takes into account the technological level of the country, its innovative activity in the food and technological spheres, development and quality of business and production environment, which are directly related to the efficiency of commodity markets;

The level of competitiveness of the world according to the Institute of Management (Switzerland) - an annual report on the competitiveness of countries, which analyzes the impact of the internal environment of the state on the competitiveness of enterprises;

Ranking of countries in the field of doing business - assesses the ease of doing business in ten areas of business regulation, including in the areas of business start-up, recovery of solvency and international trade;

Global Innovation Index - assesses the ability of countries to create successful innovations, assesses both input and output parameters.

Practice shows that all these indicators are traditionally used by strategic investors, politicians, NGOs and researchers to assess the economic situation and prospects for economic growth.

According to most of these ratings, Ukraine is in the second half of the number of countries analyzed each year. With this trace make conclusion that in the near future the future should not rely on support foreign investors and mass inflow foreign capital to the country . Most available source funds for activation innovative activity and use of intellectual capital is domestic capital - own funds n enterprises , budget funds, and a key success factor in this the process is designed to be balanced state policy on _ activation innovative areas and involvement investment in the future sectors economics for the efficient use of intellectual capital .

Thus, the main market opportunity for Ukraine today is the study and analysis of the experience of state support for innovation in different countries. And the results of this analysis are designed to help build a clear and workable mechanism for activating and state support for the creation and use of intellectual capital. For

developing countries, acquiring knowledge abroad is the best way to expand your information base and increase your competitiveness. At the same time, it is important to consider which technology and high-tech goods are most appropriate to purchase, develop and adapt to the local conditions of a particular economy, how to use their own intellectual capital.

Today's conditions significantly limit the ability of Ukrainian enterprises to compete in foreign markets. And one of the main ways out of this crisis is the active development of science in order to create new technological and product innovations that are created using intellectual capital and become independent of intellectual capital. Evidence in favor of such a statement is as follows .

Theory post-industrial society is getting growing dissemination , its theoretical and methodological aspects have been passing lately wide practical approbation in the past countries world . According to with concept _ post-industrial society , it seen as a society in the economy whose priority _ passed from predominant production goods for production services , conducting research , organization systems education and training quality life , and that most importantly , in which implementation innovations are growing to the extent depends from achievement knowledge , ie intellectual capital. Thus , the basis of post- industrial society is dominated by science and knowledge . On positions it turns out ability produce and use knowledge . The basis of development and the main object investment funds in countries Great sevens in their path development was and remains intellectual capital . Exactly intellectual capital is one of the main ones tools development of a new technological system - the sixth , the core of which is biotechnology , gene engineering , nanotechnology , laser technology and information _ technology .

Technological innovations are discoveries the latter decades . A discovery that changed people 's lives have become a phenomenon forever Internet . In general , the main ones inventions humanity belong to: wireless technologies , alternative technologies , genome research , television , energy and water conservation technologies , technologies space research , DNA analysis , technology computer

modeling , etc. _ For the best understanding the importance of science and technology today stage development worth it turn to evolution industrial revolutions .

Thus, we can conclude that the economic growth of Ukraine's economy is possible only through innovation, which is based on the development of science as the basis of the system of production and dissemination of knowledge, creation and active implementation of technical and technological innovations in all spheres of human life. use of intellectual capital. At the same time priority must be given industries industry that determines pace development of STP of others industries national economy . And this , in turn , needs formation effective mechanisms n support and incentives innovative activities enterprises, intellectual capital with significant state support.

The huge potential of human capital and intellectual assets in shaping and maintaining the long-term success of any enterprise has formed a modern direction of research in economics and management. It attracts the attention of many scientists around the world. The problem of generation and management of intellectual capital has been studied by many foreign and domestic scientists. Despite the significant amount of work on intellectual capital management, the chosen topic for research can be considered underdeveloped, as theoretical proposals are not fully translated into practical recommendations.

Therefore, the purpose of the study is to assess the intellectual capital of the enterprise and substantiate effective tools and practical recommendations for managing its intellectual capital.

in accordance with the defined purpose of the study solved the following tasks:

theoretical aspects of the essence and general characteristics of intellectual capital are considered;

methods of intellectual capital valuation are analyzed;

the theoretical approaches to the management of intellectual capital are generalized and the innovative activity of the researched leading machine-building enterprise of the Kharkiv region is analyzed;

the assessment of the intellectual capital of the enterprise was carried out;

problems of intellectual capital management of the researched enterprise are identified;

measures have been developed to increase the intellectual capital of the enterprise;

proposals for improving the management of intellectual capital of the enterprise are substantiated;

the economic efficiency of the recommended intellectual capital management system was assessed.

The scientific novelty of the obtained results is to improve the theoretical principles and methodological approaches to the management of intellectual capital of the enterprise. The main scientific results are as follows:

improved:

methodical approach to the assessment of intellectual capital of the enterprise, which, unlike existing ones, built on component analysis intellectual capital, taking into account the peculiarities of the sphere of operation of the enterprise on the basis of the application of the income method, Tobin coefficients and intellectual value added;

methodological support for the development of an incentive system for employees to increase their competencies, the difference between which is to determine the stages of building an incentive scale, which includes choosing intervals of the scale depending on the range of incentives, calculating scale standards and the amount of incentives .

Theoretical and methodological basis of the research were scientific concepts, theoretical developments of leading domestic and foreign scientists on the problems of knowledge management in the enterprise.

To achieve this goal and solve research problems, the following general and special research methods were used: system-structural, comparative analysis, graphical, economic-statistical and scientific methods of cognition: comparative analysis and method of logical generalization, which best correspond to the research.

The information base of the study was statistical materials of the State Statistics Service of Ukraine, scientific monographs, domestic and foreign scientific publications, the results of the author's own research, regulations of the Verkhovna Rada of Ukraine and the Cabinet of Ministers of Ukraine.

The practical significance of the obtained results is that the theoretical and methodological provisions of scientific work are brought to the level of specific proposals and developments for the assessment of intellectual capital of the enterprise.

Intellectual capital is characterized by a higher degree of development compared to the already known functional forms of capital, the criterion of which is a more sustainable level of economic growth of society, the efficiency of its structures. World experience proves that the living standards of all segments of the population, the general socio-economic situation in the country are determined by the degree of education of society and its attitude to intellectual values. Only an intellectually rich society is a guarantor of a high standard of living and prosperity of the state, even with small amounts of natural resources.

The concept of intellectual capital is sometimes identified with human capital, human resources, intellectual property, intellectual assets. The genesis of the concept itself is not unambiguous. According to research [268], elements of all concepts of intellectual capital can be found in the publication [269]. Some researchers have studied the impact of intellectual capital owned by the company on their competitiveness and profits [270].

Most of the existing opinions of foreign and domestic economists on the definition of intellectual capital can be divided into two main groups: intellectual capital is identified only with the human factor; intellectual capital is an advanced system, the processes and structure of which are represented by the search for optimal intellectual efficiency and relations between employees.

The main most commonly used and widespread definitions of "intellectual capital" are presented in table 1.

Table 1.

The most commonly used in the definition of intellectual capital

Author	Definition
1	2
Ramanauskaitė A. [270]	Intellectual capital is an intellectual product created or acquired that is valued, objectified and identified (separated from the enterprise), held by the enterprise (entity) for the purpose of probability of profit (additional value).
Coughlan, T. [271]	Intellectual capital is a system of characteristics that determine human ability, ie the quality of labor of the individual, the total employee of the enterprise, firm, corporation, country that creates the goods, services, additional product for their reproduction based on personalized economic interest of each entity. aggregate.
Voronkov D., Grynyov A. [272]	Intellectual capital is something like a "collective brain" that accumulates scientific and everyday knowledge of employees, intellectual property and experience, communication and organizational structure, information networks and company image.
Borjigen C. [273]	Intellectual capital is seen as intellectual resources: “intellectual capital is the value-creating intellectual resources of the enterprise, represented by human and machine intelligences , as well as intellectual products created independently or involved as a means of creating new value.
Cassiman B., Valentini G. [274]	Considers intellectual capital as the value of all its intellectual assets, including intellectual property, its natural and acquired intellectual abilities and skills, as well as its accumulated knowledge base and useful relationships with other entities.
Chesbrough, H., Bogers M. [275]	Under the intellectual capital of the enterprise means "a set of skills and knowledge that have economic value and are used in the production system, focused on meeting the needs of society in order to create innovation potential and generate income
Illiashenko N. S., Bozhkova V. V., Derykolenko O. M., Illiashenko S. M. [276]	Intellectual capital is intangible resources based on the model of monitoring intangible assets.
Khedhaouria A., Jamal A. [277]	Intellectual capital is invisible assets, knowledge, basic competence, strategic assets, basic opportunities, elusive resources, organizational memory.

Based on the analysis of the definitions presented in Table 1, we can conclude that intellectual capital is the sum of knowledge, experience, training and intuition of all employees of the enterprise, institution (or state). To this should be added the established human connections, information in the form of databases, a computer network that instantly processes and transmits information to all employees of the relevant structure, etc., so you can quickly and adequately respond to change.

Researchers and practitioners believe that at the enterprise level, intellectual capital is the sum of three components:

human capital - capital embodied in the employees of the organization in the form of experience, knowledge, skills, ability to innovate, as well as in the general culture, philosophy of the organization; its other components are the moral values of the organization, the culture of work and the culture of management, the general approach to business;

structural capital - the most diverse part of intellectual capital; these include hardware and software, organizational structure, patents and everything that allows the company's employees to realize their production potential;

consumer or market capital - capital to which it is customary to include trademarks and service marks, brand names, business reputation, the presence of "their people" in partner organizations or client organizations, the presence of regular customers, re-contracts with consumers, etc.

Thus, the term intellectual capital in the general sense should be attributed to all intangible resources that determine the value and competitiveness of the organization (enterprise). Intellectual capital, in terms of human resources, is difficult to measure in financial terms, while for all other assets of the organization there are standard criteria for determining value. Therefore, in our opinion, it would be appropriate to classify this economic category as non-financial assets.

The main function of intellectual capital - to significantly accelerate the growth of profits through the implementation and formation of the necessary relations, the knowledge system of the enterprise, which, in turn, ensure its highly efficient economic activity. In particular, the intellectual capital of the enterprise determines the quality of its management system [271, p. 20-22]. The essence of any economic category is always manifested through functions. Therefore, the main functions of intellectual capital should include: accumulative; production; reproductive; stimulating labor productivity, competitiveness, impact on economic growth [272].

Modern forms of materialization of intellectual capital are material factors of production, labor - patents, licenses, know-how, models, programs that are used in all spheres of society and its subjects [273].

Thus, intellectual capital is gradually finding its own original form of movement. Intellectual capital has its own characteristics and extends its influence to all components of the corporate structure; carries out the completed process of movement, forming, supplementing, realizing itself as a system.

Intellectual capital is difficult to measure because it relates primarily to the quality of intangible assets, and its measurement should focus on researching what is expected of the company in the future. There is no current standard for measuring intellectual capital [274].

A significant number of different methods have been developed for the assessment of intellectual capital, which differ both in the set of calculated indicators and in qualitative characteristics. As the purposes of an estimation of intellectual capital it is possible to allocate: control; valuation for the purpose of acquisition, sale of business; reports to interested persons (clients, creditors, shareholders, employees, government agencies, etc.); visualization of the hidden value of the enterprise. To review the methods of assessing intellectual capital should refer to the classification of KE Swaybi , who proposed the division of all methods into four groups [275].

1. Scorecard methods Methods (SC). This group of methods is based on indicators and indices, which are determined by calculating points. The main disadvantage of this group is that the results of the assessment are informative and do not allow to give a monetary assessment of the value of intellectual capital. The application of this method does not provide a monetary value of intellectual capital. These methods are similar to the methods of diagnostic information system.

2. Market Capitalization Methods (MCM). These methods imply that the difference between the market and book value of assets is the price of intellectual capital [276]. The value obtained is considered as the value of its intellectual capital or intangible assets. This group includes, for example, the Tobin coefficient . Disadvantages include the conditionality of the definition of intellectual capital and the

limitation of the difference between the values of factors such as business reputation and partnerships of the company.

3. Methods of direct measurement of intellectual capital - Direct Intellectual Capital methods (DIC). This category includes all methods based on the assessment of individual components of intellectual capital. After the individual parts of the capital are evaluated, an integrated assessment of the intellectual capital of the company and its employees is derived [277].

4. Methods of return of assets - Return he Assets methods (ROA). The rate of return on assets is compared with a similar figure for the industry as a whole. To calculate the average additional income from intellectual capital, the difference is multiplied by the company's tangible assets. Then, by discounting the cash flow, you can estimate the value of intellectual capital [278]. An example is a method such as economic added value.

This group of methods is also not without its drawbacks, in particular, the shortcomings include the lack of separation of intellectual capital and various forms of intangible assets, such as databases, software , etc. But despite this shortcoming, the quantitative assessment of intellectual capital of this group of methods allows you to most accurately assess both the amount of capital and the degree of impact on the company's performance.

The analysis proves that different methods of intellectual capital valuation do not contradict each other. And none of the evaluation methods satisfies all possible evaluation objectives. Therefore, the most effective should be the integration of several methods, depending on the situation, goals and capabilities of the organization.

Problems of formation and use of intellectual are connected with efficiency of realization of innovative projects and programs within the limits of strategic plans of the enterprises. Implementation of innovative processes related to the development of new technologies, new products, services, organizational, technical and socio-economic decisions of production, financial, marketing or other nature, requires not only the cost of resources, but also the use of special organizational and economic tools.

The main task of intellectual capital management should be to ensure its development and efficient use. Accordingly, given the main task, the purpose of intellectual capital management is to ensure its effective functioning; rational use of all types of intellectual capital; formation of the intellectual capital management system of the enterprise and ensuring its compliance with both internal and external conditions of activity; creation of a regulatory framework for the management of intellectual capital in order to justify management decisions; distribution of responsibilities between management entities.

There are three main groups of methods of intellectual capital management [279]: organizational, which consists in a clear organization of all its elements; economic - based on basic economic laws and principles; socio-psychological - take into account the socio-psychological diversity of management elements.

Management of intellectual capital of the enterprise should be aimed at aligning the internal capabilities of its implementation and development to external, generated by the market [280]. Thus, intellectual capital management is a process that focuses on increasing the value of the enterprise through the effective use of its structural components (human, organizational and market capital).

In modern conditions, the intellectual capital of the enterprise becomes its strategic resource and key competitive advantage.

Effectively organized and properly managed processes of creation, accumulation, storage, distribution and use of intellectual capital form the basis for creating long-term competitive advantages of the enterprise and increase its sustainability. Therefore, it is important to evaluate intellectual capital in every enterprise , as well as to reveal effective tools and improve practical recommendations for its management. As in modern realities it is impossible to refer to the names of specific enterprises of Ukraine, this study selected the leading machine-building enterprise of Kharkiv region, which can be considered the main research and production organization of energy -building complex of Ukraine and can be compared with the largest in the world General Electric, Westinghouse , Siemens, ABB, Jack Alstom [281].

The company's intellectual and production potential allows to create products that are at the level of world standards, meeting customer requirements, as confirmed by the International Quality Certificate according to the International Standard ISO 9001, obtained in 1996 and confirmed annually [282].

The company is actively engaged in innovation activities, which confirms that it has significant intellectual capital. The classification of enterprise innovations taking into account the effectiveness and direction of the innovation process are presented in table 2.

Table 2.

Classification of innovations of the researched enterprise

Classification feature of innovations	Innovation groups
1	2
Scope	Management, organizational, social
Sphere of research and development	Technical, technological, design
The pace of implementation	Growing
Degree of intensity	Uniform
Scales	Transnational, regional
Effectiveness	Stable
Efficiency	Economic, social
Degree of market novelty	For the industry within the country, individual organization and group organizations
Depth of changes	Recombination, modification (incremental)
Degree of distribution	Total
Place in the production cycle	Technological

To analyze the state of innovative development of the enterprise, a SWOT-analysis of innovative activity was conducted (Table 3), which allowed to identify its strengths and weaknesses, threats and opportunities, which will ensure the choice of strategy for further development.

Table 3

SWOT analysis matrix

Signs of analysis	Opportunities	Threats
1	2	3
Strengths	Entering new markets or market segments (2 points) Introduction into production of new types of products and Correspondence of organizational structure of character of production (2 points) Product quality control High qualification of the staff Strong market position Availability of modern technological equipment	The need to attract investment from external sources
Weak sides	Low rate of production modernization (3 points) Low level of feedback (1 point)	The presence of a financial crisis

Comparing the above factors, the main strategic directions of innovative development that characterize the development of intellectual capital are identified (Table 4).

Table 4.

The main strategic directions of innovative development of the enterprise taking into account intellectual capital

SWOT matrix field	C strategic directions of innovation development based on the comparison of SWOT matrix fields
1	2
Strengths and opportunities	Opportunities to enter new markets Production of a new range of products
Weaknesses and opportunities	New market segments will be launched only if additional investments are made
Strengths and threats	Expansion of market segments is possible about the intensification of marketing activities in real and virtual space
Weaknesses and threats	Dependence of development goals and strategies on state support in the conditions of slow signing of interstate agreements may strengthen the position of competitors

According to the analysis of table 3 and table 4 it can be concluded that the company continues to strive to be a leader among domestic producers, and the

development of innovation policy needs to increase the share of products produced by innovative technologies in more price segments.

To determine the strategic directions of innovative development, it is advisable to use a system of indicators of the level of readiness of the enterprise to carry out innovative activities. It is proposed to build a system of indicators based on the following groups of indicators.

Technical level, which includes indicators: return on assets, depreciation rate of fixed assets, profitability of fixed assets, modernization ratio, capital intensity ratio of innovation.

Price level by indicators: costs per 1 hryvnia of net income from sales, product profitability ratio (gross margin).

The level of innovation by indicators: the volume of sold innovative products per employee, the ratio of sales of innovative products in total sales, the number of employees with intangible assets, the ratio of intangible assets and net income from sales.

The level of financial condition by coefficients: the total profitability of the enterprise, return on equity, profitability of sales, profitability of operating activities, business activity.

The level of resource provision by indicators: material consumption, net income from sales of products per employee, capital adequacy of labor, the coefficient of security of one employee with intellectual property.

Due to the impossibility of providing initial and estimated data in the current conditions, we can only present the generalized results of research and give their qualitative characteristics. Thus, according to the indicators of the first group (technical level) it is possible to draw a conclusion about the low activity of the enterprise in investing in the modernization of fixed assets, which is unacceptable for the company's focus on innovative development. But it should also be noted the low level of depreciation of fixed assets, which suggests the modernization of work processes on old equipment. As for the prices of products, it is advisable to indicate that they provide the necessary level of income for the development of the enterprise. As for the

indicators of innovation activity of the enterprise, we can say that they are not high enough. But it is possible to notice that investments in innovative activity grow, that is it is possible to hope that in the future improvement of indicators is possible. Regarding the financial situation, the indicators tend to increase. With a relatively small number of employees, the company has high levels of production and provision of resources. There is no doubt that stable over a long period of time the development of the enterprise requires a high professional level of enterprise management. This is confirmed by the values of the latter group.

To identify human innovation capabilities of the enterprise, an assessment of the levels of relevant indicators, which are given in table 5.

Table 5.

Personnel innovation capabilities of the enterprise

Indexes	Level
1	2
Personnel scientific potential	Level below average. The field of scientific research is highly developed for the implementation of large pioneering developments. Opportunity to take a leading position in the field of development and innovation based on discoveries and fundamentally new inventions
Engineering scientific potential	Average. There are opportunities to master the results of GDR on their own, but the period of development may be longer than necessary for timely market entry. The way out of this situation is due to the implementation of the same options as in the previous case, with a strong emphasis on expanding the DCR's own sector.
Working human resources	Average. The possibilities of experimental production are sufficient to implement their own innovations at a rapid pace

According to Table 5, we can conclude that the researched enterprise has the potential for innovative development due to a sufficiently high level of research staff, but the development is able to slow down the workers. Most of them have secondary

or special education. To solve the problem, it is necessary to hire more new workers - graduates of higher education institutions, as well as to improve the skills of workers who are already working.

A questionnaire was conducted to diagnose the attitude of employees to the company's innovation policy. It was attended by 30 people, including management, engineers, accounting department, legal department, programmers, administrative staff and managers. The level of agreement of the experts' opinions was checked with the help of a concordance coefficient of 0.76 and Pearson's criterion was calculated , which is more than the tabular one. Therefore, the results obtained make sense and can be used in the future.

In general, the conclusions on the analysis of innovation policy of the enterprise show that its condition is satisfactory. The state of the innovation climate and the implementation of innovations is at a low level. This is due to the fact that employees do not receive the necessary tools and experimental sites for the organization and implementation of innovations. The reason for this negative trend is insufficient funding for innovation.

Tobin coefficient and the VAIC method were used to estimate the intellectual capital of the subject . To calculate the Tobin ratio , the financial statements and the report on the financial results of the enterprise for 2019-2021 were used. Its value was 0.76; 1.49; 2.11 respectively.

To calculate the value of the enterprise, the income method was chosen, which is the most suitable in this case, as the enterprise is financially stable and profitable. For this purpose, the annual discount rates are calculated as the sum of the investor's income, inflation in the foreign exchange market and the innovator 's risk premium :

Annual discount rate (r) 2019 = 20% + 24.9% + 3% = 47.9%.

Annual discount rate (r) 2020 = 20% + 43.3% + 3% = 66.3%.

Annual discount rate (r) 2021 = 25% + 12.4% + 3% = 40.4%.

Based on the calculated net cash flow and the discount rate, the value of the enterprise in 2019-2021 amounted to thousands of hryvnias in the years 123588.92; 168022,41; 274854.63 respectively.

According to the above data, it can be concluded that the company effectively creates intellectual capital. In 2020 and 2021, the values of the Tobin coefficient exceeded 1, its value tended to increase, so the studied enterprise during this period was a worthy competition to the best machine-building enterprises of Ukraine and abroad and could significantly increase these indicators, as if not wartime events . The main calculated indicators of intellectual capital and intellectual value added (ICV) are given in table. 6.

Table 6.
Indicators of intellectual capital

Indexes	Conditionally marking	Values of indicators by years		
		2019	2020	2021
1	2	3	4	5
Value added, thousand UAH	VA	184924.90	260902.90	402192,20
Efficiency of human capital	HCE	8.54	11.68	12.69
The value of structural capital, thousand UAH	SC	163270.83	238559.69	370499.70
Efficiency of structural capital	SCE	0.883	0.914	0.921
Intellectual efficiency capital	ICE	9.42	12.59	13.61
Efficiency of the involved capital	CEE	1.13	2.32	3.64
Intelligence factor added value	VAIC	10.55	14.91	17.25

The value of the structural capital efficiency index (SCE) of the enterprise amounted to 0.883 in 2019 and 0.921 in 2021, therefore, 1 thousand UAH. value added, on average, brought the company 883 UAH. and UAH 921. structural capital, respectively. That is, structural capital was used by the company quite efficiently. The value of the human capital efficiency ratio (HCE) was 8.54 in 2019 and 12.69 in 2021, ie UAH 1,000 invested in human capital brought the company UAH 8,540. and 12690 hryvnias. value added, respectively. The obtained result is high and testifies to the work of highly qualified personnel at the enterprise. The intellectual value added ratio (VAIC) was 10.55 in 2019 and 17.25 in 2021, the total contribution of tangible and intangible assets to the value added of the enterprise amounted to UAH 10,550. in 2019

and UAH 17,250. in 2021. After estimating the intellectual capital by two methods, the Tobin coefficient and the VAIC method, we observe the same upward trend for 2019 - 2021. Based on the values of EBIT and the value of the company on a quarterly basis during 2019-2021 in the Multiple module Regression using Statistica 12.5 was built a regression model. (Fig. 1-3):

$$P = -2530.7 + 0.7 * EBIT \quad (1)$$

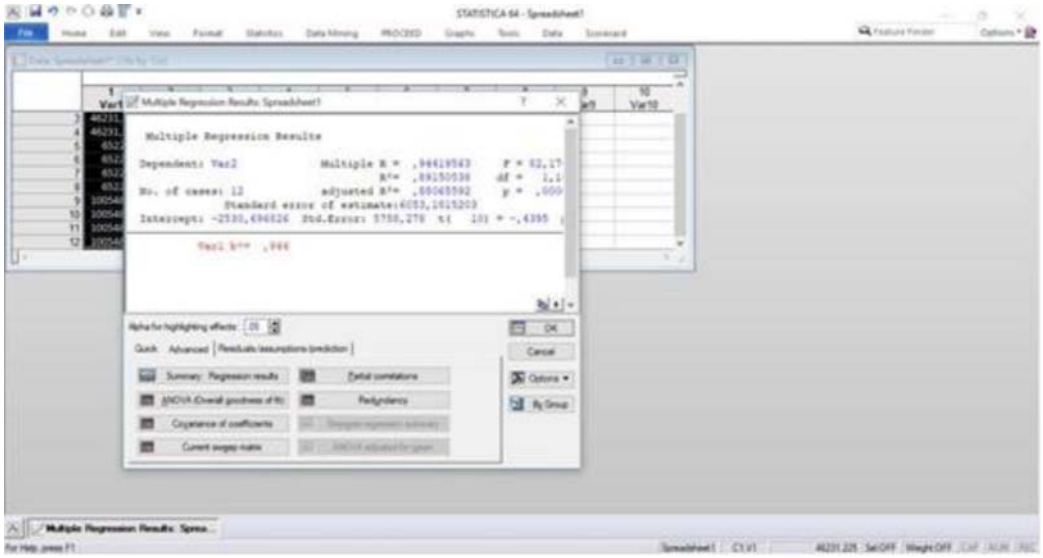

Figure 1. Regression results window

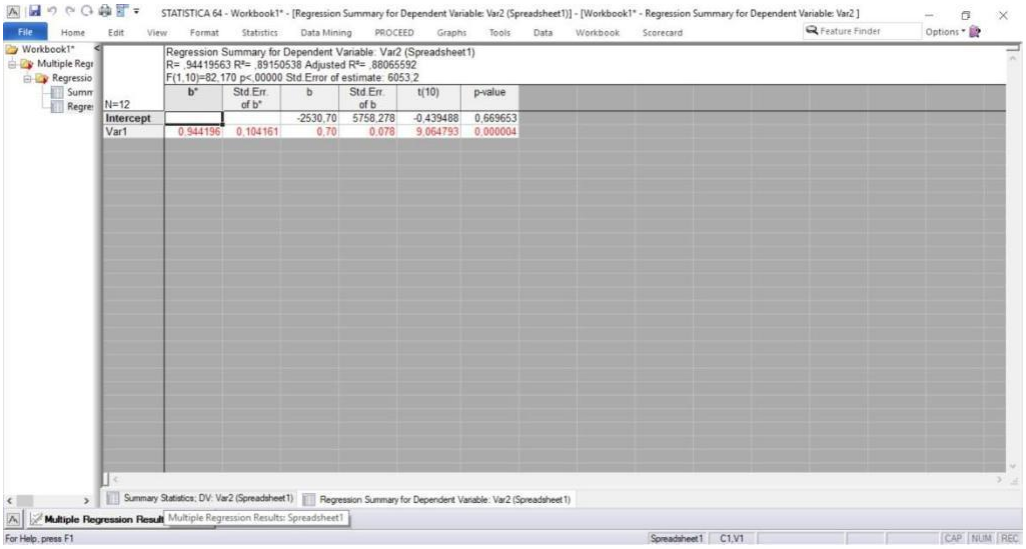

Figure 2. Regression results

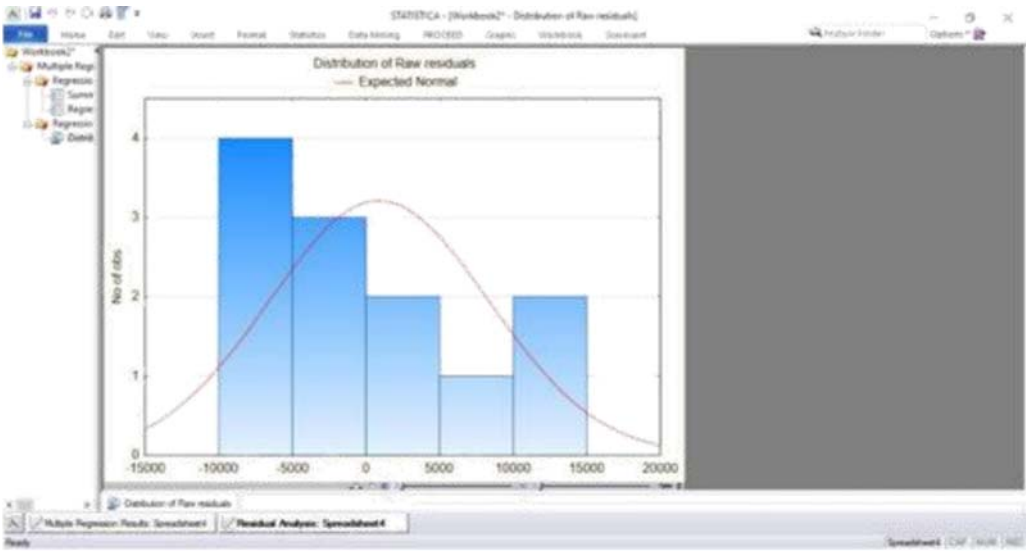

Figure 3. Histogram of the distribution of residues

The first method showed how attractive the company is for investment. In 2019, the value was less than 1, equal to 0.76, which indicates a negative value, but in 2020 the estimate is 1.49 and in 2021 2.11. The efficiency of the use of intellectual capital by the company increased from 9.42 in 2019 to 13.61 in 2021.

The obtained regression model is adequate, because the multiple correlation coefficient R for the constructed models is not less than 0.9 and all parameters of the models are significant according to Student's criterion.

Thus, the knowledge and abilities of employees of the researched enterprise (human capital) are embodied in organizational processes and relationships with partners (structural capital), which create the basis for sustainable and long-term relationships with clients (client capital). Cooperation with clients and partners helps to gain experience, develop knowledge and skills of employees, create databases, etc .. Thus, the company is a circular movement of parts of intellectual capital: from human to client and vice versa. However, in the process of interaction of the components of intellectual capital, you can get a positive effect that does not correspond to the efforts made.

The key to successful innovation is to increase intellectual capital, which will stimulate the development and implementation of innovations. The company's management links the growth of intellectual capital with the creation of a knowledge management system (CMS), which will mobilize the knowledge of staff, turning them into a competitive asset.

In general, the enterprise knowledge management system is in the early stages of formation. Knowledge is accumulated situationally, only when necessary, to solve specific production problems. The company uses only certain elements of the CMS (access to information resources of the Internet, training, corporate culture). Analysis of the structure of organizational knowledge of the company allowed us to conclude that the company allows employees to improve professional competencies, but this is not taken into account in the current system of personnel evaluation and is not encouraged by management financially. Training or mastering the necessary knowledge and skills is used by the company in three main cases. First, when the employee is accepted into the organization. Second, when an employee is appointed to a new position or when he is assigned a new job. Third, when the inspection (certification) finds that the employee does not have certain skills to perform their work effectively.

In order to improve the existing management system and calculate efficiency, it is necessary to analyze data on personnel costs and management. The company has a personnel department, which employs 2 people: HR-employee and personnel inspector. Table 7 shows the articles of enterprise costs for staff and their quantitative values for 2021.

Table 7.

Staff cost items

Cost items	Units of measurement	Sum
1	2	3
Wages, including social benefits	thousand UAH	31692.50
Premium	thousand UAH	2641,04
Search and selection costs	UAH	36421,00
Training and development costs	UAH	54324.00
Expenses for the purchase of educational and methodical literature	UAH	8033.00
HR department maintenance costs	thousand UAH	234.00
Total	thousand UAH	34432,318

Analysis of Table 7 allowed us to conclude that the cost of staff training is 0.2% of the salary fund. This figure averages 4-10% by industry, which indicates the need to increase training costs. In addition, an important component of increasing the

efficiency of intellectual capital management of the enterprise is the development of a system of incentives for employees to increase their competencies .

When building incentive systems, it is advisable to use the growth rate of staff competence, which most fully evaluates the performance of employees. The effectiveness of material incentive systems depends on a reasonable ratio of incentives and incentives. Mathematical incentive functions are used to establish this relationship. The use of these functions ensures the dependence of the size of premiums on incentive indicators.

In general, the mathematical function of encouragement is:

$$Y = f(x), \quad (2)$$

where Y is the amount of premiums;

X - indicator of incentives (level of staff competence);

f - form of relationship between the size of the award and the incentive rate.

The constructed scale of encouragement is presented in table 8.

Table 8.

Scale of encouragement of employees of the enterprise for the level of competence

Raising the level competence	The amount of bonuses as a percentage of salary	
	for reaching the bottom interval limits	for each percentage of excess of the lower interval limits) (□)
1	2	3
From 0 to 2.0	4.0	3.0
From 2.0 to 4.0	10.0	4.0
From 4.0 to 6.0	18.0	5.0
Over 6.0	28.0	5.5

The proposed system of incentives for employees to increase the efficiency of intellectual capital management will help increase the competitiveness of the enterprise as a whole.

When designing the overall design of the CMS, the selection or development of information and technological tools necessary for its effective operation is based on the analysis of the specifics of already accumulated knowledge and identification of the main problem areas that require special attention. So information and technological tools of SUZ of the enterprise are: data: metadata; directories, catalogs; databases, files,

WEB-pages; information: structure of archives; reports, methods, technologies; electronic documents, drawings; knowledge: ontology; rules of choice; knowledge base. The existing SUZ of the enterprise has the following features: modern information technologies are used: fixed assets, information bases; knowledge is aimed at obtaining and processing computing and software operational and strategic information for management decisions - decision support system; knowledge is used to improve non-production processes (business processes) of the organization - reengineering of business processes (organizational structure, administrative measures); considerable experience has been gained in the implementation of traditional R&D on a project basis. The process of management of intellectual capital of the enterprise consists of the following stages: implementation of the function of management of intellectual capital of the enterprise, the formation of management methods, the creation of mechanisms for the transformation of management methods in management decisions and ensuring managerial influence on the basis of intellectual capital management. To assess the knowledge management system of the enterprise, it is proposed to use the indicators presented in table 9. In the case when it is difficult to determine a comprehensive indicator of comparative economic efficiency, use an integrated parameter characterizing the dynamics of changes in efficiency for individual components. way:

$$K_e = \sum K_i \times a_i \quad (3),$$

where K_i is an indicator of the effectiveness of the i-th component of the knowledge management system;

a_i - rank factor, which characterizes the contribution of each component in the effectiveness of the knowledge management system as a whole is set by the expert method [285, p. 47];

$i = 1 \ldots 9$ - number of indicators.

The calculation of intellectual capital efficiency indicators are given in table 9.

Table 9.
Indicators and calculations for assessing the components of the enterprise knowledge management system

Component management knowledge	Object estimates	Indexes	Indicator efficiency components % (K and)	Coefficient rank (s)	Integral indicator efficiency, %
1	2	3	4	5	6
Personnel	Management staff	Growth productivity labor K 1	10	0.17	1.7
		Change in fluidity frames K 2	-26	0.08	-2.08
		Growth secondary salary K 3	22	0.07	1.54
Technologies	Information systems and technology	Reducing IT costs K 4	-8	0.05	-0.4
		Efficiency of investments in IT K 5	9.86	0.15	1,479 th most common
		Increasing the cost of IT per 1 employee K 6	30	0.15	4.5
Processes	IR	Increasing the number of patents registered IP rights K 7	14	0.07	0.98
		Increase in training costs per 1 employee K 8	65	0.06	3.9
		Reducing the cycle of development and implementation of innovative products K 9	12	0.2	2.4

The calculation of the integrated indicator of economic efficiency of intellectual capital of the enterprise for all components of knowledge management shows its increase by 14.02%, which is quite high. Thus, using an integrated indicator of

economic efficiency, we can compare and draw conclusions about the rationality of the introduction of knowledge management. In the analysis of each component of the knowledge management system with the help of the presented indicators it is possible to assess the effectiveness of the enterprise in the development of intellectual capital management. This will allow managers to receive operational information and make the necessary adjustments to the management process. Management of intellectual capital of the researched enterprise should be aimed at aligning the internal capabilities of its implementation and development to the external ones generated by the market. Relevant proposals are given in table 10.

Table 10.
Proposals for intellectual capital management

Ingredients	Decision
1	2
Management strategy knowledge	personalization strategy involves the dissemination of communication between staff members with implicit knowledge
Human resources	community of practitioners; specialists who have information about the knowledge and skills of each team member and can select the right people to perform the task; new ways of learning: webinars ; wider participation in scientific conferences and international exhibitions; introduction on a regular basis of the practice of group discussions ("brainstorming", innovative game); hackathons; reporting system on the readiness of the project stages report and presentation on the next completed project stage; open discussion of the gained experience, introduction of the principle of cascading training.
Communications	query response teams; removal of barriers to the exchange of knowledge and information, development horizontal connections between units; team building .
Corporate culture	cultural support; space - physical and virtual: libraries, living rooms; cultural support and programs for collective use; creation of corporate values: dedication; team work; responsibility; people - creating a team of highly qualified and interested employees; quality - the desire to achieve high quality always and in everything; honesty.
Information component	tools that facilitate the search for information, programs.

The PEC development strategy should include and identify key areas for segment development, the role of participants, and criteria for PEC effectiveness. The PEC strategy should be developed on the basis of the enterprise development strategy. To implement the strategy, all business processes implemented in the business segment should be updated and refined taking into account the requirements of the policy. An important element is the generation and use of the portal to provide a single information space for the professional activities of employees [286]. The process of formalizing a rational decision on intellectual capital management should consist of the following stages: the emergence of a situation that requires decision-making, collecting and processing information on developed methods of intellectual capital management, identifying and evaluating alternatives to the developed methods of intellectual capital management, preparation and optimization management decision made, making management decisions, implementing management decisions and evaluating its results. Proposals for the management of intellectual capital of the enterprise are presented in table 11.

The proposed and developed process of intellectual capital management for the researched enterprise is presented in table 11. Thus, in accordance with the management process, they were formalized into management decisions and provided managerial influence on the basis of leadership.

The problem of increasing the competence of personnel remains very important for the management of intellectual capital, as the efficiency of the enterprise and the degree of achievement of its goals depends on its solution. Knowledge, skills, work skills of staff are becoming an increasingly important strategic resource compared to financial and productive capital. In modern conditions of rapid professional aging Competences with the ability of the company to constantly increase the level of competence of its employees is one of the most important factors of success. According to economists, the knowledge of workers is morally obsolete for 10 years, and therefore every company must maintain compliance between the requirements of modern business and staff competence [287].

Table 11.

The process of intellectual capital management

Implementation of basic management functions			
Planning	Organizing	Motivation	Controlling
1	2	3	4
Formation of management methods			
Development plan intellectual activities enterprises; educational programms; technological documents implementation advanced technologies product repair.	Creation order PEC department enterprises; job descriptions and staff list employees in the intellectual activities.	Regulations on awarding employees employed in intellectual activities; plan to improve conditions work of employees employed in intellectual activities.	Report on the results development intellectual activities; magazines operational development control intellectual capital enterprises.
Formalization of management methods (mechanism of their transformation into management decisions)			
Approval general director enterprises: 1) Regulations on goals of formation and development of IR enterprises; 2) Promising development plan intellectual activities enterprises. Approval deputy Director of PEC training programs staff development.	Approval general director enterprises: 1) Order of create a group with formation and development of IR enterprises; 2) Officials instructions employees in the intellectual activities; 3) Staffing employees in the intellectual activities.	Approval general director enterprises: 1) Regulations on bonuses and material stimulation employees of the group formation and IC development; 2) Improvement plan working conditions employees employed in intellectual activities.	Approval general director enterprises: 1) Report on results development intellectual activities enterprises; 2) Magazines operational control formation and development of IR enterprises.
Implementation of management decisions			
Making changes to development plan intellectual activities enterprises; training programs staff development.	Making changes to creation order PEC department enterprises; job descriptions employees in the intellectual activities.	Making changes to provisions on awarding employees employed in intellectual activities; plan to improve conditions work of employees employed in intellectual activities.	Making changes to report on results development intellectual activities; magazines operational control formation and development of IR.
The influence of management on management decisions			
Receipt by subordinates of specific instructions, guidelines, work schedules, incentives and penalties for the development of their intellectual activity			

This will allow to constantly increase intellectual capital, respond faster and more efficiently to changes in the external environment, strengthen stability, representativeness and competitiveness in the market.

In order for the staff to acquire the necessary professional competencies , it is advisable for the company to apply new forms of training aimed at externalizing knowledge, and to control the results obtained on the basis of effective management. The meaning of assessing the effectiveness of training is that the information obtained was further analyzed and used in the preparation and conduct of similar training programs in the future. This practice allows you to constantly work on improving the effectiveness of training and get rid of such training programs and forms of training that have proven to be ineffective [288].

Three main reasons for the need to assess the effectiveness of training: to justify the new training system, showing what contribution it makes to achieving the goals and objectives of the enterprise; decide whether to continue or change the program of training and communication on projects; get information on how to improve the curriculum in the future [289].

To assess the effectiveness of the learning process, the following criteria can be identified: the reaction of participants in training programs; satisfaction of participants in training programs; assimilation of educational material; changes in behavior, the degree of use of acquired knowledge and skills in the process of work; working results; cost efficiency [290]. The new training programs for each department will be different and the training costs will be different.

Regarding the surveyed enterprise for 2021, according to its needs, it is proposed to allocate a training budget of 0.35 % of the salary fund, ie increase it by 0.18% compared to the previous year, but its cost will be lower compared to industry averages . A relatively small training budget will have a greater impact through the implementation of a strategy of personalization in knowledge management, and in particular, activities such as webinars ; scientific conferences; participation in international exhibitions, conferences; group discussions (brainstorming, business games); hackathons ; reporting system on the readiness of the stages of innovative projects - reports and

presentations on the next completed stage of the project; open discussion of the experience gained - cascading learning.

The effect of the introduction of additional proposals in the motivational package in the form of developing an individual career of the employee is difficult to determine, but the fact of the company's focus on professional growth of employees will be evaluated, which will increase its internal image.

The expected revenue from the sale of products after the implementation of the training program will increase by 20%. Consider how to improve the financial performance of the enterprise. The calculation based on the financial indicators of the previous year is presented in table. 12. The results show that after the implementation of the proposed measures and the expected effect in the form of increased revenue, the final financial result of the company will improve by 2.67%, and in value terms the expected increase in profit will be 10123.88 thousand UAH. Thus, we can conclude that the proposed measures are aimed at improving personnel policy by improving the management of intellectual capital and socio-economic condition of the enterprise as a whole.

Table 12.
Forecast financial performance indicators for 2021, taking into account implementation of measures of the personnel training program, thousand UAH

Indexes	2020	2021	Deviation	
			absolute value	relative value,%
1	2	3	4	5
Revenue from sales of goods and services	443592.0	532310.4	88718.4	20.00
The cost of production	84566.4	99064.2	14497.8	17.14
Income tax	22394.5	43324.62	20930.1	93.46
Net profit	379797.7	389921.6	10123.88	2.67

The results obtained in the scientific work together solve an important scientific and practical problem of deepening theoretical principles, improving methodological support and developing practical recommendations for ensuring the effectiveness of intellectual capital management in the enterprise. The result of the study were the following scientific and practical conclusions.

Analysis of the theoretical foundations of intellectual capital management has led to the conclusion that in the process of making strategic management decisions, analysis and forecast of changes in the value of intellectual capital of the enterprise.

It is necessary to create a sufficient information and analytical base to address practical issues of strategic development of the enterprise. Intensification of research in the direction of improving the management of intellectual capital is one of the key tasks, the solution of which is the basis of strategic enterprise management. In order to increase the efficiency of domestic enterprises, it is necessary to intensify the constant managerial influence based on an innovative model of intellectual capital use.

The implementation of the intellectual capital management process is proposed to be carried out in the following stages: implementation of intellectual capital management functions, formation and use of management methods, creation of mechanisms for transforming management methods into management decisions and ensuring managerial influence on intellectual capital management functions.

The intellectual capital of the leading machine-building enterprise of the Kharkiv region was assessed according to the Tobin coefficient and the VAIC method, which indicate the presence of the same growth trend for 2019-2021. In 2020, the investment attractiveness of the company was 1.49 and in 2021 2.11. According to the method of Ante Pulyk , the second is the coefficient of efficiency of intellectual capital, the value of which increased from 9.42 in 2019 to 13.61 in 2021, which confirms the efficiency of intellectual capital.

Based on EBIT values and the value of the enterprise by quarterly values during 2019 - 2021 in the Multiple module Regression using the application package Statistica 12.5 built a regression model that confirms the interdependence of these indicators, and checked its adequacy.

The system of encouragement of employees of the enterprise from growth of efficiency of use of intellectual capital is offered and proved. An indicator of the growth of the level of staff competence is used, which most fully evaluates the results of employees' work. The effectiveness of the system of material incentives depends on a reasonable ratio of the size of the incentive and the stimulated indicator. To establish

this relationship, we used the mathematical functions of incentives, which characterize the relationship between the size of bonuses and incentives that characterize the professional competencies for the use of intellectual capital.

To increase the efficiency of intellectual capital management of the enterprise is proposed the following measures: the use of modern forms and methods of staff training; intensification of measures for adaptation and motivation of staff. To acquire the necessary professional competencies by the staff, it is proposed to use the following methods of staff training: webinars ; scientific conferences; participation in international exhibitions, conferences; group discussions (brainstorming, business games); hackathons ; reporting system on the readiness of the stages of innovative projects - reports and presentations on the next completed stage of the project; open discussion of the experience gained - cascading learning.