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INTELLECTUAL CAPITAL IN THE KNOWLEDGE-BASED ECONOMY

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1. Introduction

In the era of the knowledge-based economy created by the private and public sectors, in which a fundamental basis for economic development is the production, distribution and implementation of information [1, p.82], knowledge has a pivotal role to play. It is regarded as a key endogenous factor that shapes the production structure and social and economic progress. The ability to create knowledge, and in particular, its transformation into new products, services and technologies, contributes to the market success of an organisation and to the functioning of the whole economy. Knowledge, therefore, becomes a key determinant of the pace and level of economic growth [2, p.16]. The development of the knowledge-based economy manifests itself, in particular, in the creation and dynamic development of intellectual capital. This is triggered by an ever growing interest on the part of both theorists and practitioners of the management of intangible assets in the potential use of intellectual capital as a new tool for creating value and competitive advantage in business, and also in an improved functioning of public administration. There can be no doubt that intellectual capital is the wealth and source of development of an organisation and the engine for the economy of the future [3, p.319]. Therefore, such capital is unquestionably linked to the prosperity of nations, whose generation and growth in the knowledge-based economy cannot come from entities that do not possess adequate intellectual capital [4, pp.14–15]. For this reason, the objective of the considerations provided herein may be expressed as follows: *What are the areas, in which differences emerge, in relation to intellectual capital, between business and public entities?*

2. Intellectual capital in the private sector

A concept of intellectual capital was initially defined in the context of the private sector. In terms of management, it is associated with a strategy, assuming that the activities carried out by a business entity should be orientated towards the creation of value leading to the competitive advantage. In this context, it emerges that these are precisely the intangible resources that play a more significant role in the development of a company than its tangible assets, as they are a key source of competitive advantage and the investment in intellectual capital is long-term and also the derivation of value from intellectual capital is more complex and risky than from physical capital [5, p.106]. The literature on this subject abounds in variety of definitions of intellectual capital, which demonstrates that there is no consensus as to the unambiguous meaning of this term and, therefore, as to the determination of its components. Intellectual capital is understood as:

- the economic value of intangible resources of a company [6, p.158];
- the broader knowledge, information, intellectual properties and experience that may be applied when creating value of a business company [7, p.xi];
- the difference between intangible values and intangible liabilities of a company [8];
- the intellectual matter used for creating valuable assets [9, p.65];
- the knowledge, practical experience, technologies, good relationships with clients and any other skills allowing a company to achieve the competitive advantage [10, p.91];

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- the total of islands of knowledge that function in an organisation and its relationship-based environment [11, p.148];
- the difference between the market value and the book value of a company [12, p.4];
- the total of all intangible and knowledge-based resources that an organisation can use in its production processes, attempting to create value [13, p.364];
- the total of hidden assets of a business entity, which are not recognised in its balance sheet, including both what is in the employees' heads and what is left after they are gone [14, p.13].

When analysing the aforementioned definitions of intellectual capital, one may conclude that the basis for creating and developing intellectual capital is not only knowledge but also any intangible resource that may contribute to the achievement of the competitive advantage for a business entity and to the creation of value for its stakeholders. This is why when searching for the answer to the question of what intellectual capital is, it is reasonable to determine its subcategories. In view of the numerous and ambiguous definitions of intellectual capital, it is generally accepted that it consists of human capital, structural capital and relationship-based capital [15, p.73]. The subcategories of intellectual capital are the combination of various intangible assets. It should be emphasised that neither theorists nor practitioners addressing the issues related to intellectual capital can reply unanimously to the question: *What does intellectual capital related to the employees of a business entity, its internal structure and external environment, consist of?* The two approaches described in Table 1 below demonstrate that the absence of an unambiguous answer to the aforementioned question makes the understanding of a nature of intellectual capital even more difficult.

Tab. 1. Components of Intellectual Capital

Subcategories of intellectual capital	Author (year)	
	Baum (2000)	Vuolle, Lönnqvist, Meer (2009)
Human capital	– relationships with employees	– differentiation of skills – experience and education – creativity and innovative behaviour
Structural capital	– innovations – quality – technology	– ideas, systems and tools supporting R&D – managerial support, engagement and practices – culture and organisational structure – personal relationships, functional correlation of teams, internal cooperation and projects
Relationship-based capital	– alliances – relationships with clients – brand value – environment and society	– engagement of clients – relationships of clients – direct relationships – R&D cooperation – projects with companies and institutions

Source: Own study on the basis of [16, p.69]

Given the role of intellectual capital in the knowledge-based economy, its valuation becomes increasingly important. However, the valuation of intellectual capital poses a number of methodological difficulties, making the measurement and evaluation of intangible resources a still imperfect process. In the face of many potential indicators of intellectual capital valuation, which relate to the business sector, their classification proposed by K. E. Sveiby becomes handy [17, pp.2–3]. Assuming the criterion of the level of analysis and the intellectual capital valuation method, he recognised 4 method groups, namely the market capitalisation method, asset return method, capital direct valuation method and scoring card method. The first three methods allow for the value of intellectual capital to be expressed in monetary units and the last method provides a qualitative account thereof. Intellectual capital can be measured and evaluated using, in particular, the following indicators [9, p.65; 18, p.49; 19, p.35; 20, p.55]:

- MV/BV (*Market-to-Book Value*) – the ratio of the market value to the book value of a business entity;
- TQ (q-Tobin Index) – the ratio estimated on the basis of analysis of the market value of a business entity and the replacement costs of tangible assets;
- CIV (*Calculated Intangible Value*) – the method based on a seven-stage procedure, whose result reflects the intellectual "bonus";
- KCE (*Knowledge Capital Earnings*) – the method based on economic variables that include tangible and financial assets, including the coefficient of intangible assets;
- VAIC (*Value Added Intellectual Coefficient*) – the value added intellectual coefficient allowing for the effectiveness of creating the added value from tangible and intangible assets to be estimated;
- EVA (*Economic Value Added*) – the economic added value that is the difference between the operating profit after tax and the cost of capital (both equity and debt);
- TB (*Technology Broker*) – the three-stage measurement method that includes the diagnosis and quality audit related to intellectual capital and the estimation of its monetary value;
- SICN (*Scandia Intellectual Capita Navigator*) – the Skandia Navigator is an enterprise value-based model that consists of the book value of financial capital and the value of intellectual capital, and is based on the appropriate ratios applicable to both measurable and non-measurable elements of intellectual capital;
- BC (*Balance Scorecard*) – the balance scorecard is a system of interrelated ratios, which in relation to intellectual capital measures the ability of human, information and organisational capital to generate goodwill.

3. Intellectual capital in the public sector

There can be no doubt that nowadays intellectual capital becomes increasingly significant in the public sector satisfying social needs through the creation of common good. This stems firstly from the new way, in which public administration functions, which is based on the process management, in which knowledge of the essence and stages of the implemented processes along with the existing limitations in resources (human, asset and financial resources) conditions the effective and efficient management of such resources, and secondly from the principles of new management philosophy, namely the New Public Management. This is associated with the phenomenon of marketization understood as the transfer and development of the following market solutions in the public sector: [21, p.296]

- the implementation of managerial management in public entities,
- the focus on the measurement of performance, which requires that the objectives of public entities and the scores and criteria for their achievement be defined,
- the implementation of competitive mechanisms to the functioning of public sector entities, both in the area of procurement and service creation.

The transposition of the intellectual capital concept from the business sector manifests itself, in particular, in the observed evolution of the public sector oriented towards converting the bureaucratic public administration officer to a pro-consumer one and the bureaucratic public administration authority to an intelligent one. The first case concerns the attempt to create an ideal public administration officer. Regarding civil servants, they should be professional, apolitical, reliable, honest and impartial, as well as disinterested (not corrupted), friendly and helpful to citizens and also open and fair [22]. The second form of evolution refers to a modern administration authority, i.e. to an administration authority operating in accordance with the uniform and coherent procedures, making sure that the regulations are interpreted in the same way by all of its entities and employing public administration officers that comply with the mission of civil service [23, p. 14]. This will be possible, if a public administration authority is managed in keeping with the *New Public Management,* taking full advantage of the potential of intellectual capital, and if it comes up to the digital revolution and becomes an intelligent and digital public administration authority.

The differences existing between the private and public sectors, in the area of the objectives of their operations, offered goods, intensity of using resources, innovative level of implemented solutions, freedom of making decisions and social and environmental responsibility, will diversify, up to a significant degree, the approach to the interpretation and use of intellectual capital in the public sector [24, pp.4–7]. Without going into details, it should be emphasised that the functioning of the private sector is often different from that of the public sector, which stems from the different goals of entities that operate in a given sector. The activities of business entities on the openly competitive market are oriented, in particular, towards maximising economic effects (profit, market share, sales or value for shareholders). This is similar to the adoption of a productive performance approach in business activities oriented towards selling tangible products. On the other hand, public sector entities are oriented towards minimising the expenditure incurred, by way of providing public services (goods), as a rule in an intangible form, based on the economical approach. The differences in the goals and offered goods make it, therefore, impossible for intellectual capital to be considered in the public sector in relation with such concepts as profit, value for stakeholders or competitive advantage, as it should be considered in association with the type and quality of services provided to citizens.

In the public sector, the concept of intellectual capital is not so well structured or identified as in the private sector, in relation to which the scientific contribution regarding the measurement of intangible assets and the management of and reporting on intellectual capital is already significant. Due to the critical role of human resources in creating the public good, the definitions of intellectual capital that are certainly of value are those that highlight the importance of knowledge. This is how intellectual capital is perceived, for example, by G. Urbanek [25, p.38], according to whom "… this is both the knowledge itself and the effect of its transposition to intangible assets". In addition, the categories of intellectual capital components provided in Fig. 1 demonstrate that the approach to this concept in the public sector is different and emphasise that the operations in this sector are transparent and characterised by social and environment responsibility towards citizens. These factors are paid no attention to in the intellectual capital models addressed to business entities.

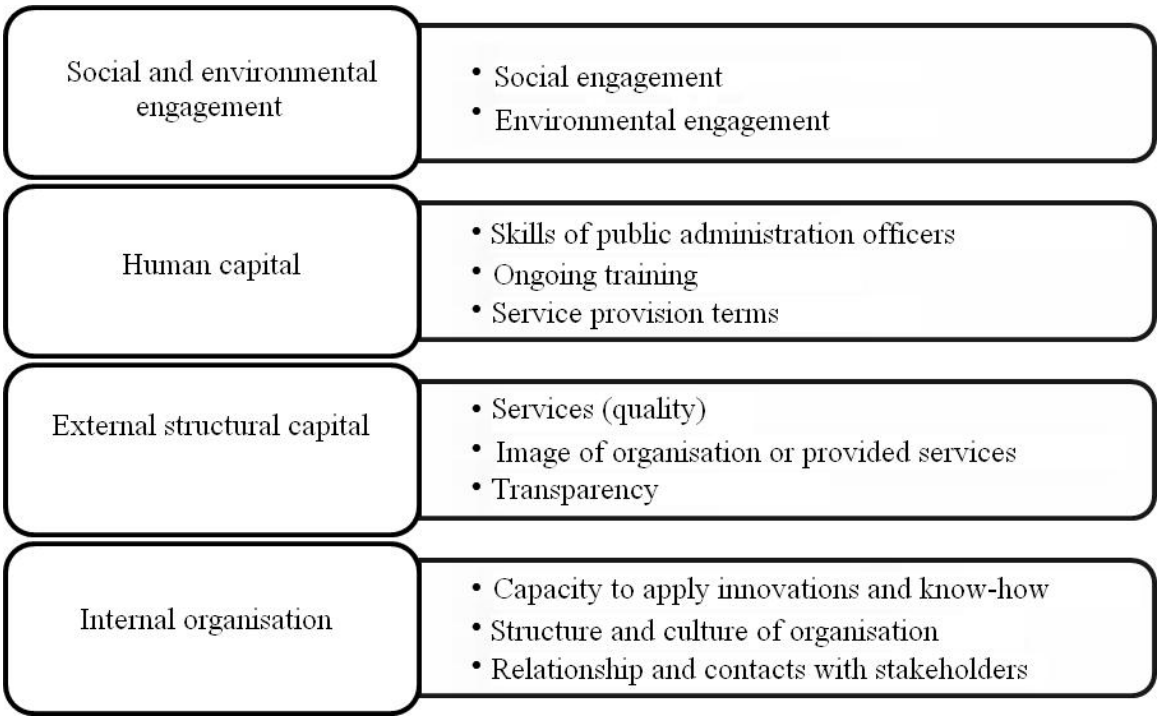

Fig. 1. Components and elements of intellectual capital in the public sector

Source: Own study on the basis of [24, p.9]

The fact that the sectors differ is also demonstrated by the application of an appropriate method for measuring intellectual capital, adapted to the philosophy and specific nature of public entities. The uncritical transposition of commercial solutions applied in the private sector to the public sector becomes therefore pointless or even counterproductive. Therefore, the public sector uses the intellectual capital valuation methods based on scorecards, and in particular the Intangible Assets Monitoring (IAM), Skandia Navigator (SICN) and the Balance Scorecard (BC) models, as well as any completely new models that take account of a specific nature of public administration [26, pp.253–260]. Attention should be paid to three models. The first one is the Intellectual Capital Disclosure Index. It reflects the scope and quality of the reporting on intellectual capital, by a reference to nearly 30 elements of intellectual capital that comprise human capital, external capital and internal capital [27, pp.245–486].

The next model was developed by A. Bossi Queiroz, Y. Fuertes Callén and C. Serrano Cinca [24, p.9]. In keeping with this model, intellectual capital is evaluated in four areas provided in the aforementioned figure. For example, in the area of internal organisation, it may be the percentage of people who prefer teamwork or the number of projects, in which a given public administration entity takes part, and in the area of human capital, it is the percentage of people with tertiary education or the training satisfaction index [28, p.13, p.15]. The last model for measuring intellectual capital in the public sector is the ICGM (Intellectual Capital General Model) developed by E. Bueno, C. Morino and M. P. Salmador. It is highly valued, because it allows for such intangible resources to be measured as affect the created value and the effectiveness and efficiency of the provision of public services. The model consists of 3 components (public human capital, public relationship-based capital and public structural capital), a dozen or so of elements (for example, culture, foundations and values or intellectual property rights) and a several dozen of variables (for example, cultural homogeneity, creativity, patents), which are subject to the measurement with the use of appropriate indicators [26, p.253].

4. Conclusions

Taking into account the fact that interest in implementing commercial solutions, which are transferred from the activities of private business entities to the functioning of the public sector, has been growing in recent years, special consideration should be given to the usefulness of the concept of intellectual capital in the area of public administration, and more widely, of the public sector. The differences in the functioning of the two sectors, reflected in their goals, make it, however, impossible to uncritically transfer the solutions regarding intellectual capital and, therefore, to simply impose such modifications to its meaning and also adjustments to the methods and techniques of its measurement as would be adequate to the specific nature of the public sector, which is reflected in the attempts made to develop the new valuation approaches and models.

Ongoing changes in social and economic reality have also contributed to a change in the philosophy of providing services to citizens, who have ceased to be petitioners and are promoted to the rank of clients. In the face of such challenges and trends, the system of public administration should be efficient, effective and inexpensive, applying information and communication technologies and guaranteeing full access to information to citizens. The changes have also influenced modifications in the existing public administration officer model, which in the light of a new image of authorities seen through the prism of an intelligent organisation that meets the expectations of both individual and institutional clients should depart from a pejoratively understood bureaucracy in the direction of a genuine civil service provided for the common good and interest. In the context of the considerations provided herein, one may conclude that intellectual capital and the potential related thereto may contribute, through adequate management, to improvements in the quality and increases in the effectiveness of the functioning not only of private sector entities but also those in the public sector, and in particular, of public administration authorities. The monitoring, measurement and stimulation of intellectual capital growth in the knowledge-based economy may therefore contribute to an improvement in the quality of the services provided both to citizens and

business entities, which in a wider perspective will help to bring about an increase in social well-being and the competitiveness of the whole economy.

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Summary

The considerations provided herein focus on intellectual capital as a concept that is gaining increasing significance in the functioning of business and public entities in the era of the knowledge-based economy. This paper aims to identify differences in the meaning and measurement of intellectual capital in the private and public sectors. In the light of the growing interest, triggered by marketisation, in the implementation of business solutions in the public sector, this paper provides the characteristics and comparative analysis, including differences in the use, of intellectual capital in both sectors. Regarding the public sector, the paper also points out potential advantages that reveal themselves, in particular, in relation to a change in the existing public administration officer and authority models that is based on the practice of business orientation towards the needs of a client in the process of providing public services.

Keywords: intellectual capital; private sector; public sector.

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