

INTELLECTUAL CAPITAL AND KNOWLEDGE CYCLE

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ABSTRACT: Paper focuses on intellectual capital and strategic knowledge, essential elements of knowledge based organisation. Starts from knowledge revolution, indicating knowledge role - as raw material, production factor, product and capital - which transforms them in “the engine” of knowledge based economy. Major attention is given to presenting the main features of capital and intellectual property which contributes to perceiving their specificity and economic, social and ecologic performances that it generates. There are presented and analysed 15 features. Finally, we present strategic knowledge which takes a central position in intellectual capital, indicating their main aspects - unique or rare, pragmatic, generating added value, dynamic and based on intense learning processes.

KEYWORDS: knowledge revolution, knowledge, knowledge role, intellectual capital, strategic knowledge, knowledge based management.

1. INTRODUCTION

The wording “knowledge revolution” is new for many of our contemporaries. Some may consider that it even represents a simple replacement for information and/or IT revolution, a tautology. Even there is a close connection between information revolution, on which specialists refer to for more than three decades and knowledge revolution, the latter is sensibly different from the point of view of its scope, nature and finality.

Essentially by knowledge revolution we designate fundamental change from predominantly physical resources based economy to knowledge based economy (1). At the base of this revolution is the decisive role of knowledge in modern economy. In the last decades it was noted and taken into consideration the growth of economic importance of technologies, information, economic processes, human capital, organisation’s capabilities and competences-factors organically connected with knowledge. Each one of them, approached individually, reveals extremely valuable elements, with high pragmatic implications. Their common background is represented by knowledge, they constituting as a matter of fact,

individualization and operationalizational modalities of knowledge.

Since the early days, wealth and power were associated with possession of physical resources. Traditional production factors-land, equipment, buildings etc. - were of physical nature predominantly. That’s why the necessity to have vast and thorough knowledge was limited. Industrial revolution of past centuries was based predominantly on steam power, man’s physical strength and cash assets.

For the future a sensible different situation can be seen. **Wealth and power in the 21st century will result mainly from intangible intellectual resources, from knowledge capital (2).**

2. KNOWLEDGE ROLES

Knowledge revolution, which consists in this movement toward knowledge dominated economy, is a very far-reaching and profound process, generating essential changes in all economic activities components’, analogue as intensity with the ones produced by industrial revolution.

Knowledge in the new type of economy fulfils **four essential roles or functions** (see figure no. 1).

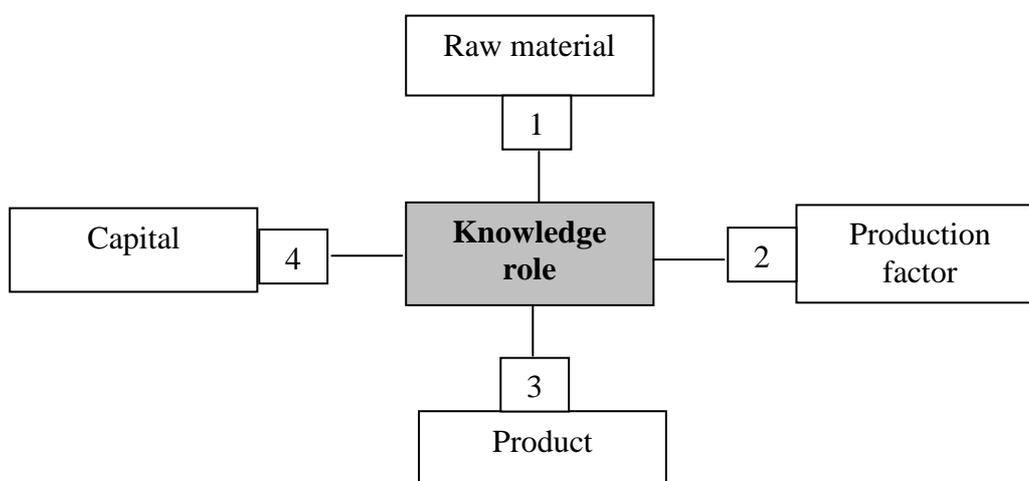


Figure 1. Knowledge role in economy

As raw material, knowledge takes part widely to obtaining modern products. It is obvious for anybody that production of a computer or of a TV set incorporates not only metal, plastic

and other materials but also others numerous knowledge. Even more, in the cost of a several thousand dollars computer the effective cost of incorporated metal and plastic and of energy

used to obtain them are of about scores of dollars, representing only a few percents of its total cost.

Knowledge represents also an essential production factor, for it participates, together with other classical production factors-labour power and means of production-to development of all production phases, starting with obtaining raw material, continuing with their processing and ending with selling the made product. Obviously, the more modern a company is, the more the impact and role of knowledge as a production factor is bigger.

Knowledge represents also a final product, by itself. The most known shape of it are software, technical projects, inventions, quality standards, management and marketing studies and analysis, data banks, business plans, feasibility studies etc. It must be noted that a diversification of the product range is taking place together with increasing weight in company's turnover and in national economies GDP.

In parallel, we mention also the fact that numerous physical products tend to incorporate knowledge at large. High-tech products-computers, cameras, satellites, TV sets, telephones, cars, etc.-are made up predominantly by knowledge, thus conferring practical usefulness and value to them.

For the whole value of modern companies the **knowledge capital**, for which is used frequently the name of intellectual capital, tends to hold a bigger and bigger weight. Even though intangible, personnel's knowledge inside the companies, technological, commercial, managerial, financial etc. know-how presents a value which with increased frequency is expressed in money. Stock market quotation of known IT or electronic equipment companies-Microsoft, Alcatel, Nokia-fully demonstrate it. Their stock market value is several times-for some more than ten times-higher than the value of buildings, equipment, land etc. these own. We can anticipate that in a not too far away future, for an appreciable proportion of the companies, including some of the classic ones, when evaluating their capital we will include also knowledge as a distinct component and often substantial. Besides, in business world such a tendency is obvious and strong. One of its expression is that entrepreneurs or investors often state that they want to buy "x business" and not plant or shop "x". It is obvious that they take into account aside from their tangible capital also intangible capital.

From what was presented above it results without any doubt the multiple and essential roles that knowledge have in contemporary economy which, practically, could not function and survive without it.

3. FEATURES OF CAPITAL AND INTELLECTUAL PROPERTY

As it is known by all who are interested in the field of economic sciences, the base of each type of economy-slavery, feudal, socialist (communist) or capitalist-was constituted by a new type of property characterized by content and relations between people, highly specific, referring to object of property and to conditions of their participation to economic activities and results (and not only that), essentially different from the previous type of economy. Always, nature of property determined specific configurations for the general economic system, ways and proportions sensibly different of peoples' participation to sharing the results of the economic activities, with multiple essential consequences in all fields of human activity: economic, social, politic, cultural, etc.

This is why it is essential to examine if knowledge revolution and its new functions determine changes in the nature of property and capital and if these represent radically different elements compared to the ones who define the nature of property of the actual economic system, of capitalist or post-industrial type.

Analyses conducted by us have led, essentially, to two major conclusions:

a) **Until the past decades knowledge did not constitute the object of property but only sporadically**. Only starting with the last two-three decades we note their proliferation and apparition of some new forms of property on knowledge, named intellectual property, with specific content and a substantial impact on economic activities.

b) **Intellectual property has a sensibly different content compared to classic property** on land, buildings, equipment, products etc. which determines other structures, mechanisms, utilisation, ownership, capitalization and appropriation of economic values.

The main specific aspects of intellectual property and capital are briefly presented in the following:

1. Property and intellectual capital, because it has knowledge as main content, is predominantly **dematerialized, and most often not tangible**. And so, practicing possession, decision, usage and usufruct rights-of the owners-change radically compared to the property over tangible material goods. Also, this type of property generates group and individual interests and motivations, sensibly different compared to previous periods, which will reflect directly in new laws and economic and social mechanisms, and indirectly also on the political, cultural, technological etc. elements.

2. Intellectual property presents a **high degree of personalization** because it incorporates not only explicit knowledge but also relevant implicit knowledge. Additionally, frequently, in certified and protected intellectual property it is impossible to integrate wholly knowledge generated by person or persons involved in the processes of creating respective property. This situation determines three main consequences: relativity of value and price on intellectual property respectively because the same new knowledge generated or owned and/or sold by highly competent and entrepreneurial persons generating a much higher market value compared to the same new knowledge generated, owned and/or sold by persons with inferior competence and entrepreneurial abilities; further owning of the competitive advantage by the specialists who generated the intellectual property which motivates the entrepreneurs and managers to involve them in future capitalization processes of the respective intellectual property; some relativity of the determination to the value of intellectual property, which is as high as its contents and implicit knowledge have a higher weight.

3. Intellectual property presents, often, **high fluidity and volatility**, because of the nature of incorporated knowledge and because of its appreciable dependency of their value and usefulness by contextual evolutions in the involved field, frequently very dynamic and new. And so, storing intellectual property is difficult and often risky because in short periods an appreciable market value of the respective property can be lost, wasting long and intense creative efforts.

4. The same intellectual capital **can be used simultaneously and independently inside two or more organisations**, generating added value simultaneously, which no element of

tangible property can realize. And so the owner of the respective intellectual property can sell it to many companies, naturally based on contracts which regulate in this way its sale. By simultaneously selling and using the same intellectual property to many clients it is possible that the commercial value, the capacity to produce profit of the involved knowledge will diminish at the level of one organisation or even on a larger scale. Intellectual property can double, triple etc. (multiply) from the point of view of its usage and capitalization in economical processes and this determines a substantial growth of work productivity and diminishes investments and unit price.

5. Intellectual property, in contrast with classical property, **does not outdate physically by using it inside economic processes**. On the contrary, because by using respective knowledge, it grows and amplifies through innovation, generating and integrating inside it new knowledge which increases its market value and usage value. This way the physical outdate pressure disappears, to which all material property and capital is exposed, predominant in the capitalist type economy.

6. Rapidity of innovation processes, of knowledge renewal reflected in their short life cycle and in its tendency to diminish, causes a **high moral outdate** of intellectual property. As a consequence, it is necessary to capitalize as fast as possible intellectual property in order to avoid its depreciation before achieving „de facto” the usufruct right of the owner. More than this, facing moral outdate of knowledge, which represents the contents of some intellectual property, induces a stimulating impact on further production and capitalization of new knowledge and/or of new intellectual property.

7. Intellectual property, used in business processes, can **generate both classic products and products knowledge**, whose value is represented almost totally only by incorporated knowledge and not by expenses of material production factors (tangible raw materials, means of production, etc.). Tendency is toward rapid amplification of generation by intellectual capital of products knowledge or of products which, even though they take a material shape, contain largely knowledge representing the main part of their value structure and price.

8. The specific of intellectual property makes it not rarely difficult to **separate legally, economically and operationally the right to possess of the owners, of decision, usage and usufruct rights**. Especially important is the relation between possession rights and, respectively, usage of knowledge which represents the contents of intellectual capital. Complicated situations arise, difficult to solve, because the owners right to possess that knowledge does not guarantee exercising de facto the other three rights including usage right. More than this, by using intellectual capital, frequently it is produced, because of innovation, by generating new knowledge, a growth of its performance and value.

9. Amplifying participative character of generating knowledge, especially in high level fields characterized by high complexity and dynamism, **generate major difficulties in establishing their paternity and on this grounds of de jure owners and in using and capitalizing respective knowledge inside the organisation where they were produced and outside them**. The solution used more and more frequently in this situation resides in patenting new technologies, products, software, etc. on the name of the whole group directly involved in producing them. In the same manner, amplifying the participative character of knowledge usage processes, which generation of new knowledge takes place and development of the existing

ones, makes it difficult to establish possession rights over them, and following as well decision, usage and usufruct rights.

10. Practice demonstrates that **there is the possibility to generate simultaneously identical knowledge by different persons or groups who work independently**, without collaborating or even without knowing that the others exist. In actual conditions, when an unprecedented intensification of innovative activity takes place and-in various areas of the world-specialists and groups of specialists handle the same problems and seek solutions to the same market demands for products and services, frequency of such cases multiplies with a growing tendency. In these circumstances, the difficult problem of establishing ownership rights on respective knowledge and over their capitalization arises.

11. Specificity of knowledge that forms the object of intellectual property **makes it extremely difficult to protect them**. A new type of theft appears, widely applied today, but almost inexistent in previous types of economies and that is **the theft of usage value of intellectual property**. In other words, even though the owner owns property over knowledge registered with competent authorities and does not alienate it, by information leaks or by “taking over” knowledge based on product analysis, other persons use these intellectual properties, without paying the price for them. It is well known the actual situation when China produces annually goods for tens of billions of dollars using the knowledge generated with much effort and expenses by their competitors from USA, EU or Japan, by copying respective products, without paying the royalties to respective owners, without buying licences, patents, etc. More than this, also the possibility to steal intellectual property appears without the owner knowing it and thus without any reaction from the owner because apparently, but also de facto, he is exercising his ownership rights without having as a subject the stolen knowledge from his intellectual property. These elements give to protecting intellectual property a major social and economical importance and contents, sensibly different from the ones of classical property protection.

12. **Value of new knowledge which forms the object of intellectual property is rising by informing the market and potential clients on its existence and utility**, motivating efforts and costs for their spreading. In the same time also the difficulty to protect them amplifies, the risk of “theft” by other persons or organisations and of their capitalization, showing no respect for possession, decision, usage, usufruct rights of the legitimate owner on respective knowledge.

13. **Coexistence and co-operation between owners of intellectual properties and owners of classic properties, with tangible content, when they are different, raises new problems, totally different from previous practices** and which impose radical change of legislation concerning property and economic activities and implicitly of business organisations and institutions with economic attributions. It will be necessary to project legislation for regulating protection and usage of intellectual property, much more comprehensive and operational than laws concerning intellectual property protection adopted in most of world states in the last decades. In the same time, there will have to be designed new specific institutions which cannot summarize only to an Office for Inventions and Trademarks in each country, that shall ensure correct and operational application of legislation on intellectual property, in the same time with stimulating generation and efficient usage of knowledge. Simultaneously, it will be necessary to modify the whole functional mechanism of

national and world level in order to create the framework and favourable structures for production and performant management of property and intellectual property, in all areas and types of organisations.

14. Development and preponderance of intellectual property at macro-economic level will **reflect also in changes in sources of development and in economic structure of every country and of every international economic area**. Economic and social phenomena like Microsoft or Nokia will be much more frequent, of course, especially in national and international economic environments favourable to producing, using, selling, storing, protecting and capitalizing knowledge. In the same time, inside more and more classic companies, knowledge will play an essential role. In these circumstances the economical structures will acquire new configurations, more surprising than the ones who appeared recently in the most developed countries of the world, national and international economic performances being obtained by using less and less tangible material resources but with predominant consumption of knowledge and focus on products knowledge. Dynamicity and fluidity of business activities and structures will amplify step by step, their development being based on new laws and mechanisms.

15. Concomitantly the **social structure of the population will modify itself**. Social categories of whose activity has a predominant intellectual content will make up for the majority in numbers and quality inside the society. Managers, specialists, consultants, trainers, regardless of profession and jobs, focused on generating, using and capitalizing knowledge will be more and more numerous and will exert a determinant influence in economic and society management. Degree of economic and social homogeneity of the population will amplify, given the circumstances that the elite will have their capacity recognized and their manifestation in the interest of economic and social development will be facilitated. Elites of professionals, focused on knowledge, will take the lead step by step in all fields and industries. The main motivations for their

efforts and performances are related in the first place with the nature of the exercised work processes, by the satisfaction of obtaining successes, by manifestation inside a stimulating environment for producing and efficient usage of knowledge. Financial-material motivations, absolutely necessary of course, will not be the most important.

All these changes will require a few decades, but the rate their development will be very quick, surprising many persons and political power, economic or social centres. Like all essentially new processes, their implementation will take place with tensions, tripping, even resistance, more often in those areas of the world where political and economical elites do not understand the sense of these objective evolutions and do not strive for the wise way of integrating actions in changes that come with constructing knowledge based economy and society.

Determinant factor for imposing new economy based on knowledge will be represented by-as always during human kind development when the economy changed to a new type - increased productivity and business performances determined by intellectual property.

4. FOCUSING ON STRATEGIC KNOWLEDGE

Within intellectual capital, not all knowledge has the same role and impact. Analysis of most evaluated and performant knowledge based companies shows **shaping up of a new type of knowledge-strategic knowledge**. This is essential for sustainable development of the company and consists of-as specialist A. Grunwald (8) shows-combinations of orientation knowledge, explicit knowledge and action guiding knowledge. Generating this new type of knowledge represents a new type of challenge for managerial theory and practice for businessmen.

According to our analyses, strategic knowledge present a set of specific aspects (9), displayed in Figure no. 3, on which we consider necessary to underline the following:

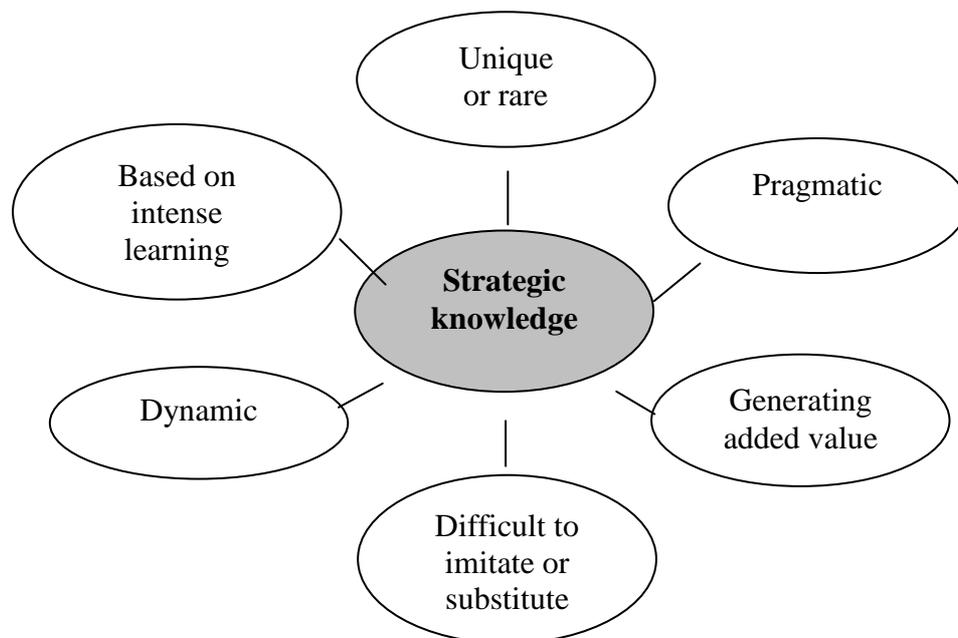


Figure 2. Main aspects of strategic knowledge

- **Unique or rare**, signifying either they are not to be found in other companies, either they are possessed in a similar shape but in a limited number of other organisations. The more rare

strategic knowledge is the more they have a wider strategic advantage for the organisation

- **pragmatic or exploitable**, signifying that they can generate new products or services inside the company or they

can improve the existing ones by innovating them. This aspect reaches climax when knowledge itself becomes product, being sold on the market as such

- **generating added value**, meaning that by using them added value for the company is created, value which is recognized on the market. Strategic knowledge are always a part of company's value vector
- **difficult to imitate and/or substitute with other knowledge**, aspect which insures company's sustainability and profitability on medium and long term. The more the tacit and innovative knowledge has more weight inside the company, the more intense this characteristic of knowledge is.
- **dynamic**, signifying that knowledge can be updated and modified according to changes in company's endogenous and exogenous environment, especially to market demand. Dynamicity refers both to knowledge contents and to their shape and ways of manifestation
- **based on intense learning processes**, whose continuous operationalization is decisively for maintaining the other aspects of strategic knowledge. Intense learning processes, even though difficult and resource consuming, constitute the best protection for maintaining and amplifying strategic knowledge character.

Knowing and taking into account these elements confer to knowledge cycle more functionality and efficacy, offering supplementary elements to company managers in order to increase company sustainability.

5. CONCLUSIONS

The elements incorporated in this study allow us to formulate the following conclusions:

- the knowledge, in the modern approach is essential for the functioning and performance of the top companies and the most developed economies
- the knowledge achieves a set of key roles – raw material, production factory, resource, capital and competitive advantage – with effects never realized in the mankind modern history
- the intellectual property and capital represents the main economic elements of the “modern knowledge”
- the 15 features which characterised intellectual capital and property should be know and taken into consideration in order to understand the new type of economy – knowledge based economy
- the 15 features which characterised intellectual capital and property should be know and taken into consideration and to masively used in order to practice a management able to generate high functionality and performance, never meet in the mankind history
- the strategic knowledge has the decisive role within intellectual capital, generating propagate multiplying effects and competitive advantage for the company and national economy
- the essential features of strategic knowledge are: unique or rare, pragmatic, generating value added, dynamic and based on intense learning process

- the strategic knowledge generation, buying, use, protection, valorisation a.s.a. is primordial for the intellectual capital and property development and, implicitly, for the economic performance and sustainability

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