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Global business networks

Concept – structure – competitiveness

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Contents

List of abbreviations **7**
Introduction **9**

Chapter I
Concept of a global business network in light of economic theory **15**
1.1. Network approach – the genesis and evolution of network thinking 15
1.2. Business networks as a type of regulation model 19
1.3. Attributes of a global business network – a comparison with other network models 27

Chapter II
The structure of a global business network **35**
2.1. Transnational corporations – the evolution of the business model 35
2.2. The role of globalisation in shaping global business networks 42
2.3. A business integration model – the target structure of a global business network 47
2.4. Attributes of the orchestrators of global business networks 53

Chapter III
Stratification of the capital of network organisations **59**
3.1. The systemic nature of an organisation's layers of capital 59
3.2. An organisation's knowledge capital – intellectual capital vs human capital 64
3.3. The importance of an "organisation's knowledge capital" in its corporate strategies – based on research for industry sector leaders 72
3.4. Capital of the orchestrators of global business networks 85

Chapter IV
The competitiveness of network enterprises **95**
4.1. The competitiveness of enterprises in light of the modern enterprise theory 95
4.2. The system of international competitiveness 103
4.3. The concept of the international competitiveness of enterprises 111

Chapter V
Assessing the competitiveness of global business networks **121**
5.1. Selected methods of a multi-dimensional assessment of complex structures 122
5.2. A measure of the ability to create value-added – an aggregated assessment of GBN efficiency from the point of view of an orchestrator 132

Conclusions **143**
References **153**
List of tables and diagrams **167**

List of abbreviations

A	– asset value (A), total assets (A)
AEC	– accumulated economic capital (AEC)
AM	– the American model (AM)
Am	– amortisation (Am)
AVA	– assets value abroad (AVA)
CE	– capital employed (CE)
CEE	– capital employed efficiency (CEE)
CR	– cooperative relations (CR)
CSV	– Creating Shared Value (CSV)
E	– employment (E)
EA	– employment abroad (EA)
ENE	– enterprise's normalised earnings (ENE)
EVA	– Economic Value-added (EVA)
FDI	– foreign direct investment (FDI)
FINC	– financial capital (FINC)
FL	– financial leverage (FL)
GBN	– global business network (GBN)
GTM	– Grounded Theory Methodology (GTM)
HC	– human capital (HC)
HCE	– human capital efficiency (HCE)
HVA	– Holistic Value Approach (HVA)
IE	– income of an enterprise (IE)
IAM	– Intangible Assets Monitor (IAM)
IC	– intellectual capital (IC)
ICBC	– Intellectual Capital Benchmarking System (ICBS)
ICE	– intellectual capital efficiency (ICE)
ICdVAL	– Intellectual Capital Dynamic Value (ICdVAL)
ICEC	– international competitiveness of economies (ICEC)
ICEN	– international competitiveness of enterprises (ICEN)
IMD	– the International Institute for Management Development (IMD)
INNC	– innovation capital (INNC)
INNS	– institutional capital (INSC)

KCE – Knowledge Capital Earnings (KCE)
MAC – the World's Most Admired Companies (MAC)
MARC – market capital (MARC)
M&As – mergers and acquisitions (M&As)
MDA – Multidimensional Statistical Analysis (MDA)
MV – market value (MV)
MVA – market value-added (MVA)
NIE – new institutional economics (NIE)
NIS – strategy of network internationalisation (NIS)
OP – operating profit (OP)
ORGC – organisational capital (ORGC)
OKC – organisation's knowledge capital (OKC)
OL – ownership links (OL)
OLI – the ownership-location-internalisation paradigm (OLI)
P – profit (P)
PE – personnel expenses (PE)
R&D – research and development (R&D)
ROA – return on assets (ROA)
ROE – return on equity (ROE)
ROS – return on sales (ROS)
S – sales (S), total income from sales (S)
SC – strategic connections (SC)
SCE – structural capital efficiency (SCE)
SE – stockholder's equity (SE)
SICAV – Synthetic Indicator of Creation of Added Value (SICAV)
SM – the system model (SM)
SNA – Social Network Analysis (SNA)
SVA – sales value abroad (SVA)
TA – tangible assets (TA)
TAT – total assets turnover (TAT)
TNC – transnational corporation (TNC)
TNI – transnationality index (TNI)
TOE – total operating expense (TOE)
TOI – total operating income (TOI)
Top-TNCs – the most powerful transnational corporations (Top-TNCs)
WBG – the World Bank Group (WBG)
WEF – the World Economic Forum (WEF)
WIR – the World Investment Report (WIR)
VA – value-added (VA)
VAIC – Value Added Intellectual Coefficient (VAIC)

Introduction

The evolving global economy is the key determinant of changes to the business strategies of all categories of agents that operate in business, including transnational corporations (TNCs). By pursuing a strategy of network internationalisation (NIS),[1] corporations broaden the scope of business integration.[2] As a result, global business network (GBN) structures develop around the most powerful transnational corporations (Top-TNCs). Due to their ability to combine competition and cooperation (coopetition[3]) and utilise a networking approach (networking in chains during the creation of value-added[4]) and the concept of orchestration (based on regulation theory[5]), they are able to create value-added, which is their key task.

This work is based on a theory that in the global economy of the 21st century, there is an ongoing transformation of classic transnational corporations. It is based on the division of functions and hierarchical structures into network organisations

1 D. Blankenburg, *A Network Approach to Foreign Market Entry*, [in:] *Business Marketing: An Interaction and Network Perspective*, K. Moller, D. Wilson (eds), Kluwer Academic Publisher, Norwell 1995.

2 M. Rosińska-Bukowska, *The Most Powerful Corporations of the Modern World. Case Studies*, Publisher of the Academy of International Studies Lodz, Lodz 2011, pp. 237–242.

3 P. Ritala, *Coopetition Strategy – When is it Successful? Empirical Evidence on Innovation and Market Performance*, "British Journal of Management" 2012, vol. 23 (3), pp. 307–324, http://onlinelibrary.wiley.com/doi/10.1111/j.1467-8551.2011.00741.x/epdf [accessed: 04.07.2016].

4 G. Gereffi, J. Humphrey, T. Sturgeon, *The Governance of Global Value Chains*, "Review of International Political Economy" 2005, vol. 12 (1).

5 T. Pedersen, M. Venzin, T.M. Devinney, L. Tihanyi, *Introduction to Part II: Orchestration of the Global Network Organisation*, [in:] *Orchestration of the Global Network Organisation*, T. Pedersen, M. Venzin, T.M. Devinney, L. Tihanyi (eds), "Advances in International Management" 2014, vol. 27, pp. 37–41; G. Thompson, J. Frances, R. Levacic, J. Mitchell, *Markets, Hierarchies and Networks: The Co-ordination of Social Life*, Sage Publications, London 1991, pp. 265–276.

with hybrid, globally-dispersed structures, wherein the Top-TNCs perform the functions of orchestrators of GBNs.[6]

As a consequence of changes to the global economy, the Top-TNCs have evolved, thus changing their positions in the global business system. This observation constitutes the foundation for the reflections in this book. The unique role of GBN orchestrators needs highlighting; their task is to maximise the synergy effect by implementing the idea of coopetition and orchestration in a multi-focal, web-like network that consists of members positioned at several levels and pursuing their own business models. An orchestrator is responsible for a GBN's continuous ability to create value-added to the evolving standards. It is achieved by fostering the "organisation's knowledge capital" (OKC) and implementing NIS based on regulation theory, enabling various types of structural integration (the stratification of network capital) and the standardisation (coordinating, unifying, replicating, diversifying) of business processes and market segmentation or the transfer of network knowledge.[7]

GBN competitiveness is systemic and is based on multiplying the accumulated economic capital (AEC) thanks to the development of intellectual capital (IC) while taking into account the equal involvement of three subsystems of IC: innovation, organisation and relations with the environment. The explanation of the essence of GBNs requires an interdisciplinary approach, referring to notions such as the theory of competitiveness, the strategy of internationalisation, the concept of knowledge management, the network approach, intellectual capital, and regulation theory.

In conclusion, the evolution of the Top-TNCs resulted in the formation of GBNs – the model of entangled organisations, whose task is to incorporate the priorities of their members' individual developmental paths into a common system of values.[8] It means developing subsequent layers of the coherence system caused by GBN members accepting the idea of voluntarily restricting their sovereignty to improve performance (the regulation model). The development of GBNs is a response to

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6 J. Hagel, J.S. Brown, *The Only Sustainable Edge: Why Business Strategy Depends on Productive Friction and Dynamic Specialisation*, Harvard Business School Press, Boston 2005, p. 2.

7 J. Ross, P. Weill, D. Robertson, *Architektura korporacyjna jako strategia*, Harvard Business School Press, Studio EMKA, Warszawa 2010; G. Johnson, K. Scholes, R. Whittington, *Podstawy strategii*, Polskie Wydawnictwo Ekonomiczne, Warszawa 2010.

8 M. Szymura-Tyc, *Internacjonalizacja, innowacyjność i usieciowienie przedsiębiorstw. Podejście holistyczne*, Difin, Warszawa 2015; T. Pakulska, M. Poniatowska-Jach, *Non-Equity Modes as International Business Strategy. From Ownership to Control*, Lambert Academic Publishing, Saarbrücken 2015; M. Rosińska-Bukowska, *Rozwój globalnych sieci biznesowych jako strategia konkurencyjna korporacji transnarodowych*, Wydawnictwo Uniwersytetu Łódzkiego, Łódź 2012; V.K. Fung, W.K. Fung, Y. Wind Jr., *Konkurowanie w płaskim świecie*, Wydawnictwa Akademickie i Profesjonalne, Warszawa 2008, pp. 40–42; B. De Wit, R. Meyer, *Synteza strategii*, Polskie Wydawnictwo Ekonomiczne, Warszawa 2007, pp. 242–244.

the new model of the inclusive economy,[9] achieved by replacing exploitation with exploration and taking into account all types of stakeholders in the long-term building of competitiveness.

This business model does not fit the traditional description of a corporation. Literature studies have shown that there are several publications on the role of TNCs in globalisation processes, in changes to expansion strategies, in methods of influencing host and home countries, in relations with co-operators, employees, etc. However, there is no comprehensive work that has analysed the shift in the role of the Top-TNCs in the global economy. This book intends to fill that gap by elaborating on the specificity of GBNs. The monograph contains a description of GBNs, including the reasons for their growing role in the global economy and the unique position of the Top-TNCs as orchestrators. The concept of a GBN is discussed against the background of current theoretical works. The stratification of its structure, the systemic nature of competitiveness, and the requirements of the rules of its assessment are all examined.

The work incorporates the global economy as a scientific subdiscipline to be placed in the social sciences and the economic sciences. It contains reflections on the creation of a new business model – GBNs, which are the effect of the Top-TNCs fulfilling a competitive strategy. They also take into account the requirements of sustainable development and show an appreciation of the growing role of OKC. The study encompasses the global economy, which although under the constant pressure of change (globalisation and liberalisation), continues to create new determinants for the functioning of the participating agents. The approach presented is interdisciplinary, holistic and systemic.

This work aims to prove that global business networks are a new model of building international competitiveness based on the concepts of networking, orchestration and coopetition. Its second purpose is to draw attention to the essence of transformations occurring as a result of the state on the global market. A crucial change is the emergence of GBNs, wherein the Top-TNCs play the unique role of orchestrators. They equate all the positive qualities of the orchestrated GBN and, in reality, determine its long-term competitiveness. The assessment of GBN competitiveness requires a multi-dimensional approach, enabling the evaluation of the synergic influence of both AEC and the IC qualities of a system constructed in such a way.

The structure of the book was designed for this purpose. It contains five chapters as well as the introduction and conclusions.

Chapter I describes the genesis and evolution of the concept of the network approach in economic sciences. It notes that the continuing globalisation

9 The World Economic Forum *The Inclusive Growth and Development Report 2017*, Geneva 2017, http://www3.weforum.org/docs/WEF_Forum_IncGrwth_2017.pdf [accessed: 23.05.2019]. Growth is not a purpose in itself; distributing its benefits is more important, taking into account the map of stakeholders.

processes accelerate the liberalisation of the flow of production factors, leading to the reconstruction of business systems into organisations that are capable of creative cooperation among the system members. GBNs are a model that is the result of the evolution of the concept of network thinking, and they constitute an indirect regulative form positioned between the market and the hierarchy. It is emphasised that implementing a business network strategy requires the combination of specialisations and key competencies as well as the potential of the organisational atmosphere (identity, culture) and adaptative flexibility. It differs from other types of cooperation as it brings together in one strategy four ideas: internalisation, cooperation, multiculturalism and coherence. To precisely conceptualise the notion of a "global business network", the following attributes are referred to: stratification, coopetition, orchestration and the creation of value-added. Additionally, a model of a GBN is positioned against selected definition perspectives on networks, described in the subject literature.

Chapter II stresses the evolution of the developmental concepts of corporations and the adoption of the functions of GBN orchestrators by the most powerful among them, thus explaining the role of Top-TNCs in GBNs. The definitions, typology, attributes and strategies of expansion applied by the corporations are discussed. The essence of Top-TNCs is not merely ownership of resources, but the ability to organise, integrate and efficiently coordinate the actions of various units when fulfilling the adopted strategy aimed at creating value-added. Moreover, the dynamic development of TNCs and the changes occurring within them are a result of the evolution of global economy – which justifies referring to the stages of globalisation in the context of studies on the development of GBNs. A crucial section of the chapter presents the model of business integration, which depicts the sequential nature of the internationalisation process, which culminates in a GBN.

Chapter III contains an analysis of the layers of capital in a modern enterprise that make up the "organisation's knowledge capital" (OKC). Aside from the AEC in the standard sense, the capital also includes IC subsystems. The systemic nature of the capital of a network organisation, which comprises five layers that are correlated and stimulate their own development, is emphasised. The chapter also presents a study of the Top-TNCs (determined by the *Top 100 TNCs* UNCTAD classification). It is based on *Grounded Theory Methodology* (GTM), and it aims to confirm the rightness of selecting networking, coopetition and orchestration as pillars of a strategy that are appropriate for an orchestrator. The elements of market, financial, innovation, organisational and institutional capitals are discussed in detail – in relation to the orchestrators of GBNs. It is stressed that an orchestrator holds the key qualities of the multi-level, web-like network on which the long-term GBN competitiveness is based. Generating the value-added that is necessary for a GBN to maintain a strong competitive position is the result of the synergic impact of all its capital layers, which requires finding measures that would aggregate these impacts.

Chapter IV presents the evolution of the concept of competitiveness in light of the theory of economy, the importance of understanding the essence of the development of the international competitiveness system for the stability of an agent's position in a dynamically changing environment, and the authorial concept of the paradigm of the international competitiveness of enterprises (as the foundation for an analysis of competitiveness in network enterprises). Meeting the requirements of the 21st century, including those connected to the network-related nature of performing business operations, demands the examination of competitiveness from a systemic perspective, as four coexisting elements: competitive potential, capability, advantage and position (the latter ends the process but also begins the next cycle). As a result, four correlated and interdependent subtypes of competitiveness can be observed: base competitiveness, operational competitiveness, competence competitiveness and system competitiveness. The strategy of a GBN is based on this model. Since GBNs do not fit into the frame of microeconomic agents created for analytical purposes, they require the adoption of a suitable model to examine competitiveness – for this purpose, the author presents her own concept of international competitiveness of enterprises.

Chapter V focuses on finding measures that enable the assessment of GBN competitiveness. Selected methods of the assessment of complex structures, taking into account the role of IC, are presented. However, most attention is devoted to the need to evaluate the influence of OKC, or the complex appreciation of elements on the meso-, macro- and meta-economic level. The following sources of a GBN's advantages were identified and considered to be crucial: networking, as the ability to build coalitions; orchestration, as the use of the potential of foreign investments and the potential of the international transfer of human resources in creating innovative solutions; and coopetition, as the ability to permanently cooperate with the environment, including the competition. The evaluation of these sources has been attempted based on measurable parameters. Ultimately, they were used to assess the ability to create value-added, reflecting the position of a given GBN against the background of the competition in a given business sector through the assessment of its orchestrator.

The structure of the book makes it possible to verify five detailed hypotheses:

H1: A global business network has attributes that make it stand out against other types of business organisations – other network concepts.

H2: The most powerful transnational corporations pursue the subsequent stages of the business integration process in order to obtain the position of a GBN orchestrator.

H3: By developing the subsystems of a GBN's economic and intellectual capital (knowledge capital of a network organisation), its orchestrator aims to maintain its ability to constantly create value-added to the evolving global standards – maintaining the position in a sector-specific oligopoly.

H4: The competitiveness of GBN orchestrators is systemic, which requires a multi-dimensional assessment, and the paradigm of the international competitiveness of enterprises must be accepted as its basis.

H5: The measure of the orchestrator's ability to create value-added meets the requirements of the long-term assessment of GBN competitiveness.

In conclusion, the structure of the monograph is based on the following analytical diagram: environment – strategy – structure – competitiveness. The environment has a major influence on the functioning of an organisation. Changes to the environment transform the pillars of strategy of all types of agents,[10] and their effect is the evolution of structures, from the classical, corporate structures into multi-layer, GBN structures. This new type of structure aims to improve the competitiveness of participating agents in the changing global environment. In these systems, Top-TNCs are in a unique position – as orchestrators – combining the functions of a leader-regulator, a coordinator-manager and a conductor-administrator. The foundation for the model does not involve the classical principles of the organisation and the leader's directives, but the pillars of the business network model based on networking, orchestration and coopetition. The measure of the competitiveness of GBNs is the ability to create value-added based on the organisation's knowledge capital (the effect of the synergy of AEC and IC).

The study applies a triad of research methods. It contains a critical analysis of the literature to put in order the definitions, typologies, classifications and statements regarding the subjects and elements that determine competitiveness, as well as the preliminary research of electronic archives, reports and TNC classifications.[11] An empirical study using GTM was conducted,[12] which included 252 TNCs[13] in total. It was conducted on the Top-TNCs from nine sectors, including: automotive – 17, electronics – 26, petroleum – 25, telecommunication & media – 38, chemical & pharmaceutical – 30, consumer goods & services – 36, industrial goods & services – 40, public services – 29, and multi-branch holdings – 11.

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10 S.D. Hunt, R.M. Morgan, *The Competitive Advantage Theory of Competition*, "Journal of Marketing" 1995, vol. 59 (2), pp. 3–8.

11 *Forbes Global 2000* (2006–2018), *World Investment Report* (1991–2018), *The BusinessWeek Global 1000* (1989–2004), *1200* (2005), *2000* (2006–2011), *Fortune 500* (1955–2018), *1000* (2006–2018), *Fortune Global 500* (2005–2018), *The Interbrand/BusinessWeek: Best Global Brands – The 100 Top Brands* (2000–2018), *Financial Times: The BrandZ Top 100* (2007–2018), *The 100 (50) Most Innovative Companies* (2005–2018), *The Global Innovation 1000* (2008–2018), *The World's Most Admired Companies* (2006–2018).

12 M. Götz, B. Jankowska, *Zastosowanie metodologii teorii ugruntowanej (GTM) w badaniu koopetycji w klastrach*, "Problemy Zarządzania" 2014, vol. 12 (3), pp. 185–205.

13 Classified in the Top 100 non-financial TNCs according to the *World Investment Report* in 1991–2009.

Chapter I

Concept of a global business network in light of economic theory

By accelerating the liberalisation of the flow of production factors, the continuing globalisation processes have led to the restructuring of the organisational systems of enterprises. It is triggered by the implementation of modified development strategies. The changes promote organisms that are capable of creative cooperation, which, in turn, facilitates the development of various forms of collective systems. Global business networks are a model developed due to the evolution of the concept of network thinking. This chapter presents the genesis and evolution of the concept of the network approach in economic sciences.

1.1. Network approach – the genesis and evolution of network thinking

The network approach is a concept that involves a system of connections created to optimise market actions. The most intensive research in this field is associated with the activities of the Industrial Marketing and Purchasing Group (IMP), founded in 1976. IMP's works from the 1990s indicate precise qualities related to networking and which are crucial to the improvement of competitiveness, i.e. the actors–resources–activities (ARA) model. ARA highlights the significance of the continuity of interactions between participants (actor bonds), resource ties, and the relationship between them, which depends on the type of activity (activity links).[1]

1 H. Håkansson, J. Johanson, *A Model of Industrial Networks*, [in:] *Industrial Networks. A New View of Reality*, B. Axelsson, G. Easton (eds), Routledge, London 1992, pp. 28–34; H. Håkansson, I. Snehota, *No Business is an Island: The Network Concept of Business Strategy*, "Scandinavian Journal of Management" 1989, vol. 4 (3), pp. 187–200; H. Håkansson, I. Snehota, *Developing Relationship in Business Networks*, Routledge, London 1995, pp. 24–49.

A business network (BN) is a unique form of long-term connections, both formal and informal, direct and indirect, based on mutual correlations, cooperation and trust, which can (but does not have to) be spatially concentrated. Such a network is distinguished from the lower forms of agglomeration, although the subject literature is not unanimous as to the key features of individual types of network connections. For this work, the connections of the "industrial district"[2] and "cluster"[3] types were considered pre-networking, or a theoretical foundation for reflections regarding business networks.

Reflections about networks require an understanding of the following key features of a district:[4]

- specialisation – a determinant of competence growth and the increase in product quality; the division of labour between the companies of the district to enable them to complement each other in a given production process; improving skills and achieving above-average competences;
- spatial concentration – concentration of the reserves of qualified personnel; the knowledge of the specificity, tradition and customs of the business; human capital as a carrier of specialist knowledge, accelerating the diffusion of innovative solutions;
- industrial atmosphere – the origin of the organisational culture; it performs the function of a new production agent that is considered equal to capital, land and work;
- innovation – the quality of a specialised concentration; the joint production of a given product makes it stand out against the competition as an item of a higher standard (a marketing and promotional message);
- the development of business-related services – deepening the cooperation stimulates complementary production; a concentrated soft and hard infrastructure for a given type of business.

It is crucial to understand that a joint location and a single line of business do not automatically bring benefits to an agglomeration. What determines both the existence of connections and how the offer stands out against the competition is how work is organised in a system,[5] the endogenous accumulation of capital,[6] as well

2 A. Marshall, *Principles of Economics* (1890).

3 M.E. Porter, *The Competitive Advantage of Nations*, The Free Press, New York 1990.

4 J. Zeitlin, *Industrial Districts and Local Economic Regeneration: Overview and Comment*, [in:] *Industrial Districts and Local Economic Regeneration*, F. Pyke, W. Sengenberger (eds), International Institute for Labour Studies, Geneva 1992, p. 280; P. Maskell, *The Economic Importance of Geographical Location. Some Observations in Relation to Arne Isaksen's Thesis on the Growth of New Industrial Spaces and Specialised Areas of Production*, Norsk Geografisk Tidsskrift, "Norwegian Journal of Geography" 1996, vol. 50 (2), pp. 125–128.

5 F. Pyke, W. Sengenberger, *Industrial Districts and Local Economic Regeneration*, [in:] *Industrial Districts and Local Economic Regeneration*, F. Pyke, W. Sengenberger (eds), International Institute for Labour Studies, Geneva 1992, pp. 3–4.

6 W.B. Stöhr, *Regional Innovation Complexes*, "Papers of Regional Science Association" 1986, vol. 59, pp. 29–44.

as the appreciation of the essence of the system of values, behavioural patterns and the solidarity of the local community.[7] The role of the strength of internal bonds, the phasic nature of specialisation (which reinforces cooperation mechanisms), and the indication that cooperation does not exclude competition[8] are also of primary significance. A well-developed division of labour (specialisation) facilitates faster diffusion of knowledge (the concentration and use of an understandable information code[9]) by contributing to the development of a tight network of both intra- and inter-industry production correlations. The knowledge of individual actors, who possess different competencies, is transformed into a common economic heritage and makes it possible to deal with problems that are beyond the capabilities of individual agents.

Subsequent researchers have added to the classical district model. Amin claims that labour (within a district) must be divided along the value chain and not the production chain.[10] Specialisation means that it is not the handling of a given phase of the production process that generates an increase in product value but each participant fulfilling a task. Pietrobelli noticed that organisational structure does not necessarily consist of formal bonds.[11] The organisational system can be based on the relations between independent participants who are guided by a largely non-codified set of norms.

A cluster occurs only when there is both competition and cooperation, there is geographical proximity among the participants, and cooperation is aimed at developing innovations[12] – these conditions are considered the attributes of a cluster. Clusters constitute systems of interdependent companies, tightly bound to each other in the chain of the creation of added value, and not merely an integrated vertical system based on phasic specialisation. The subject matter of a cluster's activity does not have to coincide with a single business industry. A cluster, as opposed to a district, has autonomous members, who compete with

7 G. Becattini, *Le district marshallien: une notion socio-écomique*, [in:] *Les régions qui gagnent*, G. Benko, A. Lipietz (eds), PUF, Paris 1992, pp. 35–55.

8 V. Capecchi, *A History of Flexible Specialisation and Industrial Districts in Emilia–Romagna*, [in:] *Industrial Districts and Inter-firm Co-operation in Italy*, F. Pyke, G. Becattini, W. Sengenberger (eds), International Institute for Labour Studies, Geneva 1992, pp. 21–24.

9 G. Garofoli, *Economic Development, Organisation of Production and Territory*, "Revue d'Economie Industrielle" 1993, vol. 64, pp. 22–37, https://www.persee.fr/doc/rei_0154-3229_1993_num_64_1_1475 [accessed: 28.05.2019].

10 A. Amin, *The Dificult Transition from Informal Economy to Marshallian Industrial District*, "Area" 1994, vol. 26, pp. 13–24.

11 C. Pietrobelli, *Competitiveness and its Socio-Economic Foundations: Empirical Evidence of the Italian Industrial Districts*, [in:] *The Competitive Advantage of Industrial Districts – Theoretical and Empirical Analysis*, M. Bagella, L. Becchetti (eds), Phisica–Verlag, Heidelberg 2000, p. 4.

12 M.E. Porter, *Clusters and Competition: New Agendas for Companies Governments and Institutions*, [in:] M.E. Porter (ed.), *On Competition*, Harvard Business Review Book, Boston 1998, pp. 197–288.

each other outside of the designated field of joint activities and within the so-called integrated field. Cluster members are frequently enterprises in a strong market position, for whom being placed in a cluster is meant to reinforce this position. A cluster's main weakness is usually the absence of a drafted mechanism of managing development. Each of the cluster's components has an independent management system, often controlled by bodies outside the cluster.

The qualities of a cluster, which are significant for considerations regarding networks, are:

- its layered nature – core businesses that represent the main leading business; supporting actors who specialise in numerous varying business-related zones and who are located close to the core; soft support infrastructure, which includes facilities of local education, research and development as well as local government, etc;
- the gradual nature of development – subsequent phases of the life cycle; bonds between the members evolve with time: in the birth phase, cooperation begins almost by chance based on geographical or business co-location; in the growth phase, the key and support agents notice the possibility of benefitting from deeper cooperation (task teams, e.g. purchase agreements, joint use of distribution channels, promotional platforms as well as research and development platforms); the maturity phase involves more easily identifying and determining the cluster's quality, the institutionalisation of management and establishing participation criteria;
- the changeable fusion level within the structure – depending on the strategy adopted, clusters vary in terms of formal advancement;[13] it emphasises the scope of access to specialised inputs and is qualified as a given cluster's exclusive resources.[14]

The notions of districts and clusters can be considered stages in shaping the concept of advanced network connections. Both models have two common features – the geographical and agent concentrations. They make it possible to determine the area of connections and designate the placement of such entities. As a result, they are automatically treated preferentially by the local authorities, who are interested in stimulating their development – the attribute of localness. In a classical perspective, in the case of a district, competitiveness is operational, while in the case of a cluster, it is competitive.

The purpose of the following subchapter is to determine the attributes of a business network as a form of an advanced networking approach – defining the

13 I.R. Gordon, P. McCann, *Industrial Clusters: Complexes, Agglomeration and/or Social Networks*, "Urban Studies" 2000, vol. 37 (3), pp. 513–532.

14 T. Scitovsky, *Two Concepts of External Economies*, "Journal of Political Economy" 1954, vol. 62, pp. 143–151; F. Perroux, *Economic Space. Theory and Applications*, "Quarterly Journal and Economics" 1950, vol. 64, pp. 89–104; B. Chinitz, *Contracts in Agglomeration. New York and Pittsburgh*, "American Economic Review: Papers and Proceedings" 1961, vol. 51, pp. 279–289.

structure and management model in order to implement a competitive strategy which is suitable for new challenges. The theory of regulation will be referenced in order to explain the reasoning behind placing a networking model between the market (competition) and the hierarchy (control).

1.2. Business networks as a type of regulation model

This chapter attempts to prove that a business network is one of the structures capable of regulating economic systems. A network is an incorporating structure; in other words, it aims to internalise the offers of its members, although not necessarily based on proprietary relations. The common purpose of participating agents, the strategic context of the relations created, is the binding material of the network. The role of the network is to integrate individual members' key competence areas and create structures that facilitate the diffusion of knowledge within the network. The lack of limits regarding the scope of spatial concentration or agent concentration is meant to provide flexibility and innovativeness for an organisation, despite its extensiveness, and at the same time, automatically make it global and multi-cultural.

There are three interweaving types of embeddedness of business networks: territorial, inter-organisational and social.[15] What is extremely important is that the bonds within a network are multi-level and vary in strength, depending on the level.[16]

The effective implementation of a business network strategy requires a combination of:

- individual skills (specialisations, key competencies);
- the potential of the organisational atmosphere (identity, culture);
- adjustment flexibility (the ability to adapt to the challenges issued by the evolving environment).

15 More on the problem of "embeddedness": M.J. Roy, S.L. Grant, *The Contemporary Relevance of Karl Polanyi to Critical Social Enterprise Scholarship*, "Journal of Social Entrepreneurship" 2019, May; M. Granovetter, *Economic Action and Social Structure: The Problem of Embeddedness*, "The American Journal of Sociology" 1985, vol. 91 (3), pp. 481–510; M. Ratajczak-Mrozek, *Network Embeddedness. Examining the Effect on Business Performance and Internationalisation*, Palgrave, Cham 2017.

16 S. Rosenfeld, *Bringing Business Clusters into the Mainstream of Economic Development*, "European Planning Studies" 1997, vol. 5 (1); G. Easton, *Industrial Networks: a Review*, [in:] *Industrial Networks. A New View of Reality*, B. Axelsson, G. Easton (eds), Routledge, London–New York 1992, pp. 3–25; C. DeBresson, *Why Innovative Activities Clusters*, [in:] *Economic Interdependence and Innovative Activity. An Input-Output Analysis*, C. DeBresson (ed.), Cheltenham, Brookfield 1996, p. 161.

Integration is a crucial challenge for BNs. It should be centred around the chain of creating added value and the mechanisms of creative cooperation for market stabilisation and risk-sharing. The BN model attempts to eliminate the flaws that result from centralisation and formalisation, and that increase the rigidity of an organisation and decrease its innovativeness due to bureaucracy, non-reflective procedures and organisational habits.[17] A network is not a bundle of relations, but a coherent system of horizontal, vertical and diagonal bonds – coherence is inherent. Thus, the network structure, which is in layers near the core, is consciously constructed by interdependent agents who, upon entering the network, decide to partially restrict their sovereignty. The network members are forced to look at the developmental determinants from a perspective wider than that of their own knowledge and experience (the Uppsala model). A mature BN is a model which attempts to fulfil the idea of sustainable development in the form of a metaphorical arena, where competitors may clash peacefully and develop innovative, although usually not revolutionary, solutions through their interactions. As a result, a business network is both stable and dynamic. Stability is determined by the strategic approach to cooperation. The dynamics of the expansion of individual members, each of whom strives to be the best, in fact, stabilise the organisation as a whole. Consequently, the system of both formal and informal connections develops continuously.

A global business network will be presented in this work in such a sense – as a structure which constitutes a method of coordinating the activities of agents on an international market. This model may be considered centralised since it is an organisation wherein one agent controls a wide range of actions by managing a flow of tangible and intangible assets between independent companies to successfully meet the expectations of final clients and simultaneously limit formal integration to prevent the blockade of innovation.[18] The model can also be considered coordinated since it is a system of horizontal connections. Its planning is decentralised and yet enables mutual control of the elements.[19] It may also be a model that combines competition and cooperation, thus constituting a system of multifaceted and multilateral connections that was developed on the basis of highly coincidental purposes of both the individual network elements and the group as a whole.[20]

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17 A. Nowak-Far, *Globalna konkurencja. Strategiczne zarządzanie innowacjami w przedsiębiorstwach wielonarodowych*, Wydawnictwo Naukowe PWN, Warszawa–Poznań 2000, pp. 163–164.

18 J.C. Jarillo, *Strategic Networks. Creating the Borderless Organisation*, Butterworth–Heinemann, Oxford 1993, pp. 5–6; R. Gulati, N. Nohria, A. Zaheer, *Strategic Networks*, "Strategic Management Journal" 2000, vol. 21, pp. 203–215.

19 W.E. Baker, *The Network Organisation in Theory and Practice*, Harvard Business School Press, Cambridge 1992, p. 399.

20 M. Castells, *The Rise of the Network Society*, Blackwell Publishers, Oxford 2000, p. 187.

Business networks most frequently assume one of the three following forms:

- a centralised network – vertical integration; it centres around the production chain; there is strong structuring with clearly defined objectives, functions and positions of individual members; a strategic centre determines the areas of activity for the members who pursue a common strategy; inter-organisational connections are of strategic significance to the members, regardless of the form of the relation;
- a coordinated network – horizontal integration; business associations; positions in the network are a result of positions in a given business industry; weak structuring of the network (unclear and inconsistent interdependencies of the members); absence of purposeful creation of common structures and allocation of tasks;
- a coopetitive network – competence centres that both cooperate and compete with each other; network with mixed structuring – the network contains both the internal, centralised (strategic) networks that build a visible outer, organisational structure and numerous elements that are diversely connected to the network (multi-level bonds).

The above division can be traced directly to the environmental categories proposed by Achrol, Reve and Stern:[21]

- *primary task environment* – the parent corporation and its closest environment united by a common strategy;
- *secondary task environment* – indirect relations of corporations and other key participants within a sector and supporting industries;
- *third task environment* – indirect, not always conscious relations with a distant environment, caused by the existence of web-like networks around individual members of the main network.

Some authors additionally enumerate *macro-environment* connections, whose origins are not necessarily business-related, including cultural and social determinants, standards, international contracts, laws and other institutional regulations.

To sum up the above reflections on definitions, it should be mentioned that highlighting network attributes as the highest stage of the development of business connections, which is a form of advanced network thinking, is the most significant purpose of this work. The features of a network which distinguish it from pre-network forms are:

- internalisation – based on bonds;
- cooperation – based on key competences;
- its multi-cultural nature – caused by the absence of spatial restrictions;
- coherence – a consequence of fulfilling a common vision of development (not necessarily a single strategy).

21 R.S. Achrol, T. Reve, L.W. Stern, *The Environment of Marketing Channel Dyads: A Framework for Comparative Analysis*, "Journal of Marketing" 1993, vol. 4, pp. 55–67.

Rejecting the attribute of a specific network location, understood either as a geographical location or a business speciality, is what particularly differentiates a network from districts or clusters. However, the subject literature attempts to place networks on a level equal to virtual organisations, which, by definition, do not have a closed cooperation area. In this case, however, the difference lies in the period of cooperation, since networks create long-term bonds, while virtual organisations are usually task-oriented and short-term in nature. Another attempt to place networks within the current theoretical works involves equating them with strategic alliances. In this case, it also appears unfounded. Alliances (even between competitors) usually concentrate on a single aspect of relations – the cooperation. Thus, a much narrower range of forms of cooperation is applied.

It is not the form of cooperation that is the essence of a network but its content. In other words, it is the character of the bonds between the participating agents that is important. A business network is one of the structures that can regulate an economic system. A network-oriented approach is a synthetic and analytical perspective that utilises various concepts of cooperation. Therefore, it is neither a sum of the concepts (some elements were rejected and replaced with others) nor a single one of them. Districts, clusters, alliances and virtual organisations should be considered specific organisational forms that can function as part of business networks. The networks hold solutions applied earlier, developed as part of the pre-network forms and then refined.

The analysis of mere fragments of a business network may mistakenly lead to the notions of a network and another form of cooperation that is visible from a given perspective being considered equivalent. Only on the basis of a diagnosis of the whole business network can a network model be ascertained, having determined the types of internal relations within a network and identifying the predominating organisational forms and rules governing the relations between them. Network type reflects the rules that coordinate various types of relations (cooperative and competitive). Having taken that into account, it is necessary to determine the position of a business network between the market and the hierarchy.

In order to present a business network as a model that regulates the economic system, the concept of Thompson, Frances, Levacic and Mitchell has been used, which gives the three following possible models of regulation:[22]

22 G. Thompson, J. Frances, R. Levacic, J. Mitchell, *Markets*…, p. 271. The classical economic theory of regulation contends that regulation is supply and demand process with interest groups on the demand site and government regulations on the supply side. R.A. Posner, *Theories of Economic Regulation*, "The Bell Journal of Economics and Management Science" 1974, Autumn, vol. 5 (2), pp. 335–358. The next researchers use the theory to explain many different issue. A. Zardkoohi, *Market Structure and Campaign Contributions: Does Concentration Matter? A Reply*, "Public Choice" 1988, vol. 58 (2), pp. 187–191; B. Jankowska, *Koopetycja w klastrach kreatywnych. Przyczynek do teorii regulacji w gospodarce rynkowej*, Wydawnictwo Uniwersytetu Ekonomicznego w Poznaniu, Poznań 2012.

- markets – with price competition as the leading regulation mechanism;
- hierarchies – with administrational directives as the leading regulation mechanism;
- networks – wherein the regulation mechanism is based on trust and cooperation.

Cooperation occurs on the market and between specific agents (including the ones hierarchically managed) and, consequently, the position of a network naturally falls between these two forms. Therefore, a network is an indirect form of regulation between a market and a hierarchy. When pursuing a cooperation strategy, each network form can use a different system of the rules of social coordination (understood as the rules of internal communication and the multi-directional flow of information), the significance of trust between the participants and the specific social norms as elements lowering the risk.[23] This also signifies that it is an attempt to combine externalisation with internalisation.

Externalisation is the factoring of some operations out of the leading agent structures, using management methods such as lean management, outsourcing, divestments or reengineering. It considers the market to be the most appropriate and accurate mechanism to verify competitiveness. Meanwhile, internalisation equals highlighting the value of executing a transaction in a structure of a given organisation. It underlines the advantages of the possibility to avoid both the structural and the endemic market distortions. Thus, the system gains an advantage over the environment when the conscious actions of those participants who aim to disturb the competition are neutralised. Moreover, a network that uses internalisation is capable of reducing the inconveniences related to incomplete data or the specificity of a given market.

Therefore, a business network oscillates between two extreme approaches:[24]

- *the exit strategy* – leaving the market for one's own organisational structure by replacing the market with administrative decisions and hierarchical structures;
- *the voice strategy* – continuously adapting to the current situation and making use of the opportunities brought on by the given circumstances.

In reality, a business network is a regulation model[25] that combines the forms of the market, and hierarchical and mixed structures as alternative means of conducting market processes. It reflects the relations between three types of regulation structures: competition, control and cooperation. From a theoretical perspective, it is known as the CCC paradigm.[26]

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23 B. Uzzi, *Social Structure and Competition in Interfirm Network: The Paradox of Embeddedness*, "Administrative Science Quarterly" 1997, vol. 42, pp. 35–67.

24 A.O. Hirschman, *Exit, Voice and Loyalty: Responses to Decline in Firms, Organisations and States*, Harvard University Press, Harvard 1970.

25 G. Thompson, J. Frances, R. Levacic, J. Mitchell, *Markets*..., pp. 265–276.

26 A. Sulejewicz, *Partnerstwo strategiczne: modelowanie współpracy przedsiębiorstw*, "Monografie i Opracowania" vol. 427, Oficyna Wydawnicza SGH, Warszawa 1997, pp. 192–194.

As a consequence, a business network corresponds with the regulatory structures that are cooperative and are positioned between the market (competition) and the hierarchy (control). Networks, therefore, lack a central managing unit, i.e., a unit with hierarchical control. Bonds are created when taking into account market requirements, but not in accordance with the rules of the supply and demand balance alone. The selection of co-operators is not necessarily based on cost advantages and is not wholly flexible (in contrast to purely transactional relations). Forging and maintaining bonds, as long-term relationships, requires time; therefore, changes are evolutionary (not revolutionary). The basic feature of the bonds is their complementary nature; the function of a network as a regulation structure is strategic coordination. Therefore, network structures do not rule out the existence of a hierarchy, but they identify the need to make it more flexible. The coordination of cooperating agents does not aim to eliminate the competitiveness between them, merely to move it to another level. Cooperation signifies that, in the spirit of the concluded (not necessarily formal) agreement, the signatories strive to improve the conditions for participation in the market together.

Competition, control and cooperation are, therefore, the three basic – but also equal – methods of conducting transactions on the market. The structures that appear as a reflection of the domination of a given regulation system correspond with the phases of development of capitalism. It evolved from entrepreneurial (the domination of market structures) through managerial (the period of the glorification of management and the development of hierarchical structures) to modern investment capitalism (the search for an appropriate structural form to meet the interests of numerous groups of participants, i.e., hybrid structures).[27]

It appears that in the context of the ongoing changes in the functioning of the global economy, and the necessity to take into account the determinants of a global business space when conducting a transaction, there are two elements that need to be added to the three already determined by Sulejewicz: orchestration and coopetition. They themselves are not new but reflect the essence of the new situation. A mature network organisation is a regulatory structure without a classical parent entity (a dominator),[28] which constitutes a platform for the coordination of both the competitive and cooperative relationships. Therefore, coopetition and orchestration are the essences of a GBN.

Coopetition should be defined as a specific way of acting that makes it possible to build potential based on the close cooperation among the participants combined with the competition between them. Analysis of the sectorial and

27 M. Rosińska-Bukowska, *Rola korporacji transnarodowych w procesach globalizacji. Kreowanie globalnej przestrzeni biznesowej*, Dom Wydawniczy Duet, Toruń 2009, pp. 283–299.

28 Without a classical dominator = without a classical parent entity = without a classical autocratic business system management.

organisational factors that determine the existence of a bond indicates that coopetitive relations are related to the fulfilment of strategic purposes (long-term perspective). As time goes by, the coopetitive relations tend to encompass more and more participating agents. Time is also crucial for the strength of the relationship, which, with time, becomes tighter. Coopetition is a system of streams of simultaneous and interdependent relations of competition and cooperation between agents that are organisationally separate.[29]

Orchestration is the spatial distribution and coordination of the production process in time and space to obtain value-added.[30] Orchestration is a regulation mechanism in the chain of the creation of value-added that utilises the diverse resources of the members of an organisation. An orchestrator is responsible for the performance of the process. It is an agent who is capable of achieving "harmony" between system elements that are not necessarily formally or organisationally united (i.e., they may be unaware of the existing relations between them). The essence of an orchestrator requires the creative combination of three functions – a leader, a coordinator and a conductor.

A similar concept is brought forth by entrepreneurship paradigm based on the concept of Stevenson.[31] The three forms of conduct presented by the author – the promoter, manager and administrator – can be ascribed to the three above-mentioned functions of an orchestrator. As a leader--regulator, an orchestrator focuses on finding opportunities to create value--added. The role of the coordinator-manager is to focus on transforming ideas into real achievements that are meant to help the organisation prosper and grow in the long term – the aspect of performance and competition, a proper entrepreneurial culture. The task of the conductor-administrator is to run an efficient administration, select participants, divide the responsibilities and gather resources in such a way as to make full use of development possibilities.

29 Y. Lou, *Toward Coopetition within a Multinational Enterprise*, "Journal of World Business" 2005, vol. 40, pp. 71–72; M. Zineldin, *Co-operition: The Organisation of the Future*, "Intelligence & Planning" 2004, vol. 22 (7), pp. 780–790; J. Cygler, *Kooperencja przedsiębiorstw. Czynniki sektorowe i korporacyjne*, Oficyna Wydawnicza SGH, Warszawa 2009, p. 19.

30 T. Pedersen., M. Venzin, T.M. Devinney, L. Tihanyi, *Orchestration of the Global Network Organisation*, "Advances in International Management" 2014, vol. 27; P. Hurmelinna--Laukkanen, S. Nätti, *Orchestrator Types, Roles and Capabilities – A Framework for Innovation Networks*, "Industrial Marketing Management" 2018, vol. 74, pp. 65–78.

31 T.E. Brown, P. Davidsson, J. Wiklund, *An Operationalisation of Stevenson's Conceptualisation of Entrepreneurship as Opportunity-based Firm Behavior*, "Strategic Management Journal" 2001, vol. 22, pp. 953–968.

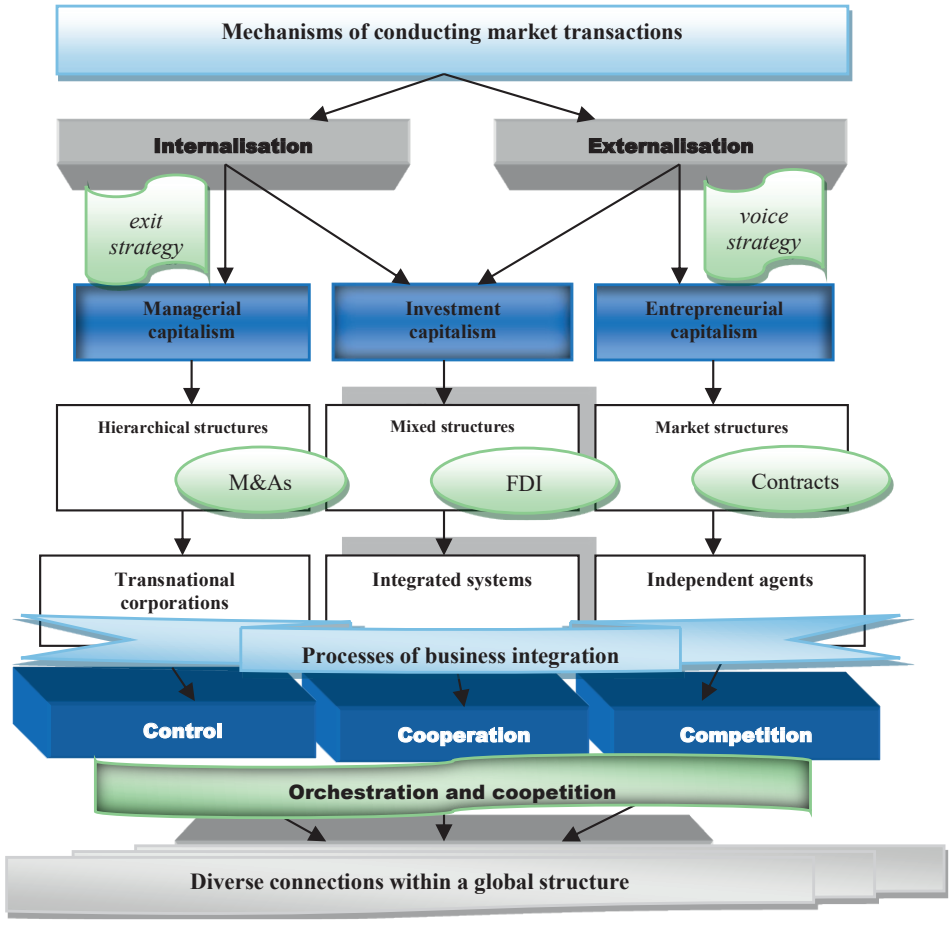

Diagram 1. The business network as a regulation structure on a global market

Source: own elaboration.

Diagram 1 presents the business network as a regulation structure, using the elements of the CCC paradigm.

Leaving the market is an attempt to create a complex organisational structure and thus obtain a long-lasting position on the global market, which is expressed by the intensification of international mergers and acquisitions (M&As). Strategic cooperation includes all alliance forms that are intended to ensure long-term, sustainable development thanks to relations that are not a result of ownership. In this sense, a network emphasises a new aspect of regulation – control is not determined by ownership.

1.3. Attributes of a global business network – a comparison with other network models

In order to precisely conceptualise the notion of a global business network, its attributes – stratification, coopetition, orchestration, creation of value-added – will be referred to and a GBN will be juxtaposed with selected network definitions.[32]

Stratification is a crucial attribute of a GBN. It is based on three levels of bonds that depict the balance between internalisation (hierarchy) and externalisation (market). The strongest connections, ownership links (OL), make up the core and are based on ownership, i.e., the fusion of networks through international mergers and acquisitions. Strategic connections (SC) constitute the next layer – they are long-term contracts, of the strategic alliance type, and joint ventures. Cooperative relations (CR) make up the outermost layer; they involve transactional relations and conducting business in a socially responsible way. Capital-oriented relations (i.e., OLs) are the first level of a GBN. They are responsible for reinforcing the network core, and they constitute a measure of specialisation. SC-type connections (mostly within a given business sector) are the second level, determining the extent of specialised global structures and measuring the scope of the network's actions. The third level of connections, cooperative relations, involves relations with an institutional environment in the broader sense – the intercultural aspect. Individual layers may overlap; the strength of a GBN is determined by the strategic coherence of individual layers and their constant interactions.

Ownership links build the internal strength of the network core and constitute the base potential of a GBN; traditionally, they may be strategic networks with a strong leader. The OL structure is a result of an in-depth assessment of the sector's organisation system, the participants' strengths and weaknesses, the potential of their resources and, on this basis, the pursuit of a sequential expansion strategy. Ownership links often involve implementing the Uppsala model and a rational

32 By analysing theoretical works on defining and classifying networks, for example: J.C. Anderson, H. Håkansson, J. Johanson, *Dyadic Business Relationships Within a Business Network Context*, "Journal of Marketing" 1994, vol. 58 (4), pp. 1–15; A. Dubois, *The SweFork Case*, [in:] *Developing Relationships in Business Networks*, H. Håkansson, I. Snehota (eds), Routledge, London 1995, pp. 64–77; A. Dubois, H. Håkansson, *Relationships as Activity Links*, [in:] *The Formation of Inter-organisational Networks*, M. Ebers (ed.), Oxford University Press, Oxford 1997, pp. 43–65; P. Fredriksson, *Modular Supply in the Swedish Automotive Sector*, [in:] *Company Strategies and Organisational Evolution in the Automotive Sector: a Worldwide Perspective*, A. Bardi, F. Garibaldo (eds), Peter Lang, Berlin 2005, pp. 159–180; L. Gadde, H. Håkansson, *Teaching in Supplier Networks*, [in:] *Strategic Networks*, M. Gibbert, T. Durand (eds), Strategic Management Society Series, Blackwell Publishing, Oxford 2007, pp. 40–57; L. Gadde, H. Håkansson, *Interaction in Networks*, [in:] *Handbook of Marketing SAGE Theory*, P. Maclaran, M. Saren, B. Stern, M. Tadajewski (eds), Sage, London 2009, pp. 355–364; A. Holma, *Relationship Development in Business Triads – Case Studies in Corporate Travel Management*, "Journal of Business Market Management" 2010, vol. 4, pp. 73–90.

approach to strategic management. The expansion is typically focused on the development of sequential cooperation with agents from regions that are historically and geographically closest. The subsequent step involves entering more distant markets and becoming familiar with a foreign culture. OL overlap with SC, which results in the creation of various network types. The structure of connections that emerges is frequently a combination of several alternative formulas of cooperation which appeared in the process of searching for an optimal network model. The concept is based on the notion of entangled organisation, which assumes that business does not automatically signify war, and its essence is the creation of value, which, by its very nature, is a non-zero-sum game.[33] The CR layer is of fundamental importance to preserve flexibility in the global network system. The cooperative relations are the loosest within a GBN – they are operational and, with time, can take on a strategic or ownership-related form.

A GBN typically has space for both cooperative and competitive (coopetitive) behaviours in all three of its layers, OLs, SCs and CRs. Therefore, its coopetitive nature is yet another specific attribute of a GBN. Sharing knowledge and cooperating with the direct competition is proof of network strength, since only the strongest can afford to cooperate with rivals. The matter of creating bonds of mutual trust is also of fundamental importance, as trust stems from knowledge, while the lack of knowledge signifies the increase in risk. Shutting oneself away from cooperation (with anyone) increases the level of ignorance. A GBN is based on a systematic reinforcement of relationships, though not necessarily formal ones.

All three layers constitute platforms where diversities clash in order to create value-added to the current standard. The essence of a GBN is innovation, aiming to systematically add to the model pattern of advantages. The advantages meet the subsequent challenges of the global market with its multicultural religious identities that make it possible to outdistance the competition. This phenomenon occurs in each business area.

Yet another attribute of a GBN is oligopolisation, which is the result of the polarisation of market participants around the innovation leaders. When attempting to meet the requirements of dynamic changes in the environment, a GBN cannot constitute a rigid oligopolistic system, wherein several of the strongest agents dictate conditions and share the market. This is especially true when the market is a global economy and not a closed business or physical area.

In conclusion, a global business network makes use of synergy, which involves replacing individual agents with groups. The groups are aware that this method enables them to achieve more than they would as separate units. The attributes that make a GBN stand out against the typical network concepts are stratification, orchestration and emphasis on the creation of value-added. It is of crucial significance that a GBN be characterised by all four attributes simultaneously. It is a regulation model that was created in the process of the recomposition

33 B. De Wit, R. Meyer, *Synteza*…, pp. 58–72, 242–244.

of numerous models and concepts. As a result, by making analogies and references to network classifications proposed by individual researchers, a GBN can be described as a specific web-like organisation.[34]

Boulanger isolated network types, taking into consideration the relations between participants, and proposed a division into the following networks:[35]

- integrated networks – a collection of scattered units such as branch offices, missions and departments, which are legally and financially subject to a single central office that holds the power and has the financial resources at its disposal; they resemble traditional companies with an extended structure;
- federal networks – a group of natural or legal persons with common needs and the ability to create methods of fulfilling them on their own (cooperatives, federations, etc.);
- contractual networks – relationships that rely on the short-term or medium-term analysis of market determinants; based on, e.g., concession or franchise agreements;
- direct-relations networks – relationships that rely on shaping interpersonal bonds and non-economic (social, cultural, religious) determinants.

The above network types correspond with individual layers of GBNs: integrated – ownership links, federal – strategic connections, contractual and direct-relations – cooperative relations of various types.

Hooley, Saunders and Piercy proposed a network division that relies on the rules of participant selection, depending on the environment type. They distinguished four network types:[36]

- value-added networks – the central company of the system focuses on improving internal relations; the most important actions are undertaken inside the company, and the value-added is also generated there; the network is comprised of bonds to the stable environment of the suppliers;
- flexible networks – a unit responsible for the network manages the internal team, which studies all changes to the environment, identifies customer needs and methods of fulfilling them; internal cooperation;
- virtual networks – partners are willing to participate in long-term cooperation in order to adjust the offer to match the needs of a given market sector; assumption that target market is stable; cooperation aimed at the exchange of specialist technology and serving the market together;

34 J.B. Quinn, *The Intelligent Enterprise. A New Paradigm for a New Era*, The Free Press. A Division of McMillan, New York 1992, p. 120.

35 P. Boulanger, *Organiser l'entreprise en réseau*, Nathan, Paris 1995.

36 G.J. Hooley, J.A. Saunders, N.F. Piercy, *Marketing Strategy and Competitive Positioning*, Prentice Hall, Englewood Cliffs, New York 1998, pp. 182–184; G.J. Hooley, G. Greenley, J. Fahy, J. Cadogan, *Market-focused Resources, Competitive Positioning and Firm Performance*, "Journal of Marketing Management" 2001, vol. 17, pp. 503–520.

- hollow networks – created to fulfil the specific needs of the customers; the central agent selects the participants tasked with specific objectives; transactional approach; the line-up changes depending on the project.

In this classification, value-added and flexible networks correspond to the ownership links (OL) and strategic connections (SC) in a GBN; virtual networks correspond to strategic connections (SC), while hollow networks correspond to cooperative relations (CR).

Achrol made a similar classification, enumerating the following network types:[37]

- marketing channel networks – a central agent assigns its own brand to the network (to all the actions conducted); cooperating companies provide production technologies, complete products or ordered components;
- internal market networks – the agents in the network divide their activities between internal markets (competing sectors);
- opportunity networks – the core of the network is an agent who is responsible for negotiations with customers and suppliers, project coordination, monitoring the market and regular control of network structures; the participants cooperate, but only to complete a specific project or to find a solution to a problem;
- intermarket networks – network participants are connected by multi-aspect structures; the connections are elaborate and encompass the transfer of resources, production technologies, or management concepts; relations between participants are both direct and indirect.

To sum up: marketing networks are the equivalent of OL relations, internal market networks are the equivalent of SC relations, and opportunity networks are the equivalent of CR relations that result from the knowledge of the subject matter and the region of the transaction. Intermarket networks are the closest to the GBN model.

Fors and Nyström presented a network classification based on changes in participants' roles and the influence of emerging connections on the perception of structures from the outside. They enumerated:[38]

- trembling networks – a system of highly centralised, stable elements of the network core (affected actors), which actively cooperate with each other (alerted relationship) and simultaneously look for candidates for cooperation in the outer environment; systematic searching for, testing and choosing candidates from a vast, unstable selection; yet, recruiting potential participants of the system is marginal – internal connections are the dominating factors,

37 R. Achrol, *Changes in the Theory of Interorganisational Relations in Marketing. Toward Network Paradigm*, "Journal of the Academy of Marketing Science" 1997, vol. 25, pp. 56–71.

38 A.-G. Nyström, M. Mustonen, *The Dynamic Approach to Business Models*, "AMS Review" 2017, vol. 7 (3–4), pp. 123–137; J. Fors, A.-G. Nyström, *Network Reactions to Actor's Role Change*, Marseille France, Competitive Paper Annual IMP Conference 2009, pp. 7–12; P. Dahlin, J. Fors, V. Havila, P. Thilenius, *Netquakes – Describing Effects of Ending Business Relationships on Business Networks*, IMP, Rotterdam 2005.

determining the shape of the network system; new connections do not have a major influence on the internal network relations but can be noticed by external agents who analyse the environment;

- swaying networks – the changes within a network are crucial for the competitiveness in specific sectors of the global (external) market; they most often lead to the reconstruction of organisational structures of the agents participating in the network, but their influence on the whole sector-related or global determinants is slight; a network's internal restructuring mostly involves identifying the specialisation areas of individual network members on the basis of their key competences; the changes in the first internal ring of the network are mostly expressions of cooperation, made to enable the participants to adapt to the new developmental determinants; these transformations resemble mild swaying – they occur during ongoing business relations; external relations constitute the second ring of the network; skills not indigenous to the network, yet necessary for the completion of business processes, are acquired outside; the bonds with the external environment (interpersonal relations, joint undertakings) gradually change their nature until transactional relations are replaced with strategic connections (adapting to network requirements);
- shaking networks – the structure of connections determines the level of agent competitiveness; therefore, the bonds are – more and more often – formal; the agents included in the network as part of their own structures adapt to the requirements of the network as a whole; this causes visible changes to the network system (the whole also evolves); since the number of actors increases, the rising dynamics of changes is visible on all network levels; this shakes the individual business and geographical spheres; the shaking effect is also emphasised by replacing transactional relations with stronger bonds (adapting and dissolved relationship);
- breaking networks – the intensification of bonds is the predominating factor that changes network structures; all main network members (affected actors) make binding and constantly developing connections (established and dissolved relationships); the system absorbs new elements, expanding the network web and breaking the limits; complete reconfiguration of structures in order to improve the coherence and sense of connection of the network members, despite the endlessness of network space; the distinguishing feature is not only the absorption of the best business practices from a vast environment – in other words, the ability to learn – but the ability to create many product variants on the basis of a single, clear pattern.

In conclusion, the network types enumerated by individual researchers are often identical. Opportunity networks appear to be equivalent to hollow and trembling networks. Marketing channel networks seem identical to flexible and swaying networks. Internal-market, value-added and shaking networks are also equivalent, while virtual and breaking networks are equivalent to

intermarket networks. In the first three groups of categories, the creating or controlling agent is usually clearly identified, which makes them dominated networks.

Opportunity, hollow and trembling networks are usually temporary, task-oriented unions, normally dissolved after the task is completed. They typically have a supervisory body that oversees individual stages of the project in relation to fixed, established rules, for instance, costs or deadlines. Such networks usually do not pursue a common strategy.

Marketing channels and flexible and swaying networks are systems based on passive membership – co-operators who deliver their products or provide their services without their brand being identified. The market offer is then advertised by the dominating agent by selecting components from an established group. The network is limited to offering the sum of the benefits, and their compilation constitutes its value. However, the network does not actively stimulate its members, which results in the absence of competitive pressure within.

Internal-market, value-added and shaking networks are highly advanced in terms of organisation. When entering the network, the members do not abandon their identities. This results in the existence of numerous network points. A customer frequently makes a choice between the offers of the same agent without being aware of it. These networks are highly centralised connection systems; therefore, their agents often focus more on competition and fighting for the dominant position than the benefits of cooperation, which may lead to the cannibalisation of network products. Such networks may become a crucial element of a GBN.

Intermarket, virtual and breaking networks shift their focus from fighting for primacy to striving for the optimisation of benefits by setting a common strategic goal. It is crucial to utilise the potential of the developed resource connections by conceptually harmonising participating agents through a common strategy. Each member is tasked with improving skills, also by maintaining contact with the external (e.g. cultural) environment.

To conclude, the network types that coincide the most with the concept of a GBN in terms of definition are the intermarket, virtual and breaking network models. Diagram 2 positions the GBN concept against all the above-mentioned classifications.

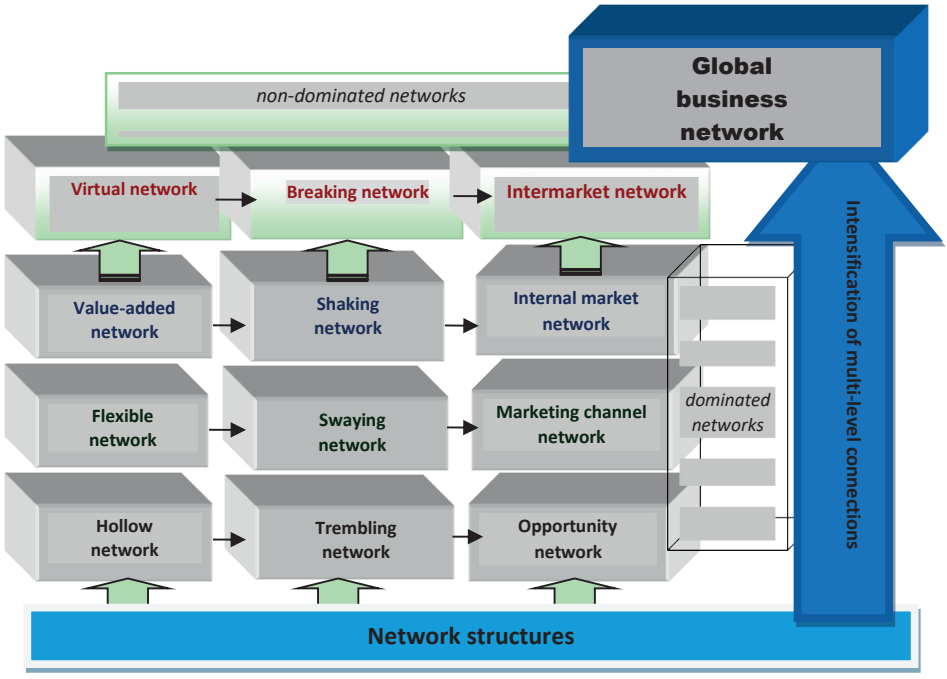

Diagram 2. A global business network against selected network classifications

Source: own elaboration.

The analysis of the presented classifications indicates that the model of Fors and Nyström is the closest to the concept of the gradual shaping of a global business network. Trembling networks can be considered equivalents of the traditional corporation; its existence is visible, but its vibrations have no influence on the rules governing the functioning of the business. Swaying networks put the closest environment – market sector, geographical area – into motion. The result is the emergence of transnational network organisations which are focused on their particular business industry/sector. Shaking networks, when taking actions, can shake not only a specific business zone but also the broader environment. Breaking networks, by their very existence, contribute to the breaking of traditional structures and changing them constantly and thoroughly. The latter development stage of network structures is the equivalent of a GBN since it is a condition where practically all agents of the global space are tangled in the network. This connection model is based on the exploration of multi-dimensional relations as part of a learning structure whose purpose is development through qualitative changes.

A GBN is, therefore, not a typical organisational structure which, by nature, puts things in order (it is not hierarchic). It is also not a system of one-sided spontaneous relations with a passive membership in the purpose structure (providing goods/services), and without a common control system or formal elements. A leading agent can usually be identified in a GBN; they constitute

both a driving force behind network integration and a force that unites all the other elements: an orchestrator. A GBN has mobile competence centres – they are the leaders of individual processes, brands, sectors, and regions (the model is typical of specific GBNs). Despite having their own control centres, GBNs are made up of largely autonomous partners. A dependency level in a GBN is related to the agent's competence position throughout a given process conducted in the network. A GBN is a system of dynamic interactions, where each stimulus is subject to constructive criticism. The feedback received is the basis for the actions that facilitate the creation of new values. It is the one to determine the improvement in the quality of actions of the whole network. The relations between companies produce specific, positive, spontaneous effects and are, somewhat unintentionally, adopted by the participants. These relations can become the source of multiplied benefits, thanks to the activities of network members. However, it requires involvement in the learning process, the effort of adapting it to one's own needs and sharing observations as well as experiences from the process of implementing the innovative solutions made available within the network.

A GBN is an advanced model of a business system, whose strength lies in the interactive connections between the network members. Active participation in the network not only makes it possible to utilise the offered development concept (with the obligation to implement rules in order to improve a given model), but also demands the adaptation of the model to suit the needs and possibilities of a given agent to obtain maximum performance. Depending on the possessed potential, the competitive capabilities and key competencies of the participants, various systems emerge which can take on the forms of centralised (dominated) networks, coordinated (non-dominated) networks and coopetitive (orchestrative) networks depending on the structuring level. A GBN structure may contain all connection types combined into a whole, while remaining a coopetitive model that aims to create value-added.

In conclusion, the essence of global business networks is their coherent nature. Coherence equals internal unity, which suggests a logical harmony of elements that make up a network based on mutual adaptation and strategic harmonisation. The creation of GBNs is influenced by the evolution of the determinants of enterprise actions. GBNs constitute a representative concept of the answer to macroeconomic challenges. A GBN is more than a type of organisational structure that reflects the strategy pursued by a given company; it is a regulation model positioned between market and hierarchy. Shaping such a connection system means moving to a higher quality level, where sovereign agents (transnational corporations – TNCs) join, cooperate and simultaneously compete to fulfil a common purpose – international competitiveness. The purpose can also be described as long-term sustainable development, wherein building a permanent competitive advantage is sequential and signifies striving after system competitiveness based on coopetition and orchestration.

Chapter II

The structure of a global business network

The fundamental structure of a network system is based on three pillars: the agent-related pillar – the participating agents; the object-related pillar – their resources; and the relational pillar – the actions they undertake. The key features include:

- the diverse potential of participants and the resulting non-identical positions in a network;
- the heterogeneity of resources brought in, whose changeability and limited quantification make it difficult to maintain order within the structure;
- the complexity of bonds created, their interactive nature and historical foundation.

This chapter identifies the role of the most powerful transnational corporations (Top-TNCs) in global business networks. Two issues are especially stressed: the essence of the evolution of developmental concepts in corporations as well as most powerful corporations adopting specific functions of GBN orchestrators.

2.1. Transnational corporations – the evolution of the business model

Corporations are perceived as agents that competently adapt to changing conditions, also in the era of progressing globalisation and liberalisation of the global economy. By adapting their structures and principles of functioning to environmental circumstances, they reap benefits arising from both the differences in the arrangement of production factors (natural resources, capital, labour) and the specificity of policies of various countries.

Transnational corporations (TNCs) are agents that run globally organised production and service networks and control major economic areas through capital commitment. Their activities are equated with market globalisation and the shaping of global production systems, the restructuring of national economies and the increase in the interdependencies between them, i.e., the changes in the functioning of almost all zones of economic and social life. They are diverse subjects whose definitions and nomenclature change as their activities change. The actions and features of corporations evolve with the increase in the internationalisation process.

When formulating the first official definition of TNCs (1973), The United Nations noted that their main activity is the control over factories, mines, sales offices, and other similar facilities in two or more countries. On the other hand, the OECD pointed out (1976) that the attributes that distinguish TNCs include the specificity of their internal relations and the role of knowledge created by them. Corporations' decisive influence on other agents' activities, mostly through the transfer of knowledge or resources, was stressed as being contrary to the connections that stem from ownership. The power of Top-TNCs does not come from capital transfer alone but the diffusion of knowledge that follows it (technology, qualifications, methods of organisation, management and marketing) that are transferred outside the corporation's home country (1998).[1] A specific attribute of Top-TNCs is not just resource ownership but the ability to organise, integrate and efficiently coordinate the actions of various units when pursuing the established development strategy[2] to create value-added. "TNCs are networks within networks, structured through a myriad of complex relationships, transactions, exchanges and interactions within their own internal corporate network and between that network and those of the other key actors with whom TNCs must interact."[3] Top-TNCs transfer capital, brands with the quality they represent, qualifications, marketing strategies, and organisational strategies (tangible and intangible assets) across borders, which enables them to create global connections by transferring resources, skills, production capacities, as well as competences that stimulate economic development.

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1 M. Wilkins, *Multinational Corporations. An Historical Account*, [in:] *Transnational Corporations and the World Economy*, R. Kozul-Wright, R. Rowthorn (eds), Wider-McMillan Press-St. Martin's Press, London–New York 1998, pp. 6, 95.

2 The corporate strategy and business model are separate conceptual entities, nevertheless interrelated. The strategy emphasises the importance of long-term aims that the company should achieve. The business model emphasises the value category. It should be highlighted that the strategy is the implementation of the business model. M. Oliński, *Model biznesu sieci przedsiębiorstw. Budowa, identyfikacja, ocena*, Wydawnictwo Naukowe PWN, Warszawa 2019.

3 P. Dicken, *Global Shift. Internationalisation of Economic Activity*, The Guilford Press, New York–London 1992, p. 226; P. Dicken, *Global Shift: Mapping the Changing Contours of the World Economy*, The Guilford Press, New York–London 2011, pp. 109–168.

UNCTAD suggested a formula for the official definition of a transnational corporation that emphasises its organisational aspect. It describes a TNC as an enterprise, necessarily a limited company (a joint-stock company or another economic entity), which consists of a mother corporation (which controls at least 10% of stock shares or other types of shares of economic entities located outside of their home country) and affiliated foreign companies in the form of branch offices, subsidiaries and associate companies. Assuming that the basis for distinguishing the forms of affiliated units is the ability to avoid market distortions and lower transaction costs due to the efficiency of the internalisation of actions, three forms of affiliation can be enumerated:[4]

- companies based on the ownership of shares – with a full or majority capital share, usually exceeding 50% (wholly-owned or majority-owned company) or a smaller share, but which still makes it possible to make decisions regarding the organisation, administration or management (a strategic shareholder);
- companies based on a strategic capital partnership – with the share of the mother company amounting to 10–50% and including associate companies, mixed companies and joint ventures; the corporation's own capital and the scope of dispersion of the remaining shares signify adequate participation in managing the company;
- companies based on cooperation agreements and low capital commitment – branches, the mother corporation has less than 10% of stock shares, or it owns personal (movable) or immovable property in the host country for at least a year.

All affiliation types stem from the fulfilment of the strategic development concept through the corporation's foreign direct investments (location theory and strategic alliances) to build a chain of international production which would make it possible to generate global value-added (Dunning's theory of international production).[5] Significantly, it is not merely an issue of a temporary reduction in transaction costs, but an attempt to create knowledge and use it as a basis for a competitive advantage.[6]

It should be emphasised that it was the expansion of the TNCs and their development model that resulted in the change in perceiving (and defining) them. The aspect that accentuated ownership and the resulting control of properties was gradually abandoned and TNCs were more and more often

4 P.J. Buckley, M. Cassone, *The Future of Multinational Enterprise*, McMillan Press, London–Basingstoke 1976, p. 33.

5 J.H. Dunning, *Multinational Enterprises and the Global Economy*, Addison-Wesley, Wokingham 1993, p. 4; J.H. Dunning, *The Eclectic (OLI) Paradigm of International Production: Past, Present and Future*, "International Journal of the Economics of Business" 2001, vol. 8 (2), pp. 173–190.

6 B. Kogut, U. Zander, *Knowledge of the Firm and the Evolutionary Theory of Multinational Corporation*, "Journal of International Business Studies" 2003, vol. 34, pp. 516–529.

perceived from the angle of their involvement in foreign direct investments (FDIs), their principles of organising international production, trade and service activities, as well as their development of organisational structures. The successes of corporations were increasingly equated with the evolution of their business models in accordance with the changes in the global economy and with the ability to prepare an adequate and professionally-implemented strategy.

This development may be compared with phases of capitalism. Focusing on the aspect of ownership was the result of the crucial role of an owner (the phase of entrepreneurial capitalism). The emphasis on coordinating the structures and the role of managers (the era of managerial capitalism) was the effect of the professionalisation of management. Currently, in the era of investment capitalism, companies perceive all stakeholder groups as useful in the creation of value-added.[7] Knowledge is deeply set in networks and specific institutional determinants, and that is why corporations prefer to internalise transactions precisely by developing global business networks.

When defining the notion of a "transnational corporation" today (2020), it should be emphasised that it is the organisation that optimises the conditions for the creation of knowledge and that makes it possible to obtain maximum effects from using it, all of it thanks to the internalisation of knowledge transfers.[8] A TNC improves its efficiency by constantly multiplying its knowledge resources due to its internally cohesive structure, i.e., the result of the organisational culture adjusted to the institutional determinants of the management process.[9] However, the creation of global networks of knowledge transfer demands that corporations are able to integrate and coordinate the actions of diverse, geographically dispersed and organisationally heterogeneous units. As can be seen from Diagram 3, a corporation's attributes constitute a system that encompasses:

- global efficiency,
- geographical dispersion,
- arbitrage,
- complexity,
- specialisation,
- integration,
- knowledge,
- networks,
- flexibility,
- sovereignty.

7 M. Rosińska-Bukowska, *Rola*…, pp. 102–112, 258–270.

8 N. Nohria, S. Ghoshal, *The Differentiated Network. Organizing Multinational Corporations for Value Creation*, Jossey-Bass Publishers, San Francisco 1997, pp. 1–2.

9 A. Zorska, *Korporacje transnarodowe. Przemiany, oddziaływania, wyzwania*, Polskie Wydawnictwo Ekonomiczne, Warszawa 2007, pp. 122–125.

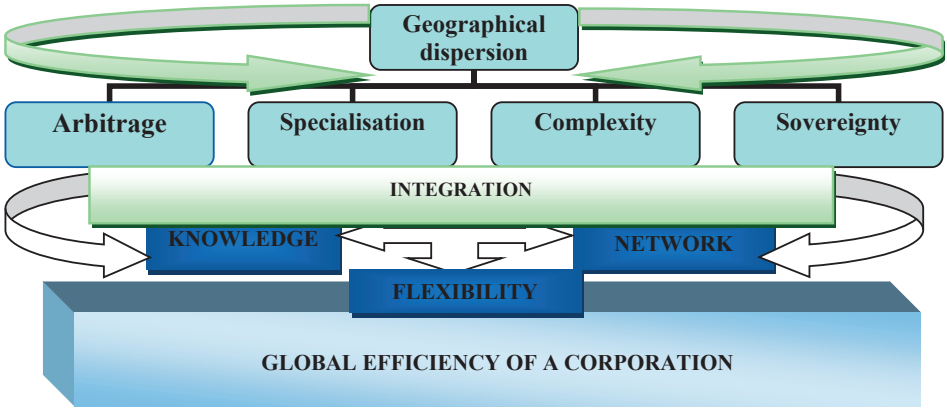

Diagram 3. The system of attributes of transnational corporations

Source: own elaboration.

Global efficiency involves striving for the optimisation of operations in a global system. It takes the form of research, production and trade tasks, and aims to lower the costs, increase value-added, innovativeness and flexibility of the corporation system as a whole. Temporary losses experienced by some units are permitted due to the systemic approach to profitability, which means that it is the adopted strategy that determines the behaviour of the components. To fulfil a higher purpose, i.e., increased global efficiency in the future, it is possible to temporarily finance some units from the organisation's general budget.

Geographical dispersion is the aspiration to arrange individual operations in the global space in order to find the maximum global efficiency. Individual functions and organisational units are located on various continents in numerous countries with the purpose of finding the best location to conducting business of a given type. Arbitrage involves the use of naturally occurring differences when performing specific processes and activities. It involves comparing not only economic conditions (prices, currency exchange rates, interest rates and tax rates) and procedural conditions (administrative and legislative), but also technological, geographical, cultural and sociological aspects. Arbitrage is based on avoiding market obstacles through the internalisation of numerous actions (conducting them within the system structures). The process itself is based on the AAA triangle: adaptation – local adjustments; aggregation – integration on a global scale; arbitrage – the selection of either standardisation or adaptation.[10]

Complexity is the conscious building of complex structures on every plane: ownership, technology, strategy, competition principles, management systems chains of value creation, production methods, organisation methods, spatial

10 P. Ghemawat, *Managing Differences. The Central Challenge of Global Strategy*, "Harvard Business Review" 2007, vol. 85, pp. 59–68.

relations, etc. Production, trade and investment activities are conducted not only as part of the property owned (various types of affiliation) but also in independent companies as part of mutual agreements (cooperative systems). Complexity is a derivative of the fragmentation of the chain of value creation into functions and smaller operations that differ in the specifics of their tasks and methods of conducting individual processes. It aims to make use of the opportunities offered by the global environment. Consequently, a corporation is a dynamic, living organism, a self-organising system.

Specialisation is the idea of operational perfection that necessitates individual units concentrating on improving their key competences. It means searching for opportunities to conduct individual activities and processes in the best possible way. Therefore, some activities can be delegated to outside units. The best units in their fields are tasked with completing specialist functions and operations (which are pushed towards them) for the whole corporation system. Those units are forced to focus on their competence area to accumulate experience. Specialisation perceived from the outside signifies the possibility to identify the core of the organisation's competences as a whole, i.e., to determine the sector or field that the agent represents, despite the frequently major diversification of its activities.

Integration is a feature that constitutes the system since, without it, units that are geographically dispersed, formally diverse and that specialise in specific processes (deeper and deeper fragmentation of functions and operations) are incapable of achieving global efficiency. The creation of an acceptable integrating mechanism, which ensures the combination and creative coordination of system members in various configurations, is necessary. This mechanism should ensure the intra-corporate transfers (of personnel, technologies, financial resources, products, intermediate products, information) and, above all, it should constitute a channel of knowledge diffusion that accelerates the learning process. The ability to integrate tasked activities as part of the so-called recombined value chain[11] is the condition for the exploration of opportunities provided by the evolving environment.

Knowledge (intra-organisational knowledge transfer) is another significant feature since, currently, knowledge is a determinant of competitive position. The strength of TNCs lies in their ability to accumulate knowledge from various sources, levels or cultures and generate new knowledge streams on this basis. Corporations are predestined to compete in an economy that exposes the roles of knowledge, since they have the financial capital to create elaborate systems of knowledge creation – their own research and development (R&D) base. They constantly expand their relations with the external and internal environments that are capable of constantly enriching existing resources.[12] The corporations create web-like channels, whose

11 J.C. Aurik, G.J. Jonk, R.E. Willen, *Rebuilding Corporate Genome. Unlocking the Real Value of Your Business*, J. Wiley&Sons, Hoboken 2003, pp. 46–52.

12 S.K. Leminen, A.-G. Nyström, M. Westerlund, J.M. Kortelainen, *The Effect of Network Structure on Radical Innovation in Living Labs*, "Journal of Business & Industrial Marketing" 2016, vol. 31 (6), pp. 743–757.

task is to disseminate information, norms, standards, experiences and observations. They also facilitate their transfer and speed up the implementation of specific innovations and improvements. TNCs made knowledge the instrument that controls resource allocation, the selection of business locations, the principles of building organisational structures. It results in the creation of network connections based on the transfer of knowledge. Networks are an optimal solution that enables the diffusion of knowledge inside a multi-level network simultaneously preventing its uncontrollable leakage in each system layer, as required.

The fundamental feature of agents who are active on the dynamically-changing global market is flexibility. It is not merely an ability, but, above all, the state of being ready to quickly and efficiently implement changes, both operational and strategic, facilitating the adaptation to the constantly changing market conditions. It involves forming new units, systems and connections (using various types of affiliation: branch offices, joint enterprises, alliances); transforming already existing structures; and reconfiguring the corporate system (mostly through mergers and acquisitions). It is the ability to isomorphically adapt to the conditions of international business. It involves positioning oneself skilfully in specific places due to the reorganisation of structures or fulfilling functions/operations in accordance with specific requirements of individual local markets. Flexibility is related to the systematic restructuring of product structures and geographical structures to improve the transparency of the management system. As a result, various units that coordinate on a global level appear; their task is to chart directions for development, establish model rules of behaviour in specific situations and then coordinate all the elements of the corporate system.

Sovereignty is the ability to make strategic decisions and make planned developmental moves, largely independent of the interests of individual national economies. The scale and dispersion of activities, and with an economic potential that is higher than in many countries, means that TNCs are able to pursue strategies that do not always coincide with the interests of the host countries or the mother countries (although in the case of the latter, the interests coincide more often). Running a business in multiple areas increases the risk that stems from the necessity to identify the rules in various economic, social, political and legal systems. When creating general standards that apply to all members of a business system, TNCs must, therefore, compromise to find solutions. However, the rising number of stakeholder groups that expand to form a network of correlations results in restricting the sovereignty of the decisions of Top-TNCs.

To sum up, the essence of the development of transnational corporations is their unique philosophy of expansion. Top-TNCs have all 10 of the enumerated features and draw strength from their synergistic use (the *Integration/Responsiveness* concept).[13] The dynamic development of TNCs and the changes occurring within

13 D.E. Westney, S. Zaheer, *The Multinational Enterprise as an Organisation*, [in:] *The Oxford Handbook of International Business*, A.M. Rugman, T.L. Brewer (eds), Oxford University Press, Oxford 2001, pp. 349–379.

are caused by the evolution of the global economic system – TNCs are a by-product of progressing liberalisation and globalisation.[14] Activating the mechanisms of the concentration of capital on the enterprise market – the effect of subsequent waves of globalisation – leads to the emergence of local and sector leaders, thus creating the orchestrators of GBNs. Consequently, the study of TNCs-orchestrators (in the post--millennium era) aims to develop a more comprehensive organisational theoretical understanding, including how they control their international operations across economic, institutional, cultural, linguistic, political and social divides.[15] This justifies the reference to the evolution of globalisation processes in the context of research regarding the development of global business networks and the position of transnational corporations in this structure.

2.2. The role of globalisation in shaping global business networks

The growing impact of transnational corporations on the global economy has been especially visible since the 1970s. It is related to the change in the nature of relationships between countries and corporations. Around that time, both groups began to increase their integrating actions, attempting to improve their positions by creating corporate systems. Thus, the phenomena that drive the globalisation process have accelerated the actions that aim to bring together all types of economic entities, i.e., corporateness.

Corporateness can be understood as the superiority of group actions over individual ones. It stems from the fact that the complexity of the global space requires the building of coalitions. Agents who are best prepared for new challenges gain an advantage. Therefore, transnational corporations improve their positions by building a strong enough coalition structure (global network). Coalition members are entities associated with both corporation ownership (companies of various sizes, usually within the industry) as well as associated long-term (strategically) and short-term (tactically and operationally) enterprises of various types of business units, and even non-profit entities. Consequently, corporations are not the only participants of the process. Only by building a coalition that consists of appropriately selected elements (a coopetitive network) can they become the driving force of the process.

14 R. Vernon, *In the Hurricane's Eyes: The Troubled Prospects of Multinational Enterprises*, Harvard University Press, Cambridge, Massachusetts 1998, p. 1.

15 Ch. Dörrenbächer, M. Geppert, *Multinational Corporations and Organisation Theory: Post Millennium Perspectives*, "Research in the Sociology of Organisations" 2017, vol. 49.

The most advanced stage of the development of globalisation processes is the current stage of corporate globalisation.[16] This phase is characterised by the creation of interactive, competitive and cooperative systems, wherein the position depends on the agent's competence and activeness (passive adaptation is out of the question). The components of coalition systems are legally and organisationally diverse entities, and they are largely autonomous, i.e., enterprises (including corporations), countries and even political and economic groupings, as well as various organisations, e.g., local, regional and international ones.

Table 1 presents the evolution of globalisation processes in the broader sense while taking into account their basic distinguishing features as challenges for corporations.

Table 1. The stages of globalisation as a path of classical enterprises' evolution to global business networks (GBNs)

Globalisation stage	Main streams of transfer	Strategic pressure Paradigm	Advantage model
Internationalisation	Trade Goods	Bilateral agreements Economies of scale	Comparative
Full-form internationalisation*	Investments Production factors	Stability of the industrial market share	Competitive – in a given segment
Globalisation in a broader sense	Knowledge transfer Transfer of capital	Development of global structures Participation in the global market	Oligopolistic – participation in the global market
Corporate globalisation	Intra-network streams (goods, services, capital, knowledge)	Development of GBNs: – OLI (ownership, location, internalisation); – CCC (control, competition, cooperation).	Coopetitive – sustained development, synergy, social value-added, regulation model, orchestration.

* Full-form internationalisation is internationalisation that covers not only trade in goods, but it includes all sensitive sectors, including agricultural products, and financial and non-financial services.

Source: own elaboration.

16 K. Marzęda, *Proces globalizacji korporacyjnej*, Oficyna Wydawnicza Branta, Bydgoszcz–Warszawa–Lublin 2007, pp. 9–10, 31–39. "Phase 4 – the one we are in today – started when production itself got broken up and shifted around to different nations. This is known as offshoring and it radically transformed world trade and manufacturing". R.E. Baldwin, *International Affairs: Globalisation*, https://www.futurelearn.com/courses/globalisation/0/steps/25790/2018 [accessed: 15.11.2019].

As globalisation moves through subsequent phases, both the market and the allocation mechanism are getting increasingly out of control. While the market refers to individual countries, the allocation mechanism applies to the global space, which means that the progressing processes of liberalisation and globalisation allow for the movement of production factors freely without restrictions in the space of the global economy. In addition, the development of transnational corporations and the systematically growing trade within their structures exclude a significant part of the global transfers of production factors (work, capital) from state control. These phenomena also concern globalization in a broader sense, but in the phase of corporate globalisation, they deepened, as the development is based on international flows of knowledge, multi-level networks of connections, and the use of modern technologies to increase the ability of entities to create added value to constantly evolving standards.[17]

Two parallel processes begin: the gradual balancing of prices of production factors on the global market and standardising the principles of acting within an economic zone at subsequent levels (bilateral, regional, subregional, global). Then, agents and locations that do not meet the requirements of competitiveness are eliminated. Entering the corporate globalisation phase means acknowledging that joining in the integration process (of both countries and enterprises) prevents elimination, especially since the transfer of developed models occurs much faster between cooperating agents. The market mechanism is the creator of structures.

Some researchers indicate that TNCs control globalisation for their own purposes.[18] This work operates under the assumption that the emerging systems are a response to objective challenges – the result of the evolution of the global economy. The emerging integrated organisms are the formulas of cooperation, forcing the abandonment of some portion of sovereignty (control) to improve competitive abilities. The current phase of globalisation is characterised by network connections as well as increasingly complex, deepening correlations between the increasingly numerous agents. The development of integrated systems stems from the fact that individual participants realise they can influence global interactions only in such a way. The correlations are, therefore, a result of strategic adjustments. It is a new developmental stage whose essence comprises

17 It is the process of the fourth industrial revolution – the complete digitisation of the social, political, and economic system in the age of Industry 4.0. There are some distinctive features of the current phase of globalisation. For the first time, international knowledge flows increase massively and are playing a major role in shaping the process of globalisation. Secondly, multilevel connections and modern technologies are changing our way of life and factors of development dramatically. X. Qinduo, *How to Make New Era Globalisation a Success*, https://news.cgtn.com/news/2019-06-28/How-to-make-new-era-globalisation-a-success.html [accessed: 10.11.2019].

18 J. Brecher, T. Costello, *Global Village or Global Pillage*, Cambridge, Massachusetts 1998, pp. 4–29; E.S. Herman, *Threat of Globalisation*, "New Politics Winter" 1999, vol. 7 (2), p. 40.

qualitative changes – the crystallisation of global business networks (in relation to enterprises) and integration groupings (in relation to countries).

Top-TNCs' acquisition of new layers of connections with various engagement levels, and the changes in their developmental strategies, should be treated as a process of adapting to changing market conditions. This stage signifies the acceptance of the idea of a regulation model, i.e., the voluntary restriction of one's own sovereignty in order to improve efficiency. Cooperation based on the mutual trust between participants is one of the strengths of GBNs. Partners within such a network connection often have a comparable negotiating position, although it may be based on different elements that constitute their specialisation. These connections are a deliberate choice, with only partial autonomy within a narrow area of their own advantages – key competences. In this sense, a GBN is a structure that is dominated in terms of area, which means that the best solutions developed by individual network elements (usually specific companies) that specialise in particular fields are considered a dominant standard within that structure. The standard is adopted by the remaining participants and is taken on faith and without verifying whether it is the best available (organisational, technological, sustainable development) model. Mutual trust between network participants speeds up the dissemination of this idea. This determines the competitive advantage of a GBN as a whole and thus, of each component on its level.

Enterprises that function within a network may be perceived from a static point of view as a collection of agents or, from a dynamic point of view, as a living organism that is more than the sum of its elements or a trigger for the synergy effect. In the first case, network resources are perceived only as a sum of material, financial and human elements (assets, sales, employment). It is a simplified view of networks, since the connections between agents prompt the development of resources and the multiplication of their values, because functioning in a network enables the members to specialise in areas advantageous for them and thus, improve and develop resources. Being in a network also makes it possible to divide the market into segments to ensure the complete fulfilment of global needs in a given zone. Additionally, internal competitive pressure stimulates innovativeness and the activities of individual R&D participants, thus prompting the creation of several times as many solutions as in classical enterprises.

Since competing in the modern world occurs on the level of value-added, it is necessary to emphasise the dynamic form of networks. The creation of value-added is an effect of the synergy of the network system.

The position within the network may be perceived at a bilateral level (micro-position) regarding the relationships between the agent and other network elements, as well as at a multi-lateral level (macro-position), pointing out a specific participant's significance in the whole business network structure. It should be mentioned that the macro-position in a network is not a sum of micro-positions. Rather, it is a systemic perspective, taking into account the effect of synergy, or

the harmony between identified, real advantages and other aspects of an agent's activities, e.g. innovation abilities.

Resource heterogeneity is a crucial asset of the network, since it makes it possible to create a wide range of offers (brands) for individual regional or even local markets. The task of a network as a regulation structure is to properly distribute resources in the global space while taking into account the interests of all members. The preservation of balance in a network system is possible due to the system of mobile competence centres.

A regional and product-oriented specialisation that is visible in the network is not a result of hegemonisation over a given area by a single member or group of members but stems from their position in the system knowledge structures (knowledge about a given field). Maintaining the position of a hegemon in a given sector requires constantly improving competences.

A network geared towards regulating the global space continuously expands its structures. As a consequence, it takes on the form of an immensely complex system of connections. Constant interactions occur between the points of these connections, which makes the network subject to modifications – it adapts to the requirements of the changing environment. However, it should be emphasised that the network's shape and basic principles of functioning largely reflect the historical and societal ground it sprouted from.

References to the history and organisational culture of agents who constitute pillars, i.e., those with the strongest positions in the network, are clearly visible. Usually, they are the ones to determine the type and method of network development or the methods of pursuing a competitive strategy. They also control the pace of new members' integration with the network. The process of inclusion in the network is most often gradual; reaching another level requires fulfilling certain conditions (not unlike the convergence criteria); therefore, the network is frequently perceived as a closed membership system. In reality, the network, as an organisational structure, is determined by the established strategic vision, which undoubtedly reflects the strategic parameters of its strongest members.

Agent connections in a network usually evolve from the least advanced forms of contractual relationships (supplier – recipient at market conditions) to full strategic integration, which is a result of internalisation. Between these forms, there are numerous indirect types of cooperation, e.g., joint venture agreements or build-own-operate-transfers. Organisational models made up of strategic business units are a much more advanced form. Such networks are decentralised and coordinative. The units, more or less independently, pursue individual business models on the basis of their own strategies that result from the product–market configuration. Individualisation concerns the specificity of the segment (product brand) or cultural and civilisation diversity of the market (local identity). Coordination by way of joint research and development activities is usually the binder. The model is a type of strategic alliance. As a result of strategic cooperation, participants' independence is restricted, and global

pressure of network innovativeness excludes the hegemonisation of the area (region, segment).

The most significant stage of integration is the execution of merger-type transactions or acquisitions that sealed the positive assessment of cooperation to date. The acquisition of the control stock of shares signifies the economic dominance over the company. However, the modern understanding of control does not necessarily require ownership changes, and definitely not in the majority ownership (50% + 1 stock share). The purchase of a significant block of shares (e.g. 20%) is usually sufficient to recognise the agent as a fully-fledged network member and the agent's brands as components of the GBN portfolio. The borderlines between types of connections made are therefore flexible, and the explicitness of classification is hindered by the fact that lower-level formal agreements (e.g. joint ventures) in reality build proper connections for more advanced forms of integration (mergers and acquisitions). The most important issue is, therefore, not to identify the connection type, but to assess a given connection in relation to the development of the GBN and its position in the global system.

By properly regulating the system, individual GBNs strive to obtain both the title of the sector leader and a major position in the global space. The result is the emergence of sector-oriented oligopolistic systems that are comprised not of monolithic enterprises, but network organisations. Oligopolists regulate or even strengthen the given business sector, since they observe and imitate each other's actions, which makes competition in the sector oversimplified. The global business network is, therefore, a specific regulation model – exemplification was attempted through the analysis of the development of GBN layers and using the classical step-by-step integration model.

2.3. A business integration model – the target structure of a global business network

To improve their competitive position, transnational corporations attempt to create various connection systems that constitute planes of advanced cooperation. Initial integration usually makes for loose relationships, focused only on an agent's particular zone of activity. After the successes of specialised cooperation in a limited area, agents are frequently interested in strengthening the connection. The integration process is similar regardless of the type of agents and is usually conducted in stages.

This work refers to Balassa's model of economic integration and uses the described mechanism and terminology on a new research ground based on the model. The development of the network-type cooperation has been presented as a sequence

of increasingly advanced ways to bind network members together and cement their connections. The proposed model of business integration is an attempt to show the stages of enterprise internationalisation as a path to the level of global business networks with the use of an acknowledged model of the economic integration of states.

The behaviours of economic entities have been assigned to the subsequent stages of the integration process.[19] The lowest stage of business integration is the Marshallian industrial district – an equivalent of a preferential trade area or a free trade area. Porter's business cluster is an equivalent of a customs union. Other, more advanced forms of clusters should be treated as the beginnings of the single market; however, they do not usually fulfil all the principles of the single internal market since they carry out only some forms of freedoms.

The network, as a stage of business integration, is located higher, since the scope and range of operations performed together or in agreement, usually encompass all the zones – the model of a full single market. Some types of network may take on more advanced forms, e.g., building networks around one shared brand. In the described business integration model, it has been juxtaposed with the realisation of the concept of a currency union. The highest stage of this integration sequence is the global business network – a regulation mechanism with features of the economic currency union and elements of the political union. Table 2 presents the activities of enterprises that can be considered equivalents to all phases of the economic integration of states in the sense that they convey the essence of strengthening bonds between the participants.

Table 2. Model of business integration – the stages of development of GBNs

Template model	Model of business integration – integration of enterprises
Free trade area	Cooperation agreements – diverse offer; agreements in the production chain (phasic specialisation); low strength of individual agents prompts agglomeration (districts); regional expansion – small psychological distance; no visible leader.
Customs union	Permanent cooperation and single policy involving third parties; joint venture on markets that are close both culturally and geographically; the idea of a cluster – a geographical assembly of specialised agents; the utilisation of local conditions – endogenous features of a region – industrial atmosphere.
Single market	Single internal policy: classes of products, market segments; departments – consolidation of activity zones and intensification of connections – production, distribution, technology, capital and human resources; system of 4 types of branches (4 freedoms) – trade and services, production, technology, strategy.

19 More on this topic: M. Rosińska-Bukowska, *Rozwój*…, pp. 179–186.

Economic union	Global network coordination – strategic alliances, intensification of M&As; centres of network competence – competence leadership allotted on a rotating basis.
Currency union	Positioning products within a network – brand portfolio; the possibility of a common brand ("currency") or the umbrella of a common brand; single "exchange-rate" policy.
Political union	Global business networks – oligopolies with established areas of key competencies and global regulation structures; networks of externally independent agents; coopetition; competence leadership; orchestration model; strategically-oriented chain of value-added; social responsibility.

Source: own elaboration.

The business integration model emphasises the transition from the indirect management model of dependent TNC elements to the creative orchestration model of a multi-level GBN system. The concept aims to automatically transfer patterns of behaviours that are relevant to a given level (free trade zone, customs union, single market, economic union, monetary union, political union) to entities operating in the business sphere using ideas that characterise a given behaviour pattern. Thanks to this, the participants' behaviours are more transparent because they are in line with expectations of a level of connection between them. Consequently, it is easier to predict integrated enterprises' next steps.

Business integration begins with regional entities getting closer, so, in the case of business processes, it refers to companies in the same business sector and the same region. Smaller entities decide to cooperate to improve their competitive position (the benefits of Marshall's agglomeration) as a result of agglomeration. Initially, there are cooperation agreements regarding a given group of agents (usually positioned along the production chain), which ensures they provide each other with preferential treatment; however, this does not exclude making individual decisions about shaping relations with others outside the system. The mechanism and the logic of thinking are the same as the model of a free trade area. As the integration processes develop, the bonds tighten, which is visible from the outside through the creation of common rules for treating external agents and standardising structures.

The consolidation of minor agents results in the emergence of enterprises that are capable of not only expanding into the international market but, above all, being identified on this market as an integrated system. In other words, they are seen as the equivalents of customs unions. By increasing their share in the local, sector-specific market, they can obtain the positions of national monopolists or oligopolists. In larger countries, it signifies the presence of business industry cartelisation, i.e., several large players having almost complete market coverage.

Agents with strong positions on their own markets are capable of taking the opportunities presented by the environment. An externally favourable situation, e.g., the liberalisation of economic transfers, motivates them to internationalise their business. Initially, it involves the export of network products into geographically and culturally close markets, due to the similarities in customers' expectations. However,

the effects brought on by a free trade area or a customs union, and based solely on trade development, are gradually depleted.

Strengthening cooperation requires interactions with the destinations of expansion in order to create common business principles and improve the coherence of the development concept. It is the preparatory stage for entering a higher level of integration processes. In the case of countries, the role of bridges is fulfilled by signed agreements regarding the directions of the expansion of exchange areas, such as agreements on the transfer of specialists or the fulfilment of joint projects (e.g., educational or cultural ones).

In the case of enterprises, this role is fulfilled by joint ventures. They motivate new, local partners. Joint venture agreements usually concern particular phases of the chain of the creating value-added, including services, e.g. distributions, promotions (vertical nature). They can also be the beginnings of consolidation agreements within a business sector (new market segment or diversification of the product portfolio). The range of joint ventures indicates potential specialisation areas for a given partner, accessible by entering the integrated network structures – during the single market stage.

As cooperation progresses, the agreements begin to encompass a wide range of regulations, including goods (production, assembly), services (trade and trade-related services), capital (financing joint ventures) and labour force (the transfer of specialists and the creation of common educational and research platforms). In the integration of countries, a single internal market emerges. It is similar in the case of enterprises that already own four types of units: trade, production, technological and strategic.

Trade branches are the least developed form of integration with the local market. Their task (as representative branches of the company) is to shape the company's image and build partnerships in order to increase the sales of products delivered from the outside. Production branches include assembly plants, which are facilities that produce specific elements and units that produce complete products from the beginning. They can produce to fulfil the needs of the whole system or specialise in handling a given area (region or part of a production process). New solutions are created in technological branches. They may be responsible for identifying the specificities of the region, i.e., its local character or the consolidation of impulses in the whole network into a complete project with network-wide significance (universal nature).

Strategic branches conduct all four types of activities simultaneously (production, trade, R&D activities, financing), aiming to pursue a competitive strategy that would enable the network to obtain global efficiency while taking into account local specificities – the equivalent of an economic union. Firstly, the areas of crucial significance to the integrating agents are determined and, later, coordination cells, which ensure that the system elements work well together, are established. The leading agents with the highest potential usually become orchestrators of the process and have a say in the location of the decision-making centres. They are the centres that set standards, schedules and methods of implementing the strategy of building

an economic union. The selection of an orchestrator is a natural consequence of an agent's macro-position.

Zones in which a certain group of elements within the organisation display an above-average coincidence of aims might emerge throughout the integration process. In the case of countries, the adoption of a single currency may serve as an example. In business networks, it may be the inclusion of formerly independent elements under the umbrella of a single brand. In both cases, it is important to first and foremost fulfil all the convergence criteria and then understand the essence of the common brand ("single currency") and take care of this common asset. It requires being subject to the rules of pursuing a single (strategic or economic) policy. Enterprises united under a single brand must be aware of their responsibility to maintain its value, i.e., the obligation to meet the quality standards.

However, a currency union does not necessarily signify the introduction of a single currency; it could merely fix the exchange rates in the member countries. For enterprises, correctly interpreting this integration level means that brands that belong to individual members of a business network are arranged in relation to each other: a brand portfolio divided into serviced segments is established. The potential of individual segments will, in turn, determine the positions of agents who are responsible for the brands in the network's organisational structure.

As a result of the ongoing integration process, organisms emerge that become capable of influencing the determinants of the functioning of other agents. Oligopolisation of the global space is the effect of the consolidation of minor agents around regional and sector leaders. The highest level of integration involves building relations within this oligopolistic space. Due to the strength and extent of the parties involved, cooperation at this level requires an understanding of the idea of cooperation, since countries are represented by the integration groupings behind them, while corporations take on the roles of orchestrators of global business networks.

In some cases, it requires abandoning the leader's particular interests for the long-term coherence and sustained development of the whole system – a strategically-oriented chain to create value-added. It means moving decisions about the political strategy to the level of supranational institutions. A unique quality of activeness at this level is the pursuit of competitive strategy while taking into account the idea of social responsibility. It includes favouring the pro-ecological concepts that accentuate the respect for human rights, safety issues and the principles of social coexistence (considering the interests of all stakeholders). This stage is based on the creation of an efficient system for sharing knowledge, power and responsibility as part of an organisation's pro-developmental changes that help it meet the requirements of its dynamic environment.

Taking the opportunities provided by the global business space results in the thickening network of possible organisational connections. It is also a response to the requirements of corporate globalisation. Network connections are supranational and extend between the leading members of the global economy. Another significant

issue is the new type of relations between competitors, which refers to strengthening the cooperation between regional and sector leaders.

Undoubtedly, each of these agents would wish to become a hegemon. Yet, the strength of the competition makes them reconsider and choose smart cooperation, enabling them to remain part of the group of world leaders and participate in dictating conditions, although together and in cooperation with other key players. Agreements do not exclude competition, but the rivalry moves to another level. The agents focus on ensuring the development of their influence zones by increasing their own competence, i.e., their competitive abilities.

By attempting to meet newer and newer challenges, transnational corporations redefine their strategies. The path of changes taken by TNCs is similar to the concept of state integration. By implementing subsequent stages of the business integration process, Top-TNCs become orchestrators of GBNs. Their strategies are based on coherence, coopetition and orchestration, or the understanding of the essence of the regulation model and sustainable development which takes into account diverse system stakeholders. Diagram 4 presents the concept of the creation of a GBN, by emphasising the evolution of the idea of capitalism and the combination of various types of network structures and models throughout the business integration process.

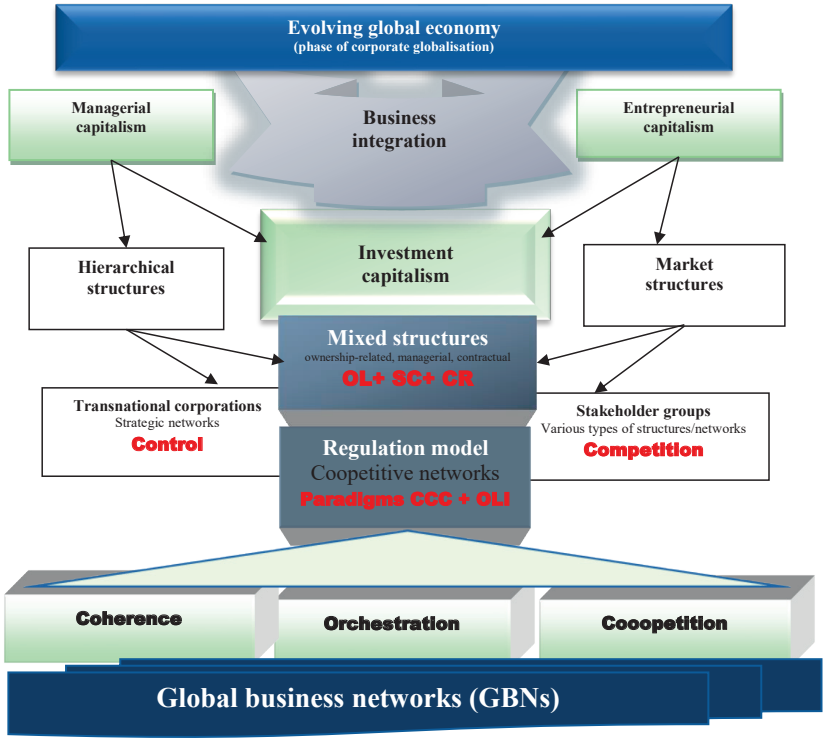

Diagram 4. The idea of the creation of a global business network

Source: own elaboration.

In conclusion, a global business network emerges as a result of pursuing a strategy of building and reinforcing international competitiveness in the conditions of corporate globalisation. The analysis shows that this process can be compared with the stages of creating integration groupings. As a result, a GBN is a model of market regulation – it is the final stage of sequential business integration. Achieving this advanced level of integration processes requires an understanding of system competitiveness and a shift from the direct model of dependent structure management to a qualitatively new model of creative system orchestration. A TNC-orchestrator plays a crucial role in this process.

2.4. Attributes of the orchestrators of global business networks

A full understanding of the concept of a global business network requires clarification of the leader's role and the function of a GBN orchestrator. The leader also acts as a conductor and coordinator since he or she is responsible for balancing market proportions and hierarchies in the system. The notions of "orchestra" and "conductor" were first mentioned by Drucker, who used them to describe the change of leadership type in modern organisations. The meaning ascribed to them in this work refers to the notion of a "process orchestrator", which is a wider interpretation introduced by Hagel and Brown.[20] A GBN orchestrator is an agent and simultaneously a leader-regulator, a coordinator--manager and a conductor-administrator.

Leadership requires major ownership of resource potential and basic skills. Orchestrator must be the leaders of their knowledge area, command respect due to their level of professionalism and be capable of building their position through openness, cooperation and strength of character. The position of leader demands constant self-improvement in order to increase basic standards. Ensuring the maximisation of GBN efficiency demands that the leader adopt a conciliatory attitude and accept the idea of a wandering leadership, since a network usually has several leaders of processes/brands, on other words, competence centres. Any attempt at introducing a hierarchy might bring resistance or opportunist behaviours and lead to a drop in the organisation's coherence. An orchestrator fulfils the role of a leader-regulator (in accordance with regulation theory) and determines the direction of the network's development. An orchestrator must have a vision of this development that would attract others; thus, an orchestrator is a promoter.

20 An almost similar interpretation was introduced by V.K. Fung, W.K. Fung, Y. Wind Jr., *Konkurowanie*…, pp. 40–42.

The orchestrator's role also involves continuous coordination, which involving reconfigurations and creating particular connections within a network's structure throughout its ongoing expansions (coordinator-manager). Yet another task is monitoring how the organisation follows its strategy, taking into account the diversity of stakeholders at all levels in the global system. Efficiently coordinating complex hybrid structures demands that the orchestrator skilfully use various communication tools and administration methods as well as adapt them to particular types of relations, the model of the agent's organisational culture, and the significance of an element in a GBN system.

An orchestrator in the role of a conductor-administrator must know when and how to react as well as what means to apply to release the energy of individual participants to obtain a desired final effect in given conditions. The orchestrator function is, therefore, a major challenge in controlling a global network. It involves balancing but not destroying diversities and pointing out common values and mechanisms that are effective in developing useful practices that facilitate the creation of value-added in a system.

An orchestrator is a GBN's binding element whose power is legitimised through:

- knowledge (leader-regulator),
- competence (coordinator-manager),
- authority (conductor-administrator).

Knowledge is the result of the accumulated potential of global resources, familiarity with their mutual connections and, consequently, basic adaptation capabilities.

Competence encompasses the creation of groups of professional skills and market behaviours that are suitable for them, depending on the observed changes. It enables the selection of key specialisation areas and taking the appropriate place in the global space (a given position in a specific business sector).

Competence largely results from the stability of the market position, but it is based on respect for the organisation's attitude to challenges that appear. Adding subsequent elements to a specific GBN means creating a world-class orchestra known for its virtuosity in a specific area, yet capable of playing almost anything. However, the conductor must also be a virtuoso, with intuition regarding the audience's (market) demand, which enables the selection of a successful scenario to adapt to new developmental trends.

A GBN orchestrator is a binding agent for the structure and yet not a dominant one. The GBN's existence must be based on a common strategic purpose and not hierarchy and control. Domination may only extend over a given participant's competence area (i.e., scope of specialisation within the network). It means that a network has a core (an agent/group) which stands out against other network elements due to its innovativeness, creativity, dynamism and charisma. The core, somewhat naturally, leads the changes in a network. It is a model – a competence centre for individual types of activities. It includes an orchestrator, who is a leader-regulator, a coordinator-manager, and a conductor-administrator, but not

an overseer-autocrat. Additionally, the core also includes agents so closely bound to the orchestrator (historically, through ownership, etc.) that they are perceived as components (who perform certain activities, fulfil certain functions, or service specific market areas).

Each subsequent layer is made up of agents with looser and looser binds to the core – strategic, cooperational connections. The aspirations of even the most powerful corporation to gain full control over the participants of a system constructed in this way and as complex as a GBN have destructive results. Too rigid a hierarchy causes resistance, opportunism and, consequently, decreased ability to create value-added. That is because it restricts the system's capability for the unhindered transfer and enrichment of the knowledge that is circulating. As a result, the network loses its dynamics and becomes stagnant.

A TNC-orchestrator is a competence core (leader), who coordinates the activities of a system that consists of largely autonomous components. The core does not strive to fully integrate them, in the sense of merging them under its leadership. It is responsible for the configurations of elements, depending on market conditions and the room in the global space – like a conductor, selecting instruments depending on the piece of music.

It should be emphasised that a possible repertoire of market actions to be performed depends on the composition of the network (orchestra). Therefore, the orchestrator must also include new elements in the network to improve its global efficiency (coordinator). The form of development may vary, from purchasing shares, acquisitions through share exchanges, or joint ventures to other, informal cooperation agreements.

By giving up the dominant position, the orchestrator provides the GBN with a higher level of organisational maturity. The components are highly autonomous, and their every action brings changes to the network (the butterfly effect). A business network around the orchestrator is a regulation model (and not a typical organisational structure) and it pursues the ideas of congruence with the environment, by balancing hierarchy and market. A stable position in the global oligopoly of a given business sector and a transparent model of structures are manifestations of organisational maturity. Fulfilling the first condition requires the completion of subsequent stages of business integration.

The effect of this integration is the accumulation of a multi-layer capital responsible for long-term competitiveness. The capital that enables an agent to become an orchestrator does not merely constitute economic potential, but systematically multiplied assets, increased sales value, and, above all, properly structured resources of intellectual capital – global structures, the connection system, and a strong brand/brand portfolio. The capital is accumulated over a long time as a result of a sequence of events (mergers, acquisitions, joint ventures, other cooperation agreements), which can be considered a consistently pursued strategy, as a result of which, TNC-orchestrators develop their connection networks. Therefore, TNC orchestrators become Top-TNCs,

most efficiently fulfilling the strategy of building competitiveness based on the network connection system.

To efficiently perform the tasks of an orchestrator, agents should reinforce their position within the sector at the global level by completing the subsequent stages of business integration. An orchestrator's job is to build a strong strategic network based on mergers and acquisitions of lesser agents, while being open to conducting various other agreements that prove the network's development potential. An orchestrator is required to actively participate in developing coordinated networks and develop the conciliatory abilities needed to create a thick net of branch offices of all four types on a global market.

The orchestrator must be ready to abandon the hierarchical model for coopetition and restructure the management to fulfil the principles of getting participants involved in the GBN structure. The principles refer to qualitative intra-network changes. These changes show themselves externally through the organisation of key product and geographical areas in order to improve system transparency. Flattening the structures makes it possible to bring the furthest layers closer to the core. This is how the layered internal market of a GBN is built. An orchestrator introduces network members to the purpose of cooperation and the rules of conduct that serve to maintain system efficiency, balance and a steady pace of improvement in a dynamic environment.

The creation of GBNs requires initiation or the appearance of an agent interested in carrying out the changes. Orchestrators are agents (usually a TNC) who attempt to pull their home area (sector) in a given direction through individual, often risky decisions. Successful ideas may result in the construction of their own strategic networks, since other members of the business sector concentrate around the orchestrator. From the global perspective, the polarisation of all the sector's activities occurs at several points. Due to the specificity of their activities, these centres function autonomously in their areas. Changes to their environment – the progress of globalisation and liberalisation processes – cause them to coordinate more and more functions and agree on matters of global significance. Thus, coordinated networks appear, signifying the beginning of cooperation within the oligopolies of a given business sector. Competition between the leading centres contributes to their development of network structures in the global space. This results in gradual transformations of coordinated networks into coopetitive ones, involving conscious cooperation between direct competitors.

The stage of business integration that opens the path to creating a GBN is the moment a TNC-orchestrator changes its organisational system. Replacing classical corporation management with a coordinating and controlling centre, establishing competence centres that are responsible for individual zones of network activity, and delegating most decision-making powers to them, is an expression of organisational maturity.

Such a model facilitates efficient actions, leaving the orchestrator to focus on strategic matters. Those include collecting a brand portfolio or reinforcing a strong

brand by expanding it and strengthening the intra-sector connections. In both cases, the purpose is to weave the network web around the whole global market and, additionally, establish cooperative relations with partners of similar potential, including competitors (egalitarian mergers and acquisitions).

The creation of a business network at this stage includes taking on the challenge of coopetition, or the combination of both cooperation and competition. Agents who are active in a coopetitive network pursue their own interests, but through methods of adding value instead of hindering opponents. Coopetition is usually strategic, since it relies on mutual trust between partners, based on their long-standing relationships. Competitors observe each other's actions for years; therefore, they can quite easily establish a partnership based on a rational assessment of possible effects of strategic synergy. Thus, integrated subjects feel more confident, since they follow and determine the directions of changes as well as solve global problems together.

The fact is that a GBN orchestrator is an agent (usually a TNC) with leadership predispositions, which, by implementing a strategy of building competitiveness for many years, has achieved the highest stage of business integration. Reaching this level results in achieving a sense of strength that results in openness, which is understood as the ability of coopetition and a pro-social attitude.

An orchestrator is responsible for pursuing a strategy that improves the competitiveness of a GBN as a whole and finding possible sources of competitive advantages for its members on the basis of the chief assets of network participation. An orchestrator puts pressure on finding sources of the so-called soft value-added, i.e., the constant adding of something exclusive to the global standard.

This results in the development of the social and economic orientation[21] expressed through competing for value-added; in other words, building qualities that expose ethics, ecological orientation, and social responsibility on top of the standard. Raising the standard all the time is the result of implementing continuous improvements in one's competence/responsibility areas. Competence centres, afraid of losing their prestigious positions in the network, constantly invest in their development, thus building their own image as the leader of a given process.

The essence of a GBN is the continuous sharing of knowledge, i.e., planting one's input in the network and obtaining a refined package of other solutions, often of a higher standard, from the perspective of the general market. This method of functioning enables the GBN members to build their competitive advantages through the use of the system's collective knowledge – the organisation's condensed knowledge capital. Based on this knowledge, they create their own value-added.

21 Companies should bring business and society back together. They should redefine their purpose as creating "shared value" – generating economic value in a way that also produces value for society by addressing its challenges. Firms can do this in three ways: by reconceiving products and markets, redefining productivity in the value chain, and building supportive industry business networks. M.E. Porter, M.R. Kramer, *The Big Idea: Creating Shared Value*, "Harvard Business Review" 2011, vol. 89 (1), pp. 2–17.

The participants of individual GBNs have the comfort of being backed by the strength of the whole organisation (network quality certificate)[22] and may focus on their unique qualities that determine their place within the system. Orchestrators have a stable position in the sector and are therefore able to take up newer and newer challenges, including ones regarding the development of relations at other levels. It is natural for the network core to become covered with external agents. Potential contenders for cooperation are continuously tested and only the best can, with time, become fully-fledged network members. That is how TNC-orchestrator creates the strategically-oriented chain of value-added creation.

The orchestrator's role is to stimulate the development of a GBN and maintain its position in the global system, despite the dynamic changes. It requires the TNC-orchestrator collecting, coordinating and integrating network resources through his economic strength and charisma. The base requirements, i.e., the pillars of a crystallised, mature structure, are the following parameters: the accumulated economic capital (assets, sales, profit); the organised market potential (speciality areas, brand portfolio); and the defined development model (human resources, value-added). The key mechanism of expansion is the GBN's creativeness and innovativeness, which is based on the synergic cooperation of its members, who constitute the layers of the organisation's capital on all its levels.

22 R. Srinivan, G.L. Lilien, A. Rangaswamy, *First in, First out? The Effects of Network Externalities on Pioneer Survival*, "Journal of Marketing" 2004, vol. 68, pp. 41–58.

Chapter III

Stratification of the capital of network organisations

This chapter analyses the layers of a modern enterprise's capital that make up an organisation's knowledge capital. Aside from capital in the conventional sense (economic), it also comprises (intellectual) capital as development potential. The role of the global investment expansion has been emphasised in order to create innovative solutions, skillfully manage globally dispersed structures and qualities, obtain the ability of arbitrage in a multi-institutional environment. In this work, we treat as the starting point for further reflections the definition of an organisation's capital, which is perceived as the collection of all resource categories, or everything of value, since it is important to growth and development.[1] It has been assumed that in the case of network organisations, there are five capital layers – all interconnected and stimulating each other's growth: market capital, financial capital, innovation capital, organisational capital and institutional capital.

3.1. The systemic nature of an organisation's layers of capital

Capital is an economic category that has the ability to increase and is based on the collected resources that serve not only to fulfil purposes as they arise but also develop a given agent's business.[2] An immanent feature of capital perceived in this way is its systemic nature, which means that the layers of capital are a system

1 I. Fisher, *The Nature of Capital and Income*, Macmillan, New York 1906, p. 52.

2 P.L. Bernstein, *Capital Ideas Evolving*, John Wiley & Sons, Inc., Hoboken, New Jersey 2007, p. 23.

of connected vessels, together responsible for the increase in the whole system's prosperity and, consequently, its stable and long-term development.

In order to analyse the capital of network organisations, the following five basic subsystems of capital layer organisation have been isolated:

- market capital (MARC) – the coordination of the allocation of rare resources during the production and sale of goods and services; it reflects possible combinations of their most efficient use in a given moment; in other words, everything that determines the quality of a corporation's global production systems;
- financial capital (FINC) – streams of the flow of financial capital; responsible for maintaining the agent's financial liquidity (both current and long-term);
- innovation capital (INNC) – the source of modern solutions and innovative techniques in the organisation of the production process; the analysis of the expenditure for research and development and the number of new projects generated; providing the possibility to improve individual offers (products and operations), especially regarding key competences;
- organisational capital (ORGC) – systematic modifications of the global chain of the creation of value-added, due to the creation of paths of structural adjustments; making use of the opportunities provided by the international environment; exchange of work resources (quantitative perspective) into human capital that generates value-added (qualitative perspective);
- institutional capital (INSC) – includes norms, habits, and institutions that determine the value systems of a given civilisation circle, country, region, society, etc.; responsible for skilfully meeting the requirements of the multi-institutional, global environment and the ability to creatively utilise its potential (Creating Shared Value – CSV[3]).

Table 3 enumerates possible measures of assessment and elements that constitute cores of each of the five layers that make up a given organisation's capital.

3 Creating Shared Value (CSV) – the model for corporate social responsibility developed by Porter and Kramer. The concept is based on the proposition that businesses can create the most value by working where investments in long-term competitiveness simultaneously address social and environmental objectives. M.E. Porter, *The New Competitive Advantage: Creating Shared Value* (presentation pdf March 19th, 2019), see: www.isc.hbs.edu and www.fsg.org. Authentic social responsibility means business seeing itself as a socio political actor. M. Pinkhasov, R. Joshi Nair, *Creating a Culture of Shared Value Through Luxury Branding*, [in:] *Sustainable Management of Luxury*, M.A. Gardetti (ed.), Springer, Singapore 2017, pp. 61–80.

Table 3. Layers of an organisation's capital

Layer	Subject of research	Measures and methods of assessment	Concept of the assessment of a given category	
1	2	3	4	5
Market capital	**Market activity**: assets, sales, employment, profits	Analysis of resource potential against direct opponents (by sector): – assets value (A); – employment (E); – sales value (S); – profit (P); sales growth (SG); – growth of total assets (AG); – employment growth (EG); – net profit growth (NPG).	**Market resources** – return on assets (ROA); – return on sales (ROS); – employee performance (EE). **Market efficiency** – return on equity (ROE).	Accumulated Economic Capital (AEC)
Financial capital	**Financial flows**: accounting equation; long-term and current financial status	Index analysis: – share price growth (SPG); – earnings per share (EPS); – market value (MV); – weighted average cost of capital (WACC); – discounted cash flow (DCF); – free cash flow (FCF); – cash flow per share of company (CFPS); – cash flow return on investment (CFROI); – return on equity (ROE).	**Financial potential** – long-term volume and dynamics of profits; – profit per stock share of a given TNC against alternative options in terms of capital investment (comparing EPS on a given market). **Financial efficiency** – the relation between profit and return on equity (P/ROE).	
Innovation capital	**Potential for innovation**: research and development foundation	Analysis of technological potential: – model of an R&D system against the sector; – the number of R&D centres; their arrangement in the global system; – expenditures for R&D in relation to the sales revenue; expenditures for R&D in relation to all expenses; – number of patents (position in a sector); – number of patents and patent applications; – the scale of employment in the R&D department, number of scientists employed – types of education.	**Innovation** – R&D investments: profitability of R&D expenditures; relationship between asset productivity (S/A) and the dynamics of expenditures for R&D; expenditures for the R&D zone per employee; – position in innovation rankings (most innovative companies – MIC). **Creativity** – potential of human capital: volume (against the sector), education, submissions of innovations;	Intellectual Capital (IC)

1	2	3	4	5
Innovation capital			– intellectual capital: components, role in a system; – the creation of standards: position in a sector.	**Intellectual Capital (IC)**
Organisational capital	**Management system**: target market, segmentation and offer portfolio; competitive potential – key competences; organisational and technological changes	Analysis of structures and management methods: – evolution of the organisation and management model; transnationality index (TNI); geographical spread index (GSI); – mergers and acquisitions (M&As): transaction number, value, dynamics and types (vertical, horizontal, conglomerate); – joint venture: the number and specificity of contracts signed, relation structures; – models of brand strategy: brand concept, brand positioning, brand architecture.	**Organisation structure** – global layout of an agent's activeness (geographical divisions); – organisation of the structure of a production and service system (product divisions). **Brand strategy** – brand portfolio; – sum of the value of brands in the agent's portfolio – brand value (BV); – part of brand value in market value (BV/MV).	
Institutional capital	**Development model**: mission; stakeholders; pillars of strategy; sustained development; long-term competitive position	Analysis of the development model: – the quality of the exploration of corporate assets: employees, financial capital, structures; – adaptability to regulations and institutions: legal standards, habits, organisational culture, business ethics; – assessment of the development model against the sector; – structure of the system's stakeholders: rules for the implementation of sustained development model; – reputation through the eyes of stakeholders: brand quality (BQ) according to clients, employment quality (EQ) according to employees, cooperation quality (CQ) according to co-operators;	**Networks** – connections between units that participate in a network: perception of a network as a brand vs total market value of the business system (against the means in a sector). **Full-form internationalisation** – network activeness (outside the orchestrator's home country): percentage of the assets, sales, employment of network members abroad against the sector.	

1	2	3	4	5
Institutional capital		– principles of building relations within the network: layers of capital, structure, quality of relations; – internalisation of market operations: principles, assessment of the benefits of agglomeration; – position in a sector oligopoly: the Herfindahl-Hirschman Index (HHI) as an indicator of business sector concentration.	**Oligopolisation** – the network's ability to impose models, arising due to the network's participation in sector sales (with the use of the HHI). **Strategy** – pillars of strategy as a reflection of the quality of the development model adapted to meet the challenges of sustained development; – Creating Shared Value (CSV): based on the pursuit of obtaining the most value by using investments in long--term competitiveness simultaneously address social and environmental objectives.	Intellectual Capital (IC)

Source: own elaboration.

This classification of capital subsystems aims to emphasise the necessity to adopt a systemic approach to the analysis of an organisation's development determinants. It is crucial to value the impact of economic and non-economic layers of its capital and understand the permanence of the relations between them. Economic capital makes it possible to create value-added thanks to the dynamics of intellectual capital, which utilises the structure of relations in a system and congruence with the environment.

The systemic nature of an organisation's capital indicates that the factors that are essential for multiplying it include not only the production and financial subsystems (static perspective), but also, equally, innovation, organisation and institutional subsystems (dynamic perspective). In the era of the knowledge-based economy, multiplying economic capital (accumulated economic capital – AEC) is possible only thanks to the development of intellectual capital which is based on innovation, creativeness, networks, full-form internationalisation and striving for the creation of value-added while taking into account the principles of sustained development, social responsibility, as well as building economic and social value.

The foundations of these requirements appear much stronger in network-type organisations since networks have not only a developed research and development base and global organisational system (high internationalisation index), but also

the opportunities to properly prepare for the challenges of the international institutional environment (glocality, diverse brand portfolio, pursuing local strategies adopted to fit the diverse requirements of stakeholder groups, etc.).

The unique resources owned by network links are created, divided, transferred, adapted and changed in the network during various interactions to fit its needs in order to increase competitiveness. GBNs owe their economic position mostly to the appreciation of the role of all layers of intellectual capital and the systemic nature of the total capital of the system created. That is how a unique reserve of global business networks – an organisation's knowledge capital – was established.

It is based on the synergy effect, which is achieved through a combination of the ability to create new technological and organisational solutions, the exploration of human capital (to release the whole intellectual capital of the system), reinforcing and expanding the brand portfolio (to oligopolise a given sector), and the creation of institutions that avoid the market mechanism (a creative combination of externalisation and internalisation, globalisation and localness, competition and cooperation).

3.2. An organisation's knowledge capital – intellectual capital vs human capital

The purpose of this subchapter is to show that resources constitute solely competitive potential, which requires constant improvements and adaptations to the changes in the environment. In this knowledge-based economy, "firms' productivity and competitive advantage are no longer based on physical and financial assets but intangible assets. This has compelled knowledge-intensive firms to look for a more reliable source for higher productivity and competitive advantage by focusing on their intellectual capital, which cannot be easily imitated."[4] The function of an activator of the competitive system is fulfilled by intellectual capital (IC), wherein human capital (HC) plays a special role. IC is responsible for the uniqueness of the configurations of strategic resources and skills – without it, the accumulated economic capital (AEC) quickly undergoes devaluation.

The originality of IC in an organisation is determined by the creativity of its human capital, by highlighting the unique features of intangible assets in a global network: knowledge, intellectual property, organisational culture, management system, and the organisation's style of involvement in the environment's institutional structures. All these elements are the organisation's knowledge capital

4 G.K. Oppong, J.K. Pattanayak, *Does Investing in Intellectual Capital Improve Productivity?*, "Borsa Istanbul Review" 2019, vol. 19 (3), pp. 219–227.

(OKC) that constitutes its aggregate measure of uniqueness, reflecting both its experience and its vision of development, since it encompasses three layers of IC connected and activated by HC.

In the subject literature, the concept of an organisation's knowledge capital is not elaborated on. The notion of "knowledge capital" appears more frequently and is usually equated with IC. Various models of IC emerge, and in most of them, HC is considered a part of IC.

In the IAM (Intangible Assets Monitor) model, intangible assets have been divided into three categories: the client area – the external structure, the institution area – the internal structure, and the human resources area – the competences of the organisation's members.[5]

In the Danish model, IC is examined from the perspective of four criteria: human resources, clients, technologies and business processes. The examination is based on three types of indices: statistical data, key external indices, indicators that illustrate the results.[6]

Steward, on the other hand, pointed out the necessity to include indices regarding human capital, structural capital and client capital in the assessment.[7] Similar categories are taken into account by the Skandia Navigator (considered a standard tool) – 91 measures in these three areas.[8] The model, which is considered both holistic and statistical, accentuates the role of patents, processes, the experience and skills of managers, information about suppliers and clients, or the IC associated with the creation of knowledge. However, it sees no need to emphasise the role of HC as a quality that permeates all components of IC or the accumulated knowledge of an organisation (OKC).

A computational approach to IC emphasises the role of knowledge, experience, skills, technologies, and organisation as well as client and supplier relations.[9] The value of IC stems from its involvement in making profits thanks to human and structural capital. HC is a factor that shapes structural capital, which, in turn, is determined by the client and organisational capital. Organisational capital is made up of process capital and innovation capital (shaped by the flow of intangible assets).

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5 K.E. Sveiby, *The Intangible Asset Monitor*, "Journal of Human Resources Costing and Accounting" 1997, vol. 2 (1), pp. 73–97; K.E. Sveiby, *Methods for Measuring Intellectual Capital*, https://www.researchgate.net/publication/327982460_Methods_for_Measuring_Intangible_Assets/references [accessed: 15.08.2018].

6 W.R. Bukowitz, R.L. Williams, *The Knowledge Management Fieldbook*, Financial Time/Prentice Hall, London 2000, p. 252.

7 T.A. Steward, *The Wealth of Knowledge. Intellectual Capital and the Twenty-First Century Organisation*, Nicholas Brealey Publishing, London 2001, p. 13.

8 W. Hopfenbeck, M. Muller, T. Peisl, *Wissenbasiertes Management. Ansatze und Strategien Unternehmensfuhrung in der Internet-Ökonomie*, Verlag Moderne Industrie, Landsberg/Lech 2001, pp. 347–365.

9 L. Edvinsson, M. Malone, *Kapitał intelektualny*, Wydawnictwo Naukowe PWN, Warszawa 2001, p. 40.

Its simplified variant is the organisation's value platform (created by Saint-Onge, Armstrong and Edvinsson), which indicates that a company's value is a result of the interactions between the components of intellectual capital, which are interdependent.

The social concept of IC supplements organisation and human capitals with social capital, which concerns informal norms and values that shape cooperation in an organisation. Sustainable development is a key to future competitiveness and ensures that society's present needs do not contradict the needs of future generations.[10] In this approach, innovation is a social process, understood as the system members' ability to self-organise in order to utilise and create innovations.

The analysis of the above-mentioned concepts brings up two crucial matters: determining the position of human capital in an organisation's capital system and appreciating the accumulations of IC components that act together, like a system. It should be mentioned that all creative interactions between individual links in the chain of human influences are a resultant of the current interference of human capital. The knowledge of an organisation is, in turn, the effect of the actions of HC, as is its transformation into practical discoveries – innovative solutions and then, specific products/services due to the knowledge of market determinants as well as social and cultural factors. A systemic perspective makes it possible to generate knowledge in a deeper, broader and multi-dimensional way; therefore, depending on the organisation model, it can be a valuable resource.

It is worth noting that the concept of intellectual capital and the place of human capital in the enterprise system have been long discussed in the literature of the subject. However, the result of these discussions is the creation of new definitions and dilemmas regarding both its components and the effectiveness of measuring the immeasurable.[11]

Many researchers use the terms "human capital" and "intellectual capital" interchangeably; however, this approach is an oversimplification. IC includes: knowledge, skills, creativity, and the experience of human capital (human

10 V. Januškaitė, L. Užienė, *Intellectual Capital as a Factor of Sustainable Regional Competitiveness*, "Sustainability" 2018, vol. 10 (12).

11 A. Wall, R. Kirk, G. Martin, *Intellectual Capital. Measuring the Immeasurable?*, CIMA Publishing Elsevier, Oxford 2004; T.A. Stewart, The *Wealth of Knowledge. Intellectual Capital and the Twenty-First Century Organisation*, Nicholas Brealey Publishing, London 2001; R. Petty, J. Guthrie, *Intellectual Capital Literature Review. Measurement, Reporting and Management*, "Journal of Intellectual Capital" 2000, vol. 1 (2), pp. 155–176; H. Dane-Nielsen, Ch. Nielsen, *Value Creation In Business Models Is Based In Intellectual Capital*, [in:] J. Guthrie, J. Dumay, F. Ricceri, Ch. Nielsen (eds), *The Routledge Companion to Intellectual Capital,* Routledge, London 2017; P. Stahle, S. Stahle, S. Aho, *Value Added Intellectual Coefficient (VAIC): A Critical Analysis*, "Journal of Intellectual Capital" 2011, vol. 12 (4); K. Choong, *Intellectual Capital: Definitions, Categorisation and Reporting Models*, "Journal of Intellectual Capital" 2008, vol. 9 (4), pp. 609–693.

assets);[12] all material and intangible effects of this capital (including patents, copyrights, publications, etc.); the well-behaved behavioural models such as organisational culture, processes, procedures, communication and distribution channels (structural assets) as well as the brand, the reputation, relations with the environment, goodwill (company assets).

Therefore, IC is a wider and much more complete concept, and its three subsystems should be enumerated:[13] organisational capital (ORGC), innovation capital (INNC) and institutional capital (INSC), which are linked through the activity and creativity of human capital. Although people create knowledge, it is only through interactions between them that its scope is increased, and, as a result, the institutionalised knowledge of a given organisation, i.e., its intellectual capital, is created.

IC is a quasi-public good (standards, customs, patterns), recognised in each organisation as a standard whose dissemination among its members makes it possible to raise the effectiveness of the system as a whole. In this approach, IC can be identified with the corporate culture of an organisation, including structures, innovations and institutions, the shape of which is a reflection of the accelerated function of human capital permeating them all. Thanks to these interactions, the organisation's knowledge capital is created.

Emphasising the key role of human capital in modern business is, of course, justified.[14] Human capital is the foundation of intellectual capital, which in turn is a multiplier of OKC. Human capital is a unique and extremely valuable category of assets; it permeates all three subsystems of IC and triggers the potential inherent in them. Human capital connects the system by shaping a particular organisational management model based on the accumulated OKC. Its role is indisputable, but at the same time, human capital is not sufficient to build intellectual capital. The integrating function of human capital enables the activation of the organisation through:[15]

- structures – internal and external (organised to serve the transfer of knowledge, not purely transactional, flattened; based on building a sequence of the processes of value creation; subjected to systematic reorganisation to the rhythm of observed changes);

12 D. Klaila, L. Hall, *Using Intellectual Assets as a Success Strategy*, "Journal of Intellectual Capital" 2000, vol. 1 (1), pp. 47–53.

13 M. Rosińska-Bukowska, *Rozwój globalnych sieci biznesowych jako strategia konkurencyjna korporacji transnarodowych,* Wydawnictwo Uniwersytetu Łódzkiego, Łódź 2012, pp. 97–112.

14 Y. Xu, A. Bernard, *Knowledge value chain: an effective tool to measure knowledge value*, "International Journal of Computer Integrated Manufacturing" 2010, vol. 23 (11), pp. 957–967; P. Stahle, S. Stahle, S. Aho, *Value Added*…; N. Bontis, *Assessing Knowledge Assets: A Review of the Models used to Measure Intellectual Capital*, "International Journal of Management Reviews" 2001, vol. 3 (1); G. Ross, J. Ross, *Measuring Your Company's Intellectual Performance*, "Long Range Planning" 1997, June.

15 M. Rosińska-Bukowska, *The Model of Competitiveness Assessment of Coopetition Network Systems – Competition and Cooperation of Enterprises in the Global Economy*, "Journal of Economics and Management" 2016, vol. 24 (2), pp. 5–13.

- innovations – product-related, process-related and organisational (constantly and quickly implemented for specific segments/modules, competently coordinated in the system);
- institutions – principles of building relationships with a diverse internal and external environment (through the intensification of various forms of cooperation, and the creation of socio-economic values and socially responsible activities).

An IC system which is based on the structures, innovations and institutions that are perceived in that way is the essence of the organisational culture of advanced enterprises, shaped by the creativity of human capital. A contemporary model of strategic management based on the OKC. It is a system-situational approach, emphasising the role of knowledge resources,[16] which are present on many levels in relationships of a given organisation.

IC determines the efficiency of the exploration (not exploitation) of economic capital accumulated in the organisation. In the modern international business, the network of organisational, pro-innovative and institutional relations, built thanks to the creativity of human capital, is the basis of the ability to create socio-economic values.[17]

Modern business requires the creation of collective, institutional knowledge,[18] based on the junction effect, which joins the processes of creation, accumulation, organisation, dissemination, implementation and exploration of knowledge.[19] The necessary condition for the development of a modern enterprise is, therefore, the ability of multilevel cooperation even with existing competitors, i.e., coopetition,[20] and distinguishing the skills of effective value creation on the basis of diversified resources of many actors – orchestration.[21]

16 R.H. Whiting, J.C. Miller, *Voluntary Disclosure of Intellectual Capital in New Zealand Annual Reports and the "Hidden Value"*, "Journal of Human Resource Costing & Accounting" 2008, vol. 12 (1), pp. 26–50; J.C. Miller, R.H. Whiting, *Voluntary Disclosure of Intellectual Capital and the "Hidden Value"* 2005, AFAANZ Conference, Melbourne, 3–5 Juli 2005; N. Brennan, B. Connell, *Intellectual Capital: Current Issues And Policy Implications*, "Journal of Intellectual Capital" 2000, vol. 1 (3), pp. 206–240.

17 M. Andelin, J. Karhu, S. Junnila, *Creating Shared Value in a Construction Project – a Case Study*, "Procedia Economics & Finance" 2015, vol. 21, pp. 446–453.

18 M. Sarvary, *Knowledge Management and Competition in the Consulting Industry*, "California Management Review" 1999, vol. 41 (2), p. 95.

19 D.J. Skyrme, *Knowledge Networking. Creating the Collaborative Enterprise*, Butterworth Heinemann, Oxford 1999, p. 59.

20 P. Klimas, *Structural Face of Competition, Cooperation and Coopetition Inside Business Networks,* "Argumenta Oeconomica" 2015, vol. 1 (34), pp. 127–155; P. Ritala, A. Golnam, A. Wegmann, *Coopetition-based Business Models: The Case of Amazon.com*, "Industrial Marketing Management" 2014.

21 C. Dhanaraj, A. Parkhe, *Orchestrating Innovation Networks*, "Academy of Management Review" 2006, vol. 31 (3), pp. 659–669; W. Czakon, *Sieci w zarządzaniu strategicznym*, Wolter Kluwer Business, Warszawa 2012, pp. 196–210; K.W. Abbott, T. Hale, *Orchestrating Global Solutions Networks: A Guide for Organisational Entrepreneurs*, "Innovations Technology Governance Globalisation" 2014, vol. 9 (1–2), pp. 195–212.

From the perspective of these considerations, it is crucial to draw attention to the role of human capital in the management system of an enterprise.[22] First of all, it is based on the perceived need to build a long-term advantage on "ideas that are in the heads of managers."[23] Secondly, it involves making full use of all available categories of resources as carriers of knowledge, skills and competences, creating OKC.

Global business networks are entangled organisations that work as a system of joined vessels, combining competition and cooperation as well as the market and hierarchy.[24] Researchers have provided evidence on how different factors facilitate or constrain the success of individual companies. Generally, different researchers focus on their preferred approaches, e.g., the role of intellectual capital[25] or the role of entrepreneurship in the context of internationalisation and globalisation.[26] It would be preferable for GBNs to create a holistic approach to management and development strategies (as demonstrated by Pike and Roos or Viedma, for example[27]). The state of balance is a moment in which a GBN and its system (elements of a business network) are optimally incorporated into the requirements of the environment.[28] It is a development strategy from the evolutionary perspective – as an adjustment to the global changes.

In conclusion, the key guidelines for management systems that appreciate OKC and intend to get the most out of the possibilities of the complex resource that is intellectual capital, are:

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22 B. Myloni, A.-W. Harzing, H. Mirza, *Host Country Specific Factors and the Transfer of Human Resources Management Practices in Multinational Companies*, "International Journal of Manpower" 2004, vol. 25 (6).

23 M. Hirzel, *Lean Management muss in den Köpfen der Manager beginnen*, "Management Zeitschrift" 1993, No 3, pp. 73–77.

24 B. Barczak, *Koncepcja oceny efektywności struktur sieciowych*, Wydawnictwo Uniwersytetu Ekonomicznego w Krakowie, Kraków 2016; M. Rosińska-Bukowska, *Rozwój*…; H. Håkansson, I. Snehota, *Developing*…; O.E. Williamson, *Strategizing*, *Economizing and Economic Organisation*, "Strategic Management Journal" 1991, vol. 12, pp. 75–94.

25 K.E. Sveiby, *Methods for Measuring Intellectual Capital*, https://www.researchgate.net/publication/327982460_Methods_for_Measuring_Intangible_Assets/references [accessed: 15.12.2018]; G. McCutcheon, *EVVICAE, a Valuation Model for Intellectual Asset-rich Businesses*, "Measuring Business Excellence" 2008, vol. 12 (2), pp. 79–96; A. Bounfour, *The IC-dVAL Approach*, "Journal of Intellectual Capital" 2003, vol. 4, pp. 396–413.

26 K. Wach, *Incremental versus Rapid Internationalisation of Firms: Results of Exploratory Investigation from Poland*, "Entrepreneurial Business and Economics Review" 2015, vol. 3 (4), p. 40; A.S. Gubik, K. Wach, *International Entrepreneurship and Corporate Growth in Visegrad Countries*, University of Miskolc, Miskolc 2014.

27 S. Pike, G. Roos, *Intellectual Capital Measurement and Holistic Value Approach (HVA)*, "Works Institute Journal (Japan)" 2000, vol. 42, pp. 11–25; J.M. Viedma, *ICBS Intellectual Capital Benchmarking System*, "Journal of Intellectual Capital" 2000, vol. 2, pp. 148–164.

28 G.M. Hodgson, T. Knudsen, *The Nature and Units of Social Selection*, "Journal of Evolutionary Economics" 2006, vol. 16 (5), pp. 477–489.

- networking – a strategy of pro-development openness and the systematic development of a network of diverse types of relations; building a web-like system of multi-level correlations to improve performance, e.g., ownership, strategic and cooperative connections (ORGC);
- orchestration – sharing knowledge and managing the knowledge capital accumulated in the system on many levels, in order to constantly create new solutions; combining standards with the specificity of local cultures and the competences of multinational human capital to create value-added, including socially-useful innovative values (CSV[29]); the appreciation of the social capital of local spaces; replacing hierarchical management with the regulatory model (INNC);
- coopetition – the ability to combine cooperation and competition based on the idea of sustainable development; the constant combination of competition and cooperation, which involves appreciating all stakeholders and creating value-added to the constantly growing standard as a result of internal interactions within a GBN (INSC).

These elements are of fundamental importance for a contemporary model of international business and are the pillars of the development strategy of GBNs. Considering the above, although it was recognised that human capital is a key factor in building innovative and organisational capital, and the principles of shaping institutional capital, it was not distinguished as a separate category, but as a value penetrating and binding all three components of the IC (see Diagram 5). In turn, the organisation's knowledge capital was recognised as the effect of the cumulative impact of IC layers activated by HC, which determines the uniqueness of OKC as a resource for a specific GBN.

In conclusion, the assessment of the capital of modern organisations should be based on the assumption that all of an agent's resources are made up of tangible assets, the combination of market and financial capital (economic capital), and intangible assets, which encompass innovation, organisational and institutional capital, and which determines the development potential (intellectual capital).

IC comprises not only the intellectual property that can be evaluated but also a complicated series of processes and determinants, including cultural and social ones. Therefore, it is a system of various types of relations wherein human capital serves as a catalyst that activates intangible and passive forms of intellectual capital.

29 M. Andelin, J. Karhu, S. Junnila, *Creating*…, pp. 446–453. The concept of CSV can be defined as policies and operating practices that enhance the competitiveness of a company while simultaneously advancing the economic and social conditions in the communities in which it operates. Shared value creation focuses on identifying and expanding the connections between societal and economic progress. M.E. Porter, M.R. Kramer, https://philoma.org/wp-content/uploads/docs/2013_2014_Valeur_actionnariale_a_partagee/Porter__Kramer_-_The_Big_Idea_Creating_Shared_Value_HBR.pdf [accessed: 20.11.2018].

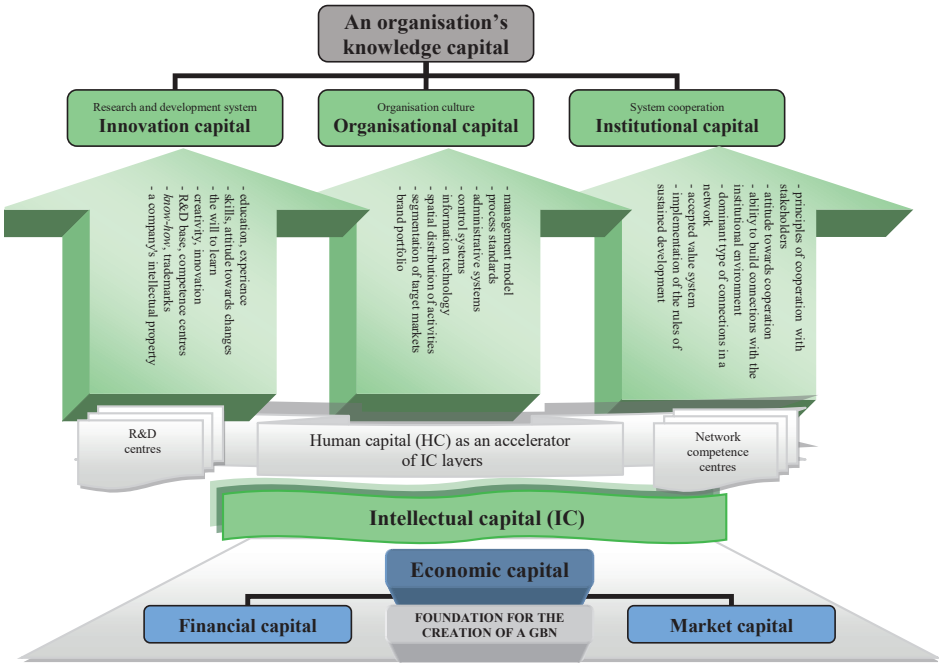

Diagram 5. An "organisation's knowledge capital" (OKC)

Source: own elaboration.

The strength of human resources lies in their natural flexibility, partial unpredictability and the ability to self-develop, increase their value and create innovative solutions. As a result, HC, by activating individual layers of IC in a given GBN in specific areas, determines its uniqueness, since it contributes to the shaping of an organisation's knowledge capital.

The evaluation of the total capital of a GBN, including a multi-level system of proprietary, strategic and cooperational relations and also taking into account all layers of capital (economic and intellectual) of such a system is a difficult, if not an impossible task. Since a GBN is usually perceived from the angle of an orchestrator – to whom some of the qualities/resources that are not his own are ascribed – the concept of the evaluation of individual GBN layers can be based on the analysis of a TNC's capital, which plays the role of an orchestrator in this network.

3.3. The importance of an "organisation's knowledge capital" in its corporate strategies – based on research for industry sector leaders

The main objective of the chapter is to discuss the direction of changes in the strategies of the Top-TNCs as a result of adjustments to the new challenges created by the growing role of intellectual capital, with particular emphasis on an "organisation's knowledge capital" (OKC).[30] This will be done by referring to case studies of specific TNCs that are leaders in their industries. The general studies show that corporations (TNC) notice the growing role of IC as a success factor in contemporary business.[31] The pillars indicated in their strategies showed that attention was paid to the development of components related to intellectual capital. The pillars of the corporate strategy are based on different values, and the study focused particularly on which of these values refer to intellectual capital (which of the three IC competences and which issues in them).

The paradigm of modern international business development assumes that the basis of corporations' strategies is to focus on the exploration of IC subsystems: organisational capital, innovations and the institutional environment. The consequence of this is that the strategies of leading entities (corporations of leaders) are based on convergent pillars: networking, orchestration, and coopetition. The author, when researching corporations and the leaders of individual industry sectors, used the key assumptions of Grounded Theory Methodology (GTM).[32] In this way, she seeks to identify the fundamental pillars of corporate strategy which

30 It refers to the "collective knowledge" that members of a network system, i.e. a multilayered organization, have.

31 M. Rosińska-Bukowska, *Human Capital and Intellectual Capital in Modern International Business – Based on Studies of the Strategies of Transnational Corporations*, "Comparative Economic Research" 2019, vol. 22 (2), pp. 141–158; L. Achtenhagen, L. Melin, L. Naldi, *Dynamics of Business Models. Strategising, Critical Capabilities and Activities for Sustained Value Creation*, "Long Range Planning" 2013, vol. 46 (6), pp. 427–442; C. Cruz, M. Larraza-Kintana, L. Garcés-Galdeano, P. Berrone, *Are Family firms Really More Socially Responsible?*, "Entrepreneurship: Theory and Practice" 2014, vol. 38 (6), pp. 1295–1316. Those authors concluded that firms can be socially responsible and irresponsible at the same time. A contemporary business is "a business with a human face", it is created by people in large organisations and in family enterprises. Thus, the success is as a result of exploration of IC, but TNCs are aware of the complexity of IC.

32 N. Ralph, M. Birks, Y. Chapman, *The Methodological Dynamism of Grounded Theory*, "International Journal of Qualitative Methods" 2015, vol. 14 (4); K. Stol, P. Ralph, B. Fitzgerald, *Grounded Theory Research in Software Engineering: A Critical Review and Guidelines?* Proceedings of the International Conference on Software Engineering. Austin, Texas: ACM, May 2016; M. Savin-Baden, C. Major, *Qualitative Research: The Essential Guide to Theory and Practice*, Routledge, London–New York 2013.

can be considered to be universal attributes that determine the long-term success of Top-TNCs.

In this study, the author used Grounded theory procedures based on Strauss's procedures of analysis in order to show how they can be combined with the case study research method to form a viable research methodology. She asserts that the coding procedures in GTM are neither automatic, nor do they need rigid adherence. On the other hand, coding is the key process in GTM. This process comprises three coding steps. Open coding is the process of breaking down, examining, comparing, conceptualising and categorising data, whereby concepts and their proprieties and dimensions are identified from the data that are transcribed by the researcher.[33]

In open coding, events and actions are compared with others in terms of similarities and differences in order to give them the same name, when similar. The name that is assigned to a category should be selected logically; usually, it represents the data and is related to it. A reading of the literature gives the researcher an initial set of concepts that can be used. Axial coding is the process of reassembling data that were broken down through open coding. Essentially, it is the process of relating categories to subcategories. Categories are higher in level and more abstract than concepts, and are generated by constantly comparing the similarities and differences between such concepts. This is done by using what is called the 'paradigm model', which enables the researcher to think systematically about the data and relate them to each other.[34]

The following aspects are taken into consideration when using the model:

- causal conditions – which represent events that lead to the occurrence of the phenomenon (the progression of gradual qualitative changes in the global business environment);
- the phenomenon – which represents the central idea, and indicates which a set of actions and interactions are directed at meaning (an increase in the importance of intellectual capital);
- context – which refers to specific properties related to a phenomenon; it represents a set of conditions in which action/interaction strategies are undertaken (a change of strategy model, building systems of network connections);
- intervening conditions – which can exercise influence by facilitating or constraining the action strategies within a particular context (innovations,

33 A. Strauss, J.M. Corbin, *Basics of Qualitative Research: Grounded Theory Procedures and Techniques*, Sage Publications Inc., London 1990, pp. 59–61.

34 The study used key assumptions, i.e., underlying elements (the comprehensive GTM procedure is very extensive and requires compliance with certain schemes). For more on GTM, see: M. Halaweh, Ch. Fidler, S. McRobb, *Integrating the Grounded Theory Method and Case Study Research Methodology Within IS Research: A Possible 'Road Map'*, Conference: Proceedings of the International Conference on Information Systems, ICIS 2008, Paris, France, December 14–17, 2008, https://www.researchgate.net/publication/221598900 [accessed: 15.08.2019].

principles of the organisation of structures, conditions for building relations with the institutional environment);
- tactics – which are devised to manage under a specific set of conditions (specific subcommands of each of the layers of intellectual capital);
- consequences – which are the outcomes of action and interaction (pillars of long-term action strategies).

Through this process, two analytical techniques are used. The first is constant comparative analysis, which is a continuous process of identifying conceptual categories and their properties that emerge from the data by constantly comparing that data. The researcher must be able to recognise which data are significant and give them the appropriate meaning, based on his or her own experience and knowledge, especially if the researcher is familiar with the subject. The next source of coding is the conclusions from the critical review of the subject literature and the analysis of the examined objects. In this case, case studies – analysis of corporate leaders' reports, presented ideas, and key pillars of the strategy.

The Top-TNCs were selected based on the UNCTAD register of *Top 100 TNCs* between 1990 and 2013 (*WIR1991–WIR2014*). Only corporations classified in the rankings for at least a decade were included. The sample contained 252 TNCs, which were divided into nine sectors: automotive, petrochemical, electronics, telecommunication and media, chemical-pharmaceutical, consumer, industrial goods and services, public services and holdings. Three leaders in each sector were selected as the Top-TNCs, based on the analysis of the value of their assets, sales and market value, as well as their position in the ranking of *The World's Most Admired Companies* for the period 2009–2018.

The objective of the study is to discuss the direction of changes in the leader's strategies as a result of the incremental deepening of the process of developing the OKC. Based on the GTM, the author will compare the test results for the TNC-leaders of all sectors and seek to indicate the key determinants of the development of contemporary corporations based on an "organisation's knowledge capital".

The research involved examining the business models of the Top-TNCs in terms of their ability to adapt to the growing role of IC through their understanding of the OKC idea. A key challenge was to find methods to effectively transfer the knowledge, skills, and competencies that are located in various parts of the system's TNC to achieve the synergy effect. These resources are dispersed throughout the entire global business network that is orchestrated by a given TNC. It is only by integrating them that the synergy effect is achieved.

The analytical model was based on the assumption that changes in the global economy have forced changes in TNCs based on intensification of cooperation on many levels and in various fields, and the constant development of international entrepreneurship and global network structures. The study assumed that maintaining a long-term, strong, competitive position is an effect of the ability to constantly create added value by exploring the growing role of the OKC. Therefore, an attempt was made to check the extent to which the Top-TNCs of various

sectors are prepared to meet the requirements of networking, orchestration, and coopetition as fundamental principles for the development of a modern international business.

The author considered it necessary to combine macro- and microeconomic approaches, and does so by presenting a model of business integration.[35] This concept refers to the strength of merging positional and resource streams, taking into consideration the importance of the international context and its continuous evolution (the approaching challenges).

The model assumes that the triad of the expansion model for the modern corporation was built from: (1) the orchestrator of the GBN as a key entity in the internationalisation process; (2) the internal and external environment, which set the limits for building the corporation's system capital; and (3) the pillars of the corporation's strategy which constructed directions for the long-term development of the entrepreneurial process.[36]

The pillars of corporate strategy must be well advanced, in the sense that they are adapted to contemporary challenges. The advanced strategy pillars indicated by the corporation create acceptable directions for the development of the entrepreneurial process in line with these ideas (i.e. some solutions, ideas, products, alliances, etc. are acceptable, but others are not). The advanced pillars of modern TNCs' strategies, which allowed them to become leaders in particular sectors, since they are a response to the challenges of the current phase of globalisation, are universal. To sum up, they are appropriate for the new challenges and are identical across all industries, as they reflect the most important requirements of building competitiveness in the international market in the 21st century.

The study assumed that the position of an organisation is increasingly a reflection of the quality of its IC. The change in the business models of TNCs, the dynamics of technological change, and the constant pressure to cut costs forced by the competition result in the key challenge being to explore the OKC as an accelerator of the potential of all relationships around the TNC (at all levels of the GBN around this TNC: ownership links – OL, strategic connections – SC, and cooperative relations – CR).

The orchestrator is responsible for identifying challenges and pointing out values which are fundamental for the GBN's development strategy, for their own development as TNC-leader as well as related entities. It will make it possible to attain cohesion in the aims of individual network participants and the long-term aims of the organisation based on the systemic transfer of knowledge, skills, and

35 The model of business integration was presented in chapter 2.3. this book.

36 It is worth noting that in the literature on the subject, one can also find other concepts of "triads" that describe the process of the incremental internationalization of enterprises. Authors who presented the concept of "the triad of international entrepreneurship" include, e.g., K. Wach, *Incremental*…; P. McDougall-Covin, M.V. Jones, M.G. Serapio, *High-Potential Concepts, Phenomena, and Theories for the Advancement of Entrepreneurship Research*, "Entrepreneurship Theory and Practice" 2014, vol. 38 (1).

competences – this is the synergy effect of the OKC. In a contemporary enterprise, this category of capital becomes the most precious asset; it can contribute to the permanent creation of organisations' added value.

The "organisations' knowledge capital" is a binder of its intellectual capital – it is a carrier of knowledge, competence and experience. It permeates all layers of intellectual capital, developing innovative, organisational and institutional subsystems. Based on the international transfers within the organisation and in its external connections system, corporations (especially GBN-orchestrators) gain competitive advantages through the synergy effect of resources. They are also specialised market structures and market surrogates in the scope of organised transactions. Thanks to this, an entangled organisation is created, which works as a system of joined vessels.[37]

Coopetition[38] and orchestration, which are the abilities of Top-TNCs to organise and combine competition and cooperation as well as market and hierarchy, are of key importance in these organisations. The concept of orchestration is a set of processes that create value thanks to the distinctive ability to effectively use the various resources of many entities.[39] It is then possible to learn faster from internal experiences by transferring knowledge and experience between the corporation's network members.

These new challenges have determined appropriate corporate behaviours (especially Top-TNCs). The appropriate competitive strategy requires the development of networks with many internal and external stakeholders, including competitors, customers, employees, non-profit organisations and national and local government in the home and host countries. The binder of this complex system is the organization's knowledge capital, which is reflected respectively in the IC subsystems.

The essence of the contemporary business strategy is to appreciate the importance of the OKC as the most valuable asset, the valuation of which, however, is very difficult. Requirements for the leaders of business networks have a cross-sectorial nature, as they reflect universal trends related to knowledge capital.

The conclusions of these considerations can be formulated as follows:

- the pattern of corporations' adaptations to new challenges results from the growing role of knowledge in the modern management model not being industry-specific – it is universal;

37 O.E. Williamson, *Strategizing*...; H. Håkansson, L. Snehota, *Developing*…; M. Rosińska-Bukowska, *Rozwój*…; B. Barczak, *Koncepcja*…; O. Sobolewska, *Knowledge-oriented Business Process Management as a Catalyst to the Existence of Network Organizations*, "Journal of Entrepreneurship, Management and Innovation" 2020, vol. 16 (1), pp. 107–132.

38 A.A. Alchian, H. Demsetz, *Production, Information Costs and Economic Organisation*, "American Economic Association" 1972, vol. 62 (5), pp. 777–795.

39 C. Dhanaraj, A. Parkhe, *Orchestrating*…, pp. 659–669; W. Czakon, *Sieci*…, pp. 196–210; R. Amit, X. Han, *Value Creation Through Novel Resource Configurations in a Digitally Enabled World*, "Strategic Entrepreneurship Journal" 2017, vol. 11 (3), pp. 228–242.

- changes in the strategies of the Top-TNCs, which are leaders in various sectors of industry, were proceeded by a single adjustment diagram;
- changes result in the restructuring of the management to enable them to use the diverse potential of the corporation's relationship system to the fullest;
- OKC activates individual layers of the intellectual capital;
- the key qualities of strategies of the development of the Top-TNCs are based on the pillars that reflect the three IC subsystems – they refer to networking, orchestration and coopetition (although they do not always directly use these names for the categories).

The purpose of the research is to show the direction of changes in the strategies of the Top-TNCs which result from the challenges created by the growing role of IC and the special place of OKC in modern international business.

The research objects were Top-TNCs, sector leaders, classified constantly in the UNCTAD *World Investment Report* (WIR) in the years 1990–2013 (*WIR1991–WIR2014*).

The first step of the research involved all 252 TNCs classified in the WIR's *Top 100 non-financial TNCs* divided into the following sectors: automotive – 17, electronics – 26, petroleum – 25, telecommunication & media – 38, chemical & pharmaceutical – 30, consumer goods & services – 36, industrial goods & services – 40, public services – 29, and multi-branch holdings – 11.

In the second step, the position of the corporations in their sectors was determined based on data for the decade 2009–2018. This part of the study used Fortune's ranking of *The World's Most Admired Companies* (MAC) and the value of assets, sales value and market value according to Forbes. Finally, three corporations for each sector were selected for further, detailed research: automotive – Toyota, Volkswagen, and Honda; electronic – General Electric, Siemens, and Samsung; chemical & pharmaceutical – Sanofi, Pfizer, and Roche; telecommunications & media – Vodafone, Telefónica, and France Telecom; petrochemical – Royal Dutch Shell, British Petroleum, and Exxon Mobil; industrial goods & services – Arcelor, Rio Tinto and Lafarge; consumer goods & services – Procter & Gamble, Nestle, and Kraft; public services – EDF, GDF, and E. On; and multi-branch holdings – Vivendi, Hutchison, and Marubeni.

The next step involved conducting in-depth studies for the three leaders of each sector in order to indicate the pillars of their development strategies. It was assumed that one can identify universal pillars for the development of the most powerful corporations because, even though they are used in various sectors, they have been subjected to the same factors that require the corporations to carry out appropriate responses, which leads to almost identical behaviour. An attempt was made to identify the model of transformations taking place in the leading transnational corporations – the three Top-TNCs in each sector – and the author characterised these changes using GTM.

GTM is a way of conceptualising ideas that are based on collected data, mainly qualitative, that are difficult to quantify. The methodology was originally developed

by sociologists Glaser and Strauss in 1965, but nowadays, it is widely used in the study of economic phenomena.

GTM is a permanent comparative method which has three main purposes: (1) to close the gap between theory and empirical research; (2) to suggest the logic of the theoretical framework for the phenomenon being studied; and (3) to justify careful qualitative research as important and necessary for a comprehensive description of complex social phenomena and for difficult to identify structures and subjects.

GTM provides practical and simple explanations about complex phenomena by converting them into constructs that include descriptions of elements and their relationships. Using GTM often begins with the collection of qualitative data. A review of the collected data ensures that ideas, concepts or elements. The next step is always to mark the codes for the key factors, i.e., ideas that have been extracted from the data. As more data are collected, the codes are grouped into concepts, and then into categories and defined. These categories may become the basis for a new theory.

GTM is a systematic methodology involving the construction of theories through the systematic gathering and analysis of data. The theory is a research methodology which operates inductively, in contrast to the hypothetico-deductive approach. GTM is quite different from the traditional model of research because, with GTM, we do not choose an existing theoretical framework and then collect data to show how the theory does or does not apply to the phenomenon under study.[40] We reverse the order of research. We move from repetitive, well-established practice to theory. First, we examine the objects, and based on this examination, we indicate regularities, i.e. we look for patterns of behaviour in specific conditions. We show the correctness of this approach for dealing with a given market situation, where the measure of success is to become a leader.

The author assumed that since the behaviours of the leaders of various sectors are the same, their patterns of behaviour can be treated as a model (it is a theory

40 B.G. Glaser, A.L. Strauss, *The Discovery of Grounded Theory. Strategies for Qualitative Research*, Aldine, Chicago 1967, http://www.sxf.uevora.pt/wp-content/uploads/2013/03/Glaser_1967.pdf [accessed: 06.05.2020]; K. Charmaz, *Grounded Theory: Objectivist and Constructivist Methods*, [in:] *Handbook of Qualitative Research*, N.K. Denzin, Y.S. Lincoln (eds), Sage, Thousand Oaks 2000, pp. 509–535; R. Thornberg, K. Charmaz, *Grounded Theory*, [in:] *Qualitative Research: An Introduction to Methods and Design*, S.D. Lapan, M. Quartaroli, F. Reimer (eds), John Wiley/Jossey-Bass, San Francisco 2012, pp. 41–67; E. Hoddy, *Critical Realism in Empirical Research: Employing Techniques from Grounded Theory Methodology*, "International Journal of Social Research Methodology" 2018, vol. 22, pp. 111–124; J. Mills, A. Bonner, K. Francis, *The Development of Constructivist Grounded Theory*, "International Journal of Qualitative Methods" 2006, vol. 5, pp. 25–35; G. Allan, *A Critique of Using Grounded Theory as a Research Method*, "Electronic Journal of Business Research Methods" 2003, vol. 2 (1), pp. 1–10; A. Strauss, J. Corbin, *Grounded Theory Methodology: An Overview*, [in:] *Handbook of Qualitative Research*, N. Denzin, Y. Lincoln (eds), Sage, Thousand Oaks, CA 1994, pp. 273–284.

grounded in business practice). We then build code sets from repeated data and combine them into concepts, and sets of concepts form categories. Categories are the foundation of grounded theory (in business practice). We can say that we collect data and organize it to show how the studied phenomena create a new system for the existing theoretical framework.

In the present study, the use of GTM involves discovering the theory from experience;[41] development priorities were determined by systematically identifying the crucial elements of the strategies applied by the studied Top-TNCs. For the analysis of corporations' business systems, the author divided them into the following subsystems: market (MARC), financial (FINC), innovation (INNC), organisational (ORGC) and institutional (INSC). Thus, the analysis becomes multidimensional and enables both an analysis of internal (the relationships established among the various subsystems) and external conditions (the principles of harmonising with the surroundings).

In the course of the leader's research, three levels of network units of individual corporations were distinguished and analysed (ownership links – OL, strategic connections – SC, and cooperative relations – CR) and the capital layers were described in detail (MARC, FINC, INNC, ORGC, INSC).[42] The characteristics of the system (particular layers of GBN-capital) of connections between entities operating in the network (around the particular TNC-orchestrator) can be recognised based on the priority directions of development strategies included in the annual reports of TNC-orchestrators.[43]

As a result of the research, a significant convergence of development priorities among the Top-TNCs was found – in all sectors – which undermines the thesis that the TNCs exhibit qualitatively different patterns of behaviour, despite subjecting them to the same meso-stimulation stimuli (industry). Strategic models in all examined cases (3 leaders of each sector) showed similar development priorities.

In conclusion, based on the studies carried out in these steps for the leaders of nine sectors, it can be concluded that:

- efforts to improve the condition of economic capital were observed through the emphasis on asset growth and profitability ratios (FINC) and the growth of structures for obtaining local resources (MARC);
- all Top-TNCs emphasised the role of intellectual capital as a multiplier of economic capital;

41 M. Götz, B. Jankowska, *Zastosowanie*…, pp. 185–205.

42 The author described capital layers of the Top-TNCs (MARC, FINC, INNC, ORGC, INSC) according to the model which was presented in section 3.1. (based on the classification of factors that shape individual layers and measures from the table *Layers of an organisation's capital*).

43 This study ensures proper interpretation of the provisions regarding the priority directions of development strategies included in the annual reports of corporations which were subjected to audit (TNC-orchestrators).

- as the driving force for their development, corporations pointed to specific attributes; they had various names, but the goals were essentially identical;
- the key, repeated priorities are multicentre R&D systems (INNC development); management reorganisation, increase in internationalisation, and expansion of the brand portfolio (ORGC); and developing a network of institutional relationships with a diverse group of stakeholders (INSC);
- the phenomenon occurs independently of the sector, although its scope varies depending on the maturity of the business network integration process around a given TNC.

It was assumed that the results of the survey for sector leaders illustrate the condition of a given category of this sector; thus, further analysis of the key pillars of the leaders' strategy was carried out. Research of the leaders was conducted using Social Network Analysis (SNA).[44]

The in-depth analysis of the strategic concepts used SNA to investigate three levels: the micro-level analysis of a given TNC-leader and its connection system, the number of clients, and its position in the network; the meso-level analysis of groups with a given type of resource and which have other common qualities and which cooperate with the TNC; and macro-level analysis – identifying the whole structure of the network surrounding the TNC (nature, methods and forms of cooperation, channels of communication and the exchange of resources).

The research involved studying the key pillars of the development strategies for the three leaders of each industrial sector by analysing the annual reports of the individual corporations. The in-depth analysis of the strategic concepts involved the SNA. The descriptions of strategies in the annual reports of individual TNCs were analysed, paying special attention to the significance of individual attributes relevant to the creation of OKC in IC subsystems.

The research evaluated selected attributes that are considered crucial for the organisation's knowledge capital (the role of OKC), including the system of R&D, types of value creation chains, types of innovations, the organisation of internationalisation structures, brand portfolio, leadership style, partnership model, map of stakeholders, and competition model. The author assessed the importance of the indicated attributes for achieving development goals (three in each subsystem INNC, ORGC, INSC) assigning them weights[45] which indicated their role as factors in the strategic concept of a given corporation.

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44 S. Yang, F.B. Keller, L. Zheng, *Social Network Analysis: Methods and Examples*, Sage Publications, Los Angeles 2017; N. Mirc, *Merging Networks – Contributions and Challenges of Social Network Analysis to Study Mergers and Acquisitions*, [in:] A. Risberg, D. King, O. Meglio (eds), *Routledge Companion on Mergers and Acquisitions*, Routledge, London 2015, pp. 259–271; A. De Brún, E. McAuliffe, *Social Network Analysis as a Methodological Approach to Explore Health Systems: A Case Study Exploring Support among Senior Managers/Executives in a Hospital Network*, "International Journal of Environmental Research and Public Health" 2018, vol. 15 (511).

45 Weights use in the strategic concept: + basic, ++ significant, +++crucial.

The juxtaposition of the results of the analysis for the leaders of all sectors, based on GTM and SNA, identified the key indicators of the development of modern corporations based on subsystems of IC. The results were combined for the TNCs that represent a single sector. The research regarding IC subsystems was qualitative.[46]

Individual IC subsystems were assessed on the basis of the following parameters: INNC – multi-centre R&D systems; the diversification of the types of value creation chains; management innovations based on the implementation of the regulatory model; ORGC – reorganisation of the structures of the global system, including at the internationalisation level; the creation of a multi-level network based on OL, SC, CR; the diversification and expansion of the brand portfolio, including extensive coverage of the market and the role of the leader; INSC – development of the network of institutional relations; the diversification of the circle of stakeholders; and cooperation with direct competition.

An important goal of the study was to assess the influence of organisations' knowledge capital (the role of OKC) on the development of individual IC subsystems of a given TNC based on the listed criteria. Ultimately, this allowed us to assess the scope of treatment of a given category: networking, coopetition, orchestration as a pillar of a corporation's business strategies in a given sector. Table 4 presents the synthetic juxtaposition of the research results for nine industry sectors based on TNCs-leaders' strategies.

Table 4. The juxtaposition of research results – by sector

TNCs by sector	**Sector**	**Automotive**	**Electronics**	**Petroleum**	**Chemical & Pharmaceutical**	**Telecommunications & Media**	**Consumer goods & services**	**Industry goods & services**	**Public services**	**Multi-branch holdings**
	Number of TNCs	17	26	25	30	38	36	40	29	11
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
Leaders of the sector	According to the value of assets, sales, market value and MAC classification	Toyota; VW; Honda	GE; Siemens; Samsung	Shell; BP; Exxon Mobil	Sanofi; Roche; Pfizer	Vodafone; Telefónica; France Telecom	P&G; Nestle; Kraft	Arcelor; Rio Tinto; Lafarge	EDF; E.On; GDF	Vivendi; Hutchison; Marubeni

46 The level of importance in the strategic concept of Top-TNC: + basic, ++ significant (it is thoroughly described in the strategy), +++ crucial (the key pillars of strategy).

1	2		3	4	5	6	7	8	9	10	11
Joint ASSESSMENT of three leaders											
Layers of intellectual capital (IC)	**INNC**		**+++**	**+++**	**+**	**+++**	**++**	**+++**	**++**	**+**	**+**
	Role of OKC	multi-centre R&D systems	+++	+++	+	+++	++	++	++	+	+
		diversification of the types of chains of created value	+++	+++	++	+++	++	+++	++	+	++
		management of innovations	++	++	+	++	+++	+++	++	++	+
	ORGC		**++**	**++**	**+++**	**++**	**+++**	**+++**	**+**	**+++**	**+**
	Role of OKC	diversification of the brand portfolio	+++	++	+	++	+	+++	+	+	+
		reorganisation of global structures	++	++	+++	+	+++	++	+	+++	+
		types of connections – OL, SC, CR	++	+++	+++	++	+++	+++	++	+++	++
	INSC		**+**	**+**	**++**	**++**	**+++**	**+++**	**++**	**+++**	**+**
	Role of OKC	networks of institutional relations	+	+	++	++	+++	+	++	+++	+
		cooperation with the competition	++	+	++	+	+	+++	++	+	+
		circle of stakeholders	+	++	+	+++	+++	+++	+	+++	+
	1.	**Pillars of strategy:** networking	+++	+++	++	+++	++	+++	+	++	+
	2.	coopetition	+++	+++	+++	+++	+	++	++	+	+
	3.	orchestration	+++	+++	+++	+++	++	+++	+++	+++	++

Significance (weight in the strategic concept): + basic, ++ significant, +++crucial.

Source: own elaboration.

Based on the research, it was determined that there is a great similarity of development priorities among the greatest TNCs. The strategies were based on the strength of the economic capital, which is expressed through the growth of assets, sales, and market value (FINC) and the growth of structures for the acquirement of resources (MARC), which is illustrated by assessing the market

position, among others. It is clear, however, that corporations are striving to develop IC to meet emerging challenges, aware of the need to maintain its balanced systemic character. In this way, the TNC-leaders are constantly creating the power of the organisation's knowledge capital based on the three IC subsystems, because only OKC ensures their long-term development.

The research revealed that each TNC-leader uses an organisation and management model based on the development of IC subsystems. As a result of the evolution of business concepts, the TNC-leaders have made some changes to the system of global structures and modifications to the brand portfolio, and they have established various types of cooperation with their competition. This is the result of the Top-TNCs' adjustments to the ongoing changes.

All the studied TNCs show changes that consider the pressure put on the growing role of IC in creating added value. As a result, it can be concluded that the leaders understood the very idea of OKC as well as the essence of the synergic and systemic impact of attributes building IC subsystems. The creation of systems by corporation-leaders that meet these challenges required them to get various types of specialists with unique competencies as well as ordinary employees from other cultures who were involved in the structures at different levels.

It was confirmed that TNC leaders modified the pillars of their development strategies in such a way that they are currently based on three pillars: networking, coopetition and orchestration. These pillars correspond to the intellectual capital subsystems for which the organisation's knowledge capital (OKC) is a factor that stimulates and dynamises development (it is an activator).

The most frequently enumerated activities (which was confirmed during the retrospective analysis of the individual reports of the TNCs-leaders) are management development (building an international personnel, creating a network of interpersonal connections and relations, and broadening the intercultural experience of the corporation); organising and controlling local operations and coordinating the network of a given corporation; and training the local personnel in order to adapt to the corporation's business model by transferring knowledge, technological and organisational skills, including the shaping of attitudes, following the model of the corporation's organisational culture (building a corporate identity).

This confirms the special role of human capital in building OKC. In this context, the most important effect of the role of OKC is the multi-faceted flow of knowledge, experience and competencies within the proper organisational culture of a given corporation. It means that it does indeed fulfil the function of the accelerator of the three subsystems of a given corporation's IC.

However, it should be emphasised that the degree to which the requirements of individual categories – networking, orchestration and coopetition – are met differs among the subjects of the study (also within sectors, i.e. in corporations in the same industry). It is the result of, among other things, the diversity of the

starting base – the economic capital and the time needed to shape individual IC subsystems.[47]

Generally, the research which explored the data regarding TNC-leaders using GTM and SNA methodology represents a sectoral approach. It can be used to indicate trends – repeated ideas – in changes in the strategies of corporations that operate in a given industry market that are considered crucial and significant for successful development. By comparing the results of observations for different sectors, we can try to generalize and give general recommendations for improving international competitiveness in the 21st century.

Table 5 presents a synthetic assessment of the scope of fulfilling general requirements based on individual concepts of implementing key assumptions for a given category by sector leaders. The research results for TNC-leaders in each sector were juxtaposed with the base categories of three layers of corporation connections – OL, SC and CR, and the equivalents of the individual layers of capital – MARC, FINC, INNC, ORGC, INSC. The degree of fulfilment of individual requirements was assessed according to the adopted scale[48] and referred to the three based pillars of a corporation's strategy: coopetition, networking, orchestration.

Table 5. Synthetic summary of the test results based on GTM and SNA – the sectoral approach

Sectors	**Automotive**	**Electronics**	**Petroleum**	**Chemical & Pharmaceutical**	**Telecommunications & Media**	**Consumer goods & services**	**Industry goods & services**	**Public services**	**Multi-branch holdings**
According to the value of assets, sales, market value and MAC classification	Toyota; VW; Honda	GE; Siemens; Samsung	Shell; BP; Exxon Mobil	Sanofi; Roche; Pfizer	Vodafone; Telefónica France Telecom	P&G; Nestle; Kraft	Arcelor Rio Tinto; Lafarge	EDF; E.On; GDF	Vivendi; Hutchison; Marubeni
OL	++	++	+++	+	+++	+	++	++	+
SC	+++	+++	++	++	++	+++	+	++	+
CR	++	++	+	+++	+	++	+	+	++

47 The results of the study are preliminary, since the research involved only the leaders. Complete verification of the hypotheses put forward requires the continuation of the study on a larger group of subjects and taking into account other classifications, but also more advanced measuring methods.

48 + basic, ++ significant, +++ crucial.

FINC	++	++	+++	+	+++	+	++	++	+
MARC	+++	++	+	++	++	+++	+	++	+
INNC	+++	+	+++	++	+++	+	+	+	+
ORGC	++	+++	+	+++	+	+++	+	+++	+
INSC	+	++	+	+++	++	+++	++	+++	+

The meaning: + basic, ++ significant +++ key factor (crucial).

Source: own elaboration.

In conclusion, the pillars of development that are written in the strategies of the most powerful transnational corporations – the leaders of the industrial sectors – are essentially consistent, though not always identically named. They can be defined as networking, orchestration, and coopetition.

Networking means building a multi-level global network based on ownership and strategic and cooperative connections in terms of both economic and intellectual capital.

Orchestration is implementing the principles of the regulatory model, enabling individual members of the system managed by a corporation to achieve the set goals on the basis of diverse types of organisational and management structures, and appropriately selected brand, distribution and resource management strategies. Additionally, it is the implementation of a sense of coherence based on innovation, sustainable development and the creative character of diversity.

Coopetition means the ability to combine competition and cooperation in order to create value-added to the constantly growing standard as a result of the internal interactions of all stakeholders.

In the end, it can be concluded that the research results for the leaders in each sector indicated the growing role of the organisation's knowledge capital and the appreciation of this category of capital as the organisation's most valuable asset.

3.4. Capital of the orchestrators of global business networks

Due to their specificity, global business networks raise capital in the structures of a multi-layer web-like network. This chapter focuses on the structure of an orchestrator's capital, as it contains the key advantages of the network, and the long-term competitiveness of GBNs is based on them. Generating value-added, which is necessary for a GBN to maintain a strong competitive position on the international market, requires the multiplication of economic capital. The efficiency

of economic capital might be the best indicator of good business practice.[49] In turn, the organization's knowledge capital (OKC of GBN) must be explored to multiply the value of its economic capital. Here the measure is the assessment/valuation of the capital which is accumulated in the layers of intellectual capital (organisational, innovation, institutional).

In accordance with the accepted model, the capital of GBN orchestrators includes:

- financial capital (FINC) – current assets, reserves, long-term investments, short-term obligations; capital that consists of cash, bonds, shares, and the remaining financial instruments; normalised revenues produced by financial capital (based on the weighted mean of revenues from several previous years and the same number of future years); the suggested FINC measure is the size and dynamics of assets;
- market capital (MARC) – an organisation's knowledge, which makes it possible to provide goods and services that are adapted to fit the needs of specific areas of the international market to systematically reinforce its position in the global oligopoly of a given business sector; the skilful compilation of elements responsible for the increase in sales volume; the suggested MARC measure is the size and dynamics of sales;
- innovation capital (INNC) – the effect of synergy from the combination of human and technological capital; the quality created thanks to the innovations and modifications as a result of the research and development activities conducted within the network (adding to the standard); it determines operational competitiveness on the level of individual categories of goods and services offered by the network; suggested INNC measures include the number of employees in the R&D area, expenditure on R&D per employee, and sector innovations; position in innovation rankings;
- organisational capital (ORGC) – the result of management principles and organisational structures in a spatial dimension (geographical branches) and sector dimension (product branches); segmentation of the market to fulfil the needs of diverse customers; knowledge rooted in the areas where it currently functions, which refers to specific processes, values, and products, in the form of brands, trademarks, copyrights, databases and data systems; it determines competence competitiveness through the correct arrangement of network structures and by indicating competence centres based on an assessment of the advancement of network members' key qualities; suggested ORGC measures include the arrangement of organisation and management structures, network competence centres, and brand portfolio (value, coverage of the sector-specific market);

49 The notion of the best indicator of business practice, i.e., the sum of the indexes of physical capital efficiency and human capital efficiency, was introduced by Austrian researcher, Ante Pulić in 1998.

- institutional capital (INSC) – the model of GBN development that is consistently carried out in accordance with the accepted concept of the network's organisational culture; the accepted rules of building relations with the external and internal environment; implementing the principles of coopetition or connecting competing elements in a network thanks to the correct assessment of market relations, sources of client loyalty, the significance of the value of goods/service brands and the organisation's reputation; it determines system competitiveness through the use of regulatory mechanisms and system orchestration; suggested INSC measures include the scope of the full-form internationalisation of employment and assets, the internationalisation index, and reputation based on the MAC criteria.

Assessing the individual layers of a TNC that acts as a GBN orchestrator indicates the strength of both this agent and the network behind it. As tangible assets are easy to standardise, compare and, therefore, substitute, they are a vital minimum that serves to assess not only a given agent's ability to fulfil the function of orchestrator but also the GBN's existence and functioning. However, they do not determine a GBN's competitive advantage, they merely identify the current position (static perspective).

The foundation for the creation of competitiveness in a GBN is the ability to create a unique value-added based on measurable (tangible) assets. Intellectual capital (a GBN's unique, intangible assets) is the source of this value. Because of it, based on the comparable value of initial wealth (AEC), individual agents have different efficiencies, and their long-term market position can vary considerably (dynamic perspective).

An orchestrator's competitive strategy should be based on the OKC that is a GBN. A TNC-orchestrator's strategic capital is based not only on the knowledge that is collected and codified but also on the knowledge that flows through global network structures as a result of external and internal relations.[50] The creativity, innovation and flexibility of IC in a GBN help make better use of the opportunities provided by the environment or determine the methods of avoiding possible dangers.

When the knowledge capital of a single agent is included in GBN structures, it multiplies. The mixing transfers generate additional streams of new knowledge as an effect of synergy. The knowledge of individual units and the people scattered in various organisations are more quickly spotted by the global R&D systems or other network structures that were established to integrate network members.[51]

Since it is crucial to make full use of the social capital of individual agents in order to multiply knowledge and increase its value, the creation of integration cells

50 L. Bankvall, A. Dubois, F. Lind, *Conceptualizing Business Models in Industrial Networks*, "Industrial Marketing Management" 2016, vol. 60, pp. 196–203.

51 P. Spieth, D. Schneckenberg, K. Metzler, *Exploring the Linkage between Business Model (&) Innovation and the Strategy of the Firm*, "R&D Management" 2016, vol. 43 (3), pp. 403–413.

is necessary as GBNs expand. Therefore, the gradual development of the business connection system makes it possible to obtain, process and improve knowledge more efficiently, which determines system competitiveness.

An orchestrator utilises the knowledge capital of the whole organisation (the knowledge capital of the whole GBN structure). It makes use of the flexibility of a GBN's management structures and systematically converts its own structures so that its organisation and management system preserves its regulation capabilities, despite the size and multi-level nature of the GBN (ORGC). Modifications which have been applied to procedures, the organisational system, production processes and innovative solutions are the result of the creativity that stems from international transfers of human capital in the GBN system (INNC). The ability to explore a diverse internal and external environment increases due to the multi-level relations and their adaptative nature (INSC).

The efficiency of GBNs, which, by their very nature, operate on a global market, stems from the possibility of using diversity as a positive quality, e.g., through exploiting the international life cycle of goods, the diversity of clients' tastes, the differences in perceptions in various cultures, etc. Thus, the varying needs of individual stakeholder groups are more likely to be met, enabling sustained development, the preservation of the principles of social responsibility as well as the creation of social and economic values.[52] A TNC-orchestrator uses the GBN's knowledge capital as an accumulated IC, based on the resources of network members at all levels, though they may remain unaware of it (the butterfly effect in a GBN).

It is the orchestrator's role to create institutionalised knowledge in a GBN by transforming all resources *sensu stricto* included in the network into key factors of competitive advantage. In order to do that, an orchestrator uses interactions that take place in the system (the organisational and management aspect – ORGC) and those that occur between the GBN members and the environment (the social and institutional aspect – INSC), but also through controlling the implementation of all innovation types (the innovation and competence aspect – INNC). As a result, the orchestrator gains access to the organisation's unique knowledge capital, which makes it possible to create value-added to the current standard.

The developed databases, norms, habits, and behavioural patterns for both everyday and non-routine situations, as well as methods of solving problems, become a given network's standard. The knowledge that is modified and codified by an orchestrator becomes a quasi-public good. A GBN standard, in this sense, is a measure of the TNC-orchestrator's competitiveness. The relations between the size and structure of intellectual capital and a TNC-orchestrator's management

52 T. Haumann, P. Güntürkün, L.M. Schons, J. Wieseke, *Engaging Customers in Coproduction Processes: How Value-enhancing and Intensity-reducing Communication Strategies Mitigate the Negative Effects of Coproduction Intensity*, "Journal of Marketing" 2015, vol. 79 (6), pp. 17–33.

strategy depend on the GBN's development stage and the level of advancement in the process of building an organisation's knowledge capital on which the creation of value-added is based. In this sense, the IC orchestrator determines the GBN's development strategy and modifies the management concepts of individual system members.

The key component in the assessment of a GBN orchestrator's capital is identifying how developed individual elements are: the level of its key competence (positions in a business sector); the quality and structure of the offer (values and structures of the brand portfolio); the skills and experiences of human capital (employment structures); the places of process technologies and innovations (structures of the R&D system); the principles of obtaining information about changes on the market (structures of vertical and horizontal connections); arrangements in the target structure of network composition (in the OL, SC and CR relation systems); the accepted leadership model (regulation model, competence centres, stakeholder map).

The management process conducted by an orchestrator requires coordination between the aims of a GBN and the strategies of achieving them, which are accepted by individual network members. A GBN's management system is a structure of connections between the relations that result from an agent's position in the model of the network's organisational structures and the requirements of the organisational culture that shapes the system. Systematically implementing feedback from the market demands that the orchestrator constantly engage all IC layers, or, in other words, explore the organisation's knowledge capital.[53]

The structure of processes and the pillars of the orchestrator's development strategy reflect the system of the internal and external relations of a GBN (wherein the orchestrator constitutes the core). The cycle of optimising and implementing changes to the organisation's structure begins the moment the orchestrator obtains a stable position in the global business sector oligopoly, and therefore, in the global market structure. Also, it directs the development strategy towards the regulation model, which is subject to the GBN orchestration and which focuses on the orchestrator.

The analysis of the layers of GBN orchestrators' capital indicates that the bases for international competitiveness require multi-dimensional assessment since, currently, the knowledge capital based on all layers of the network organisation system is the foundation for building competitive advantage.

53 Exploring an "organisation's knowledge capital" is understood as a complex process that affects the business model dimensions of transaction content, structure, and governance. Reconfiguring the business model is explained by underlying knowledge conversion mechanisms. S. Forkmann, C. Ramos, S.C. Henneberg, P. Naudé, *Understanding the Service Infusion Process as a Business Model Reconfiguration*, "Industrial Marketing Management" 2017, vol. 60, pp. 151–166; K. Fatehi, J. Choi, *International Business Management*, Springer, Nature, Switzerland 2019.

GBNs understand this requirement and, therefore, are an open system, whose functioning demands an understanding of the institutional requirements, both internal and external. That is why the centre of gravity of analysis should be shifted towards qualitative aspects. It does not mean they should disregard quantitative parameters, but they should treat them as the foundations for searching a given market for real competitor groups that are able to build a competitive position at a specific level (base competitiveness). Consequently, not all agents are classified as having potential opportunities (competitive potential) to operate at a given level or have adequate knowledge capital.

The key qualities that confirm an agent's ability to explore an organisation's knowledge capital as the foundations for long-term development are:

- the pillars of the strategy that focus on the role of knowledge and innovation (theory of innovation, key competencies, behavioural concepts);
- the perception of the diversity of the global environment as a source of potential advantages and making use of this potential through the systematic growth of internationalisation in a given business (theory of international production, FDI theory);
- learning the essence of coopetition,[54] glocalisation,[55] and orchestration[56] in order to build appropriate relations and structures (theories of agglomeration, mergers and acquisitions, organisation and management).

Therefore, a GBN orchestrator must understand the necessity to abandon traditional competition based on market strength and the dominance of a single agent that focuses on real and regulation mechanisms. It is the orchestrator's task to appreciate the dynamic creation of connections that improve innovation, the role of learning procedures, the exploration of knowledge resources, the improvement of methods of implementing skill, adjustment methods, organisational forms as well as management structures. The orchestrator directs the development of the GBN system and the growth of knowledge capital (which is obtained from the developing network structures).

The continuous moderation of the system and the identification of correct development paths for individual units that make up the complex, multi-level structure is of the highest significance. An orchestrator can choose between traditional, integration and participation models.

A traditional model, based on a hierarchical power system, loses its importance as a structure that is incompatible with the immanent requirement of modernity – the speed of reactions which requires the oversimplification (flattening) of the organisational structure. Yet, the traditional model still applies in some areas or

54 P. Klimas, *Structural Face of Competition, Cooperation and Coopetition Inside Business Networks*, "Argumenta Oeconomica", vol. 1 (34); Y.D. Lou, *Toward Coopetition within a Multinational Enterprise*, "Journal of World Business" 2005, vol. 40.

55 V. Roudometof, *Theorizing Glocalisation: Three Interpretations*, "European Journal of Social Theory" 2015, pp. 1–18.

56 P. Hurmelinna-Laukkanen, S. Nätti, *Orchestrator*…

situations, although the management of a GBN mostly takes the form of integration and participation, meaning that system participants become parts of diverse, complex task teams. The imperative division of partial tasks is replaced with the integration of functions within the system. To sum up, it is not the model itself that is most significant, but the ability to manage an organisation's knowledge capital through the most efficient use of all the layers of economic and intellectual capital.

In these reflections, the key fact is that the fundamental significance of knowledge in a modern organisation means that the essence of the GBN orchestrators' strategy is understanding that building competitiveness requires the use of a knowledge-based organisation model.

Knowledge is treated as a universal value for all system members since it determines the opportunities and speed of development. Information (about competitors, co-operators, consumers and other elements of the environment) is the starting point in the process of knowledge creation, but it is merely a potential which needs to be processed inside the organisation's structures to acquire value.

The scope of access to the organization's full knowledge capital depends on the type of membership in the GBN, i.e., the scope of connections with the network structure. The most complete access is granted to entities in the ownership relationship (level: ownership links – OL), slightly less for strategic connections (SC), and a limited scope of organizational knowledge is available to members of the network at the cooperative level (cooperative relations – CR).

Knowledge assets can be divided into four groups: experimental knowledge (tacit, emotional, embodied, energetic, rhythmical); conceptual knowledge (pictures, symbols, language, concepts of goods/services); synthetic knowledge (explicit – specifications, databases, licences, patents); routine knowledge (set in practice, know-how, organisation routines, organisation culture).[57] All these asset categories are difficult to measure, but at the same time, are crucial to the process of building competitiveness. They are the building blocks of intellectual capital. As a system, they make up the structure of an organisation's knowledge capital. They determine the structure of relations at each of the following levels of the agent's environment:

- micro – they indicate specific mechanisms of allocating resources between competitive purposes, by determining the selection of specific undertakings;
- meso – the selection of speciality areas and the dominant sector based on the assessment of the level of technological advancement and the organisation-management infrastructure, the knowledge of the determinants of building relations on a given market, and the models of organisation systems and management, including coalitions that increase access to scarce resources; selecting forms of connections and the scale of internationalisation;
- macro – the distribution of global activities, using the principle of the functioning of individual national markets; selecting the system of

57 I. Nonaka, R. Toyama, T. Konno, *SECI, Ba and Leadership: A Unified Model of Dynamic Knowledge Creation*, "Long Range Planning" 2000, vol. 33 (1), pp. 20–21.

international relations in a business system based on the analysis of the specificity of relations in the context of proprietary law, R&D, education, etc.;
- meta – they make it possible to skilfully adapt to societal, historical and cultural specificities, i.e., moral norms, traditions, habits, and faiths; interactions with formal and informal institutions.

In conclusion, the essence of the capital of GBN orchestrators, which determines the ability to maintain a long-term competitive advantage, is the ability to explore the network's knowledge assets. The assessment of the resource potential they possess and their market evaluation – their positioning against the competition based on economic capital – is the starting point of the process. At this level, the strategy aims to draw attention (by standing out through costs and offers), take the starting position (find a niche or segment) and then penetrate the market in order to maximise market shares. The sizes of assets, sales, employment, and profits are examined; profitability indices are calculated, the dynamics of changes occurring between direct competitors and the changes in market positions (market shares) are compared, etc. Therefore, the analysis occurs at a microeconomic level.

However, the analysis of the capital of GBN orchestrators at the mesoeconomic level, i.e., the level of sector determinants, is also crucial. It requires an assessment of the subject structure and rules of functioning in a given business sector as well as the compatibility of the organisation and management system created by a given agent. Positioning in a global sector oligopoly, e.g., through building sector rankings, is the assessment method.

The following step is the analysis of GBN orchestrators' capital at a macroeconomic level. It involves searching for points where a business organisation could influence the legal and formal regulatory system. GBN orchestrators have the potential that enables them to help countries fulfil some of their functions. Therefore, they are allowed to negotiate the rules of establishing branch offices, profit transfers, facilitation zones for businesses, the promotion of agents in the R&D network or the education system.

The analysis of the capital of GBN orchestrators at a metaeconomic level concerns the ability to explore diverse social and cultural determinants or the building of a competitive advantage through the understanding of the essence of differences in value systems, and patterns of building relations, strategies and local policies. A GBN's knowledge capital is based on the multiculturalism of the web-like global network, wherein individual units are sovereign, allowing them to cultivate local traditions and implement the model of a creative, intranetwork knowledge transfer.[58] That is how the combination with the local environment

58 A.-G. Nyström, J. Ramström, J.-Å. Törnroos, *Conceptualizing Mechanisms Influencing Strategizing in Business Networks*, "Journal of Business & Industrial Marketing" 2017, vol. 32 (6), pp. 777–785; D. Morschett, H. Schramm-Klein, J. Zentes, *Strategic International Management*, Springer Fachmedien, Wiesbaden 2015; D.J. Teece, *Business Models, Business Strategy and Innovation*, "Long Range Planning" 2010, vol. 43 (2/3), pp. 172–194.

is not an obstacle in building international competitiveness in a largely diverse global space.

The structure of the capital of GBN orchestrators is generally made up of the same components as the capital of every modern enterprise. However, its essence is the level of development in each individual layer – the advancement of processes in each of them. Orchestrators build their competitiveness based on an organisation's constantly multiplying knowledge capital, i.e., a global, multi-level network structure that consists of various types of agents who are connected through a system of relations of differing natures. The process requires a different approach to the research on competitiveness; in particular, it demands the implementation of measures that enable qualitative assessment.

Chapter IV

The competitiveness of network enterprises

The approach towards competitiveness has been evolving, from becoming aware of competition through understanding its significance in shaping market conditions and explaining the foundations for building a long-lasting competitive advantage, to the attempts at understanding and explaining the rules of creating competitiveness on the basis of complex multi-level network systems.

The development of the subsequent research approaches was a result of detecting the multitude of factors that influence an enterprise and attempting to create patterns that would consider the changes to the conditions of agents' actions. This chapter deals with the evolution of the concept of competitiveness in light of economic theory. It describes the significance of understanding the essence of the development of the system of international competitiveness for the stability of an agent's position in a dynamically changing environment.

In the chapter, the author also presents her own concept of a model of the international competitiveness of enterprises. This concept is a proposal for researchers who want to reliably analyse the competitiveness of network enterprises and is based on a combination of issues so far analyzed separately at the macro-, meso- and microeconomic levels.

4.1. The competitiveness of enterprises in light of the modern enterprise theory

The theory of enterprise competitiveness is set in economic sciences. However, the dynamics of environmental changes require constant modifications to the theory in order to anchor it in real economics by taking into account the exogenous and endogenous conditions of the environment.

The external environment comprises not only competitors and consumers but also institutions, i.e., norms, habits, and legal regulations. The internal environment consists of a diverse set of resources (material, human, financial, information, organisation), which are characterised by imperfect mobility and costs that rise as their development becomes increasingly advanced.

Including these parameters results in a systematic moderation of the assumptions of the classical paradigm and in the birth of alternative (heterodox) theories.[1] Alternative theories are quasi-universal concepts that concern the functioning of particular types of agents in particular environmental conditions. They are an intermediate form between neoclassical theories and case studies (economic empiricism).[2]

The emergence of the modern concept of enterprise competitiveness was gradual due to changes in how the complexity of enterprise systems was analysed. There were varying perspectives on the subject:

- classical – wherein the processes of market adjustments, especially in individual business sectors (assumption about the limited mobility of resources between business sectors and between geographically distant markets) have been analysed; general theories (the works of Adam Smith, David Ricardo, Thomas Malthus, John Stuart Mill, Karl Marx, Antoine Augustin Cournot and Alfred Marshall have been classified);
- neoclassical – wherein economic theories that have been expanded by observations of economic practice have been used (the works of the neoclassical school, Keynesian economics, post-Keynesian economics, game theory, the agency dilemma, new institutional economics (NIE[3]), the classical current in organisation and management, bureaucracy theory, the concepts of scientific management and work organisation, the schools of human relations as well as the works of James R. Bailey and John Maurice Clark have been classified);
- alternative–interdisciplinary, based on combining neoclassical works with selected specific aspects (financial, technical and technological, legal, ethical and cultural); the concepts of innovation (Joseph Alois Schumpeter), the institutional school (Ronald Coase, Oliver Eaton Williamson), organisational ecology, the neo-Darwinist current, concepts of subjectivism (Friedrich August von Hayek, Ludwig von Mises), evolution theory (Herbert Simon), managerial theories of the firm, and concepts regarding TNCs and networks have been classified.

References to these reflections are necessary, since they constitute the foundation of modern concepts. Even Adam Smith described a company's trade

1 P.J. Curven, *Theory of the Firms*, Macmillan, New York 1976, pp. 83–147.
2 A. Osterwalder, Y. Pigneur, *Business Model Generation*, Wiley & Sons, New Jersey 2010.
3 New institutional economics, including works by A.A. Alchian; J.M. Buchanan; R.H. Coase; H. Demsetz; B. Doller; F. Hayek; G. Myrdal; D.C. North; M. Olson, E. Ostrom, W. Riker, K. Shepsle, H. Simon; and G. Tullock, B. Weingast, O.E. Williamson.

secrets as a source of great advantages, which make it possible to obtain benefits (higher prices due to diversity). Ricardo's studies emphasise the significance of the international division of work as a basis for deriving benefits from trade. In this case, not only the agents that are less efficient in terms of costs benefit, but so do those with other attributes (comparative advantage).

Malthus claims that competition is the ability to use advantages to develop a pattern of behaviours that would help an organisation survive (which signifies gaining a permanent advantage over the competition).

Mill notices that market prices depend on the usefulness of a given product, which constitutes the foundation of modern marketing. Marx points out that competitiveness is like a strength that does not necessarily balance the market, which suggests that competitiveness is dynamic. Cournot concluded that there are three types of market structures and competition models associated with them, depending on the number of sellers on the market.

Marshall made a valuable observation on the topic of the permanence of competition, concluding that the permanent state of competitive advantage is impossible. Various factors interfere with the balance, triggering a reaction of adjustments that lasts until the balance is restored.

In conclusion, the classical approach laid the foundations, while the subsequent concepts were created mostly on the basis of criticisms of the restrictive principles of the school. The neoclassical school managed to change the perception of competition from mere rivalry into a market condition. It resulted in the development of concepts that describe market structures. However, enterprises were treated instrumentally as a black box,[4] with analyses of only their starting and exit points and not their internal structures.

Current knowledge makes it possible to see that their potential was never fully utilised, since many of them contained undervalued observations. The neoclassical approach involved a shift towards searching for instruments of competition between enterprises based on a combined theory of competition and market structure. This current comprised two subgroups:

- theories that emphasise the importance of tools in competition among market participants, attempting to achieve a monopoly in the narrow field of their speciality; skilfully used tools delay (or restrict) the emergence of substitutes, i.e., a company influences market conditions (the concepts of Clark, Bailey, Chamberlin and Alderson);
- theories that emphasise the role of market structures as a driving force; the constant interaction between the participating agents results in the development of structures that obstruct the autonomy of the agents' actions (the concepts of Keynes, von Neumann and Morgenstern, Counot, Bertrand, Galbraith, von Stackelberg and Edgeworth).

4 J. Kay, *Economics and Business*, "The Economic Journal" 1991, vol. 101, pp. 57–61.

The concepts of the first subgroup, which consider the perfectly competitive market to be an unreal model, accentuate the possibilities of gaining a competitive advantage in a narrow section of the market. However, individual authors described other tools of competition.

Bailey described monopolisation, since it can fulfil market conditions more easily than its competitors. Clark ascribed a crucial role to innovations. Chamberlin emphasised the role of brand and advertisements as tools which make an offer stand out.

Alderson enumerated a set of tools which may be considered the pillars of advantage: market segmentation, the selection of information methods (promotion and advertisement), distribution, product development, development of processes, and innovations. To derive benefits from the developed advantage, an enterprise needs to take actions to limit the competition's ability to substitute its offer. In order to do that, it should isolate its target markets, create specific products for them, continuously make adjustments (innovations[5]) and take actions that stimulate sales (e.g., promotion and distribution using the brand's capital).

The concepts of the second subgroup focus on the principles of the interdependencies between members of transactions on a given market (including the typology of forms of possible cooperation).

Most significant in the reflections of von Stackelberg is the stress put on the fact that oligopolisation (Stackelberg's duopoly) of the market leads to the situation where the decisions of an enterprise are dependent on the actions of its direct competitors. Aware of the restriction on the autonomy of a given company's decisions and familiar with other participants of the market game, the competing companies may attempt to monitor each other's actions. Possible advantages of this surveillance include the possibility of seeing the competitors as potential partners (i.e., game theory) as well as making attempts to describe the relations between the participants of the contracting process (i.e., the agency dilemma).

In conclusion, these concepts pinpoint the sources of impulses that obstruct the perception of the market as a structure that strives for balance. They analyse the behaviours of market participants; therefore, they stop treating them as passive elements of the market puzzle. They emphasise the enterprises' ability to start their own development potential (through the use of competitive tools) and the ability to analyse their position in the market structure (or even attempts at controlling their market position).

Still, these concepts present a fairly static perspective, focusing on market observations and adjusting the behaviours of the participants of the market game to the market condition. These theories explain the principles of allocating resources

5 M.W. Wallin, G. von Krogh, *Organizing for Open Innovation: Focus on the Integration of Knowledge*, "Organisational Dynamics" 2010, vol. 39 (2), pp. 145–154; J. West, B. Bogers, *Leveraging External Sources of Innovation: A Review of Research on Open Innovation*, "Journal of Product Innovation Management" 2014, vol. 31 (4), pp. 814–831.

on the market, without investigating the complexity of either creating or allocating resources in a company.

Alternative concepts consider competition to be naturally dynamic, the environment to be unstable and changeable, and information to be incomplete and asymmetric. The two main trends are:

- evolutionary economics – the adjustments to market conditions that occur thanks to the unique resources that a company possesses are the foundations for building competitiveness; the theory of innovation as a permanent, purposeful disturbance to the existing state; providing the resources with new opportunities to create value-added; rearranging organisation and management structures; quick reactions to subjective requirements of specific market segments through the selection of a suitable composition of tangible and intangible resources (Austrian subjectivism); realising that a market is shaped by the actions of institutions which determine the shape and scope of market transactions (i.e., the institutional school); complex measurement of the efficiency of system functioning, including its ability to adapt to technological and social changes (i.e., NIE[6]); market and competition processes are a natural selection mechanism (those who are better adjusted, survive[7]); the necessity of systemic-comparative perception and a homeostatic balance between a company and its environment (biological theories of the firm); shift from the classical *homo economicus* concept to the model of social man (behavioural theories of the firm);
- managerial economics – separation of ownership from management (control); analysis of the company-environment relations, taking into account, in particular, the studies on an organisation's interior and the principles of strategy-making; a company's environment is the result of the actions of the agents that comprise it, so agents' actions are determined by both internal and external factors; the structure – conduct – performance (S-C-P) triad (i.e., the business sector economy); the development of an enterprise's resources as a result of recognising the external dynamics of the environment (i.e., the Five Forces Model); the concept of the value chain; emphasising the environment-resources relation (i.e., new competitiveness theory); the complexity of strategies and tactics (theory of the bundle of objectives).

The key conclusion from the reflections on evolutionary concepts is both the negation of the existence of an unchangeable formula for enterprises on all markets and the observation that an enterprise's organisation changes, which affects the

6 L.H. Slangen, L.A. Loucks, A.H. Slangen, *Institutional Economics and Economic Organisation Theory: An Integrated Approach*, Wageningen Academic Publishers, Wageningen 2008.

7 B.D. Henderson, *The Anatomy of Competition*, "Journal of Marketing" 1983, vol. 47, pp. 7–11; A.A. Alchian, *Some Economics of Property Rights. Economic Forces at Work*, Liberty Press, Indianapolis 1977, pp. 127–149.

efficiency of its actions (Thorstein Veblen[8]). An organisation works to reinforce beneficial market relations through specialised management structures. That accentuates the role of the connection system in the creation of competitiveness (John Rogers Commons[9]).

The following question regarding studies on competitiveness emerged: why are an organisation's internal operations based on a coordination mechanism other than the price mechanism? As a result, the amount of transaction costs both in market operations and out-of-market operations (within an organisation) becomes an element of the research. It has been observed that if a transaction involves serious investments in assets, the participants act more efficiently within their relations, since the exchange of information between them becomes harmonious and improves their ability to adapt to the changing conditions.

It was also noted that success reinforces relations and facilitates the continuity of transactions. Therefore, enterprises are interested in creating their own structures if the costs of making and completing transactions internally are lower than they would have been on the market. The system may expand, as long as there are additional transactions that can be internalised by implementing coordination through management, thus reducing market uncertainty. However, the expansion of structures requires organisational adjustments to maintain management efficiency.

The competitive strategy should look for the optimum between the luxury of controlling all resources, covering the costs of organisation and management of an expanded system, market uncertainty (as to the quality of services), but also providing the opportunity to lower the costs of resources that are obtained through contracting purchases outside. If contracting is considered a company's basic mechanism of functioning, enterprises can be treated as economic devices that constitute bundles of contracts.[10] The growing permanence and stability of contracts lead to the emergence of mini-societies with a large spectrum of norms that bind the system together and extend beyond the requirements of exchange and processes associated with it. As a result, the structural separateness of participants gradually disappears.[11]

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8 T. Veblen, *The Theory of Business Enterprise* (1904) looks at the growing corporate domination of culture and the economy. Veblen placed the large business companies in the context of the increasing industrialization.

9 J.R. Commons, *The Distribution of Wealth* (1893), https://www.unz.com/print/CommonsJohn-1893 [accessed: 19.03.2020].

10 P. Milgrom, J. Roberts, *Economics Organisation and Management*, Prentice–Hall, Englewood Cliffs 1992, p. 20.

11 L.R. Macneil, *Contracts: Adjustments of Long term Economic Relations under Classical, Neoclassical and Relational Contract Law*, "Northwestern University Law Review" 1978, vol. 72, pp. 854–906.

References to evolutionary theories can be concluded by means of the concept by Herbert Alexander Simon[12] and Edith Tilton Penrose.[13] Due to an unstable environment, enterprises frequently choose the first course of action that meets the minimum criteria (i.e., it is good enough). The competitive strategy assumes the agents' best possible adaptation to specific environmental conditions. Competitiveness is, to a high degree, determined by an organisation's structural features: complexity, formalisation, and centralisation.

The higher levels should involve decisions about purposes (i.e., they are strategic), while lower levels are involved in decisions about means of achieving them (i.e., tactical and operational). Penrose accentuates the fact that an organisation is an agent that is capable of learning and accumulates knowledge (e.g., through organisational routines)[14] in order to use it as a tool that improves competitive abilities – which confirms the significance of knowledge capital as a crucial development factor (especially in a system as complex as a GBN).

Three trends in managerial economics are an important foundation of the alternate theory of enterprise: industrial economics, resource-advantage theory, and concept of the bundle of objectives.[15] Their contribution involves accentuating that competitive position is determined by an agent's earlier position (in the industry), while the significant role of the environment suggests that a competitive strategy should be formed from the outside to the inside and fulfilled by selecting the most attractive types of activities. The aim is to take the best possible positions against the competition thanks to the correct composition of the value chain. When creating a strategy, a company needs to be aware of the complexity and diversity of the environment, including the necessity to follow global standards and the life cycle of a given sector.

As the complexity of the environment increases, a company's success increasingly depends on its resources. Proponents of the modern resource-based

12 Concept based on the assumption: *Satisficing approach to decision making vs. optimizing approach to decision making*. H.A. Simon, *Działanie administracji. Proces podejmowania decyzji w organizacjach administracyjnych*, Państwowe Wydawnictwo Naukowe, Warszawa 1976.

13 E.T. Penrose, *The Theory of the Growth of the Firm*, John Wiley & Sons, New York 1959.

14 R.R. Nelson, S.G. Winter, *An Evolutionary Theory of Economic Change*, Belknap Press/ Harvard University, Cambridge–London 1992; G. Ietto-Gillies, *Transnational Corporations and International Production: Concepts, Theories and Effects (Second Edition)*, "Transnational Corporations" 2015, vol. 22 (2), pp. 81–84.

15 The concept of the bundle of objectives was developed by Cyert and March. They argue that an organization's goals are a compromise between the members of a coalition, which comprises the participants who affect an organization. The firm is conceived as a coalition of different groups which are connected with its activity in various ways (e.g., shareholders, customers, suppliers, managers, employees, competitors etc.). Cyert and March deal with the corporate managerial business in which ownership is divorced from management. J.L. Thompson, F. Martin, *Strategic Management: Awareness and Change*, Cengage Learning EMEA, London 2005, pp. 77–78.

view[16] identify an enterprise's strategic potential not only with resources as such but also with this enterprise's ability to use them innovatively and effectively.[17] It is of utmost importance that categories such as innovativeness, entrepreneurship, learning, knowledge access and the condition of the institutional environment are considered crucial.[18]

Moreover, this trend has contributed to emphasising the essence of the shift between the entrepreneurial capitalism phase to managerial and then investment capitalism.[19] It means that the significance of the division between ownership and management has been observed. It also makes it possible to pay attention to the necessity to build the specificity of an organisation's structure, including the complexity of its purposes (theory of the bundle of objectives).

A modern organisation has more than one purpose; there are many objectives whose elements are determined by region (geographical fields), competence (production sectors), function (segments of the target market), and institution (value systems, formal and informal institutions). Shaping an enterprise into an efficiently functioning system requires a strategic vision of development and a suitable management model.

The foundation is the assumption about the endogenous nature of the competitive advantage which is obtained as a result of the organisation's collective wisdom (its knowledge capital). It internalises individual valuable offers and creates a cohesive brand portfolio that ensures full coverage of selected market areas thanks to the heterogeneity of supply.

In conclusion, the formalised and non-flexible classical model, which is based on the rationality of agents' actions and access to complete information, has failed in the dynamically changing environment. New concepts were created based on classical premises which attempted to fulfil the changing market conditions. The creation of the modern concept of competitiveness was gradual and somewhat naturally led to the development of an interdisciplinary theory, which attempted to explain the behaviours of economic entities that were striving to improve their competitive position on a global market. The new approach discovered the necessity to combine diverse abilities:

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16 B. Wernerfelt, *A Resource – Based View of the Firm*, "Strategic Management Journal" 1984, vol. 5, pp. 171–180.

17 G. Hamel, C.K. Prahalad, *Strategic Intent*, "Harvard Business Review" 1989, vol. 67, pp. 63–76; C.K. Prahalad, G. Hamel, *The Core Competences of the Corporation*, "Harvard Business Review" 1990, vol. 68 (3), pp. 79–91; J.B. Barney, *Firm Resources and Sustained Competitive Advantage*, "Journal of Management" 1991, vol. 17, pp. 99–120; J.B. Barney, *Gaining and Sustaining Competitive Advantage*, Prentice Hall, Upper Saddle River, New York 2001, pp. 151–264; R.M. Grant, *Contemporary Strategy Analysis, Concepts, Techniques, Applications*, Blackwell Publisher, Malden 2002, pp. 141–395.

18 G. Hamel, C.K. Prahalad, *Competing for the Future. Breakthrough Strategies for Sizing Control of Your Industry and Creating the Markets of Tomorrow*, Harvard Business School Press, Boston, Massachusetts 1994, pp. 14–16.

19 M. Rosińska-Bukowska, *Rola*…, pp. 258–270.

- internal ones – the ability to initiate one's own development potential based on the importance of resources of a particular nature and identifying key competencies; implementing innovations (in terms of goods, processes and organisation[20]) as a selection mechanism;
- external ones – the ability to analyse one's own position in a market structure, which requires searching for a suitable composition of resources considering new analytical planes (meso-, macro- and metaeconomic) and a wider range of factors (industrial, behavioural, institutional).

It is essential to emphasise the role of market structures as the initial conditions since they are necessary to determine the structure of the correlations and the principles of building relations. The purpose is to identify the planes of the target model of a competitive system.

4.2. The system of international competitiveness

The competitiveness of enterprises is most often understood as the ability to design, create and sell goods, whose prices, quality and other features are more attractive than the corresponding features of goods offered by the competition. It is analysed based on the relations between the enterprise, its potential, and its possibilities and capabilities and, on the other hand, the market structure and the strategic opportunities on the market.

In the attempt to meet the requirements of the 21st century in conducting business operations, including those regarding networks, the examination of competitiveness from the systemic perspective was considered a valid step. Competitiveness consists of four coexisting basic elements:[21]

- competitive potential – the sum of material, financial and human resources owned (measurable);

20 The process of generating innovations has changed significantly. The success of innovation processes are determined by the constantly changing global and competitive environment, the availability of capital, and increased cooperation between companies and their all stakeholders. H. Chesbrough, W. Vanhaverbeke, J. West (eds), *Open Innovation: Researching a New Paradigm*, Oxford University Press, Oxford 2006.

21 The essence is the transition from accumulated potential to the next stages of building prospects for long-term development. Units with identical output resources (potential) do not develop in the same way. The ability to use instruments and tactics to multiply potential is key (capability). This gives the company a chance to gain an advantage over the competition. The goal is to maintain this advantage, with the effect being the *ex-post* position. This *ex-post* position is the start of the next cycle. Thus, in this new cycle, it is the starting position, i.e., it is a new competitive potential (*ex-ante* position).

- competitive capability – instruments and tactics used to multiply the potential owned;
- competitive advantage – key competences; qualities that make an offer stand out;
- competitive position – the measure of competitive advantage achieved (*ex-post* position) that also constitutes the starting point of the next cycle (*ex-ante* position).

Resources are a competitive potential which is a result of the current market position or the company's location in the structures of the environment. The resources it owns determine the type of basic activity and the selected competition tactics. Resources *sensu stricto*, due to the organisation capabilities, or being used at the correct time, place and situation, become strategic resources (resources *sensu largo*). Obtaining a competitive advantage means achieving better results than the competition based on strategic resources.

Competitive position, measured by, for example, market participation, is an external sign of competitive capability. The position of a GBN orchestrator signifies being strongly rooted in a stable sector-specific market, the global arrangement of structures, stable portfolio of valuable brands, etc. Therefore, a competitive position is determined by the knowledge resources that are the effect of the accumulated influence of layers of an enterprise's capital.

Diagram 6 presents the role of knowledge resources in the process of building competitiveness.

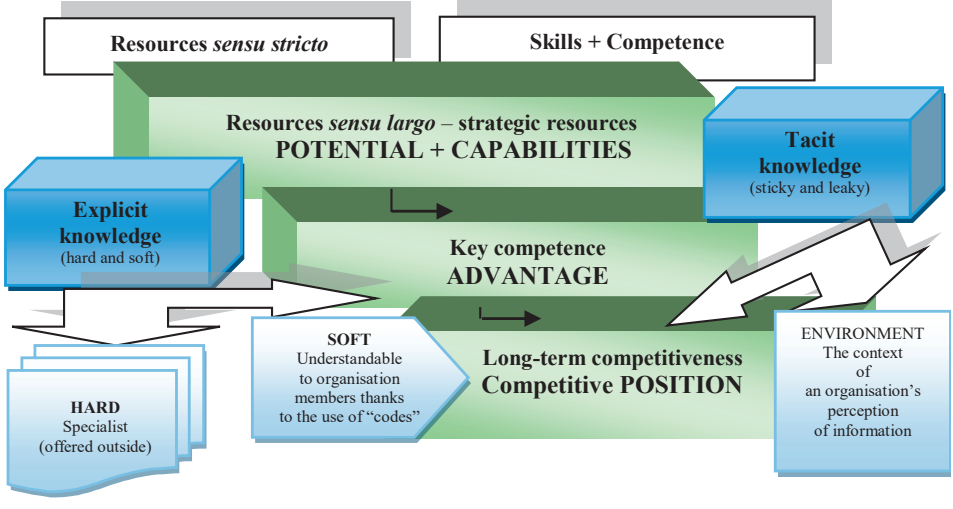


Diagram 6. The role of knowledge in the process of building competitiveness

Source: own elaboration.

The notion most often identified with competitiveness in the literature is "competitive advantage". The sources of competitive advantage depend on environmental determinants, i.e., market structure, participants' behaviours,

and the network of their relations. The specificity of an agent's ownership state provides the opportunity to select paths of competitive strategy from cost leadership and offer differentiation, and to focus on a given market segment. The strongest agents, including GBNs, manage to combine these paths and achieve synergy, thus improving three aspects of competitiveness: efficiency, size and permanence.

The matter of permanence is especially significant. Sources of permanence include distinguishing competences, an organisation's reputation, long-term market position based on valuable brands, patents, licences, innovation and organisation capabilities, or, in other words, it is largely based on the ability to accumulate intangible assets.[22] The foundation of long-term competitiveness (i.e., position) is not only the composition of resources (potential) but the base of the cause-and-effect relations (capabilities) on which it (the advantage) was built. The nature of intra-organisational connections is also of high importance. An unclear structure makes it harder for the competition to identify the essence of advantage and, therefore, determine what the real strategic resource of the enterprise is. GBNs function based on precisely this model.

In conclusion, competitiveness is based on values that make it possible to distinguish the offer against the competition's in a given field, at a specific time and in a quantifiable aspect. It is the ability to effectively use competitive potential, which makes it possible to constantly generate attractive offers thanks to the selection of successful competition tools to ensure that value-added will be created for a long period of time. Competitiveness is the resultant of potential, applied tools and measures of competitiveness over a long period. It is the stability of the advantage achieved, i.e., a comprehensively perceived competitive position.

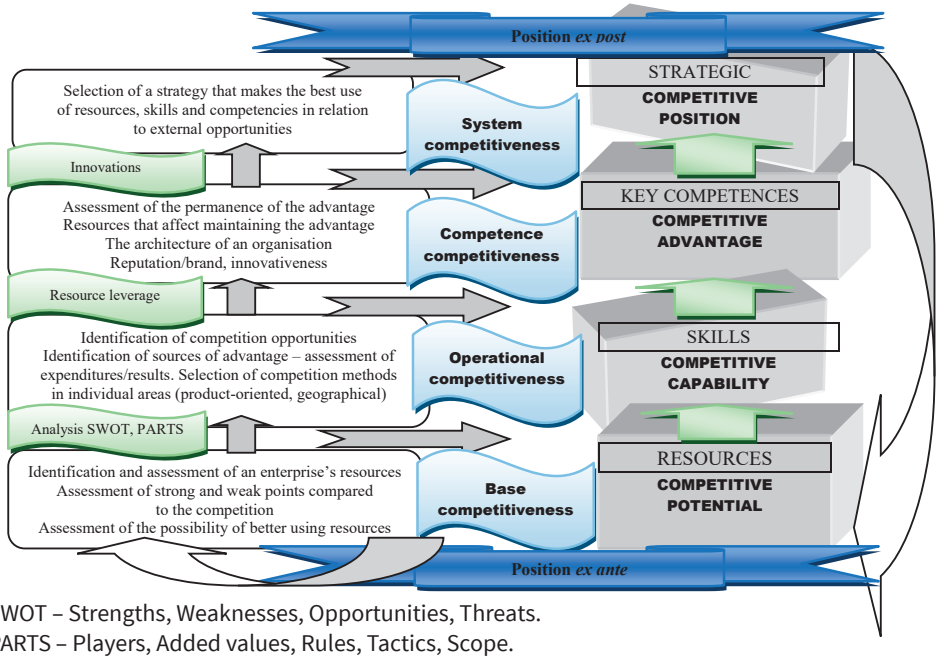
The concept presented accentuates the systemic and dynamic nature of the process of building competitiveness. Four elements that make up the general system of competition influence each other in the continuous and dynamic competition process. The current competitive position is the starting point for the development of competitive potential and, the pursuit of other innovative projects on its basis. Since the stages are repetitive, the effect of a self-winding spiral takes place.

Key competencies are the essence of competitiveness (which is why competitiveness is frequently equated with competitive advantage). They are a juxtaposition of specific, applied and integrated knowledge as well as the skills and attitudes associated with technology, production and management, thus

22 M. Srivastava, A. Tranklin, L. Martinette, *Building a Sustainable Competitive Advantage*, "Journal of Technology Management and Innovation" 2013, vol. 8 (2), pp. 47–60; I. Dierickx, K. Cool, *Asset Stock Accumulation and Sustainability of Competitive Advantage*, "Management Science" 1989, vol. 35, pp. 1504–1511; K.P. Coyne, *Sustainable Competitive Advantage: What It Is, What It Isn't*, "Business Horizons" 1986, vol. 29, pp. 54–61; P. Ghemawat, *Sustainable Advantage*, "Harvard Business Review" 1986, September–October, pp. 53–58; G.S. Day, R. Wensley, *Assessing Advantage: A Framework for Diagnosing Competitive Superiority*, "Journal of Marketing" 1988, vol. 52 (2), pp. 1–20.

enabling the achievement of long-term synergic effects.[23] They are a resultant of resources and various skills demonstrated by an organisation's components, and they only become apparent as a result of collective learning and improved integration, i.e., as a result of the correct configuration (of organisational skills and managing them).

An agent achieves a key advantage thanks to its initial position, which comprises experience and the proper resource structure. The transformation of advantages into a strong and permanent competitive position requires constant monitoring of the environment, the position in market structures and making an effort to keep the competition at a distance by making moves first. The stability of advantage is reinforced through creative coordination of the competitiveness system (diagram 7).



SWOT – Strengths, Weaknesses, Opportunities, Threats.
PARTS – Players, Added values, Rules, Tactics, Scope.

Diagram 7. Elements of the competitiveness system

Source: own elaboration.

The system of competitiveness comprises three competitiveness subtypes, which are interconnected and interdependent:

23 G. Hamel and C.K. Prahalad presented the concept in 1990 and then continued to develop it. C.K. Prahalad, *Inside-out Strategy. Explanation of Core Competence of Hamel and Prahalad*, www.ckprahalad.com [accessed: 12.10.2018].

- base competitiveness – position based on accumulated resources; the foundation of the competitive position, but insufficient to achieve a permanent advantage (static, complex perspective);
- operational competitiveness – abilities that are significant at a given point in the production chain; abrupt changes in the competitive position; only when operational competitiveness becomes part of the system can it help strengthen the positive effects (static, fragmentary perspective);
- competence competitiveness – a collection of constantly strengthened key competences; specialisation area – industry, geographical area; the offer is improved to meet the growing requirements of target markets (dynamic, following perspective);
- system competitiveness – the resultant of the three remaining types of competitiveness; the ability to create value-added to the constantly growing standard; innovativeness as an attribute (dynamic, advanced perspective).

An enterprise's strategy must consider all these elements as well as the sequential, continuous and cyclical nature of the model of building competitiveness.[24] It requires implementing the concept of managing an "organisation's knowledge capital" (OKC) based on the exploration (not exploitation) of:

- the environment – through transformational and not adaptive learning, undermining the current principles and assumptions or even questioning the assumptions and values considered crucial so far;
- processes – the creation of value based on various experiences and current observations; the new economic landscape requires a combination of entrepreneurship, innovation and internationalisation as fundamental components;[25]
- benchmarking – competitive, functional, horizontal and internal in relation to strategy, technology, management, production methods, work organisation, circulation of information and other positive practices;[26]
- the multi-dimensional monitoring of effects – the use of both quantitative and qualitative measures[27] as a basis for setting new purposes (auditing processes and structures).

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24 C. A. de Kluyver, J.A. Pearce, *Strategy: A View from the Top*, Pearson Prentice Hall, New Jersey 2006, p. 6; S. Denicolai, A. Zucchella, R. Strange, *Knowledge Assets and Firm International Performance*, "International Business Review" 2014, vol. 23, pp. 55–62.

25 B. Hagen, S. Denicolai, A. Zuchella, *International Entrepreneurship at the Crossroads between Innovation and Internationalisation*, "Journal of International Entrepreneurship" 2014, vol. 12 (2), pp. 111–114.

26 M. Coulter, *Strategic Management in Action*, Pearson Prentice Hall, New Jersey 2005, pp. 120–124; R. Mead, T.G. Andrews, *International Management*, Wiley-Blackwell, Hoboken, New Jersey 2009.

27 Computing has become an essential part of the day-to-day practice of business management. Data exploration of one variable and multivariate data. Comparing two groups and many groups. A.S, Zieffler, J.R. Harring, J.D. Long, *Comparing Groups: Randomisation and Bootstrap Methods Using R*, Hoboken, John Wiley & Sons, New York 2011.

The full utilisation of the potential inside the system of international competitiveness requires the exploration of a network "organisation's knowledge capital", which encompasses theoretical preparations, i.e., the knowledge of principles, skills and their implementation in both internal and external activity areas. It also requires the competence of coordinating various determinants and value systems of system stakeholders. It demands a systemic approach to building competitiveness or the implementation of the achievements of the interdisciplinary theory of the firm.

The new conditions created by the ongoing globalisation require that the principles of creating competitiveness be modified. It is a shift from a competitive battle for a position in a closed/limited space on a specific market to rivalry for access to the future development potential that is opening up. Building competitiveness must be based on the vision of future business opportunities, i.e., the development of industry, changes in consumer preferences, and leadership (mostly intellectual, but also economic). The changes cause a shift in the centre of gravity from focusing on products and markets to observing process dynamics and changes in conditions. That demands staying ahead of market tendencies thanks to the creative use of the full resource potential and their continuous transformations into strategic skills that give access to a wide range of competition tools.

Complete use of the potential of the competitiveness system requires:

- combining antagonisms – cooperation and competition (coopetition); localisation and globalisation (glocalisation); standardisation and adaptation (interculturality), etc.;
- qualitative changes – regarding the planning, preparation, and production of goods and services as well as the quality of the interaction infrastructure, i.e., the relations with all stakeholder types, such as notions of shared value, a map of relations, or the co-creation of value;[28]
- the modification of the mechanism that coordinates and regulates the system – the complexity and speed of internal and external changes force structural remodelling; simplification in order to improve an organisation's internal knowledge transfer, i.e., the Simple-Rules Strategy;[29]
- the implementation of a co-participating control mechanism – the use of quantitative and qualitative measures of the efficiency of an organisation's actions with the involvement of all stakeholders; the assessment of business responsibility and the implementation of the principles of sustained development;

28 G. Johnson, K. Scholes, *Exploring Corporate Strategy*, Prentice Hall Europe, London 1999, pp. 215–217; C.K. Prahalad, V. Ramaswamy, *Co-creation Experiences: The Next Practice in Value Creation*, "Journal of Interactive Marketing" 2004, vol. 18 (3), pp. 5–14; H. Yli-Renko, E. Autio, H. Sapienza, *Social Capital, Knowledge Acquisition and the International Growth of Technology-based New Firms*, "International Business Review" 2002, vol. 11 (3), pp. 279–304.

29 K.M. Eisenhardt, D.N. Sull, *Strategy as Simple Rules*, "Harvard Business Review" 2001, vol. 79 (1), pp. 107–115.

- the exploration of "organisational knowledge capital", using intellectual capital as a value multiplier; strategic resources concentrate around the information – human capital – creativity triad.

Success depends on the correct competitive strategy, i.e., one that is clear, ensures flexibility, and is based on the fundamental principles of logic (making use of the opportunities, setting limits, balancing costs and benefits), the hierarchy of purposes (priorities), and successiveness of actions (stages, pace). An effective strategy requires the correct composition of elements such as:

- the competence base – an agent's financial and market condition, position in the industry, specialisation area and key competencies, a group of loyal clients and their influence on improving the offer, brand value;
- expansion principles – the creative use of key competencies, assigning them new qualities and modifying them; methods of obtaining new clients, e.g., market segmentation and exploring the knowledge that stems from it;
- model of the creation of innovations – constantly running research and development projects (even as a market leader) regarding products, promotion, distribution, management model, etc.; the structure of R&D expenditures; employee training;
- exploration of the system of diverse connections – global and multi-level connections, with different forms, strengths and durability of relations.

Competitive strategy must refer to the analysis of an organisation's capital layers and the base elements of the competitive system: the competitive potential, competitive capability, competitive advantage and competitive position. Moreover, all these elements must relate to the micro-, meso-, macro- and metaeconomic conditions from an international perspective. According to Ludwig von Bertalanffy,[30] a systemic approach is needed to take these requirements into account.[31] As a result, a strategy based on the following pillars emerges:

- comprehensiveness – a holistic, systemic approach to meeting challenges;
- corporateness – coalition ability with possibilities of coexistence;
- congruence – being in harmony with a multicultural global environment and a multitude of stakeholder groups;
- creativity – combining competence, diversity and dissimilarity as inspirations for changes and obtaining synergy.

30 L. von Bertalanffy, *General System Theory. Foundations*, *Development*, *Applications*, George Braziller, New York 1968, https://monoskop.org/images/7/77/Von_Bertalanffy_Ludwig_General_System_Theory_1968.pdf [accessed: 03.08.2019].

31 The evolution of TNCs, within the paradigm of general systems theory, can be described in terms of the attempt by organisations to become more aware of and to react to their relevant external and internal increasingly complex pattern of system-environment interaction. G.R. Dowling, *The Application of General Systems Theory to an Analysis of Marketing Systems*, "Journal of Macromarketing" 1983, vol. 3 (2), pp. 22–32; L. Skyttner, *General Systems Theory: Problems, Perspectives, Practice*, World Scientific Publishing Co. Pte. Ltd, 2006.

A global business network is a social unit created and transformed as planned (with the orchestrator's involvement) to fulfil specific purposes. Based on the above-mentioned pillars, it is able to meet the challenges of building competitiveness in the dynamically changing environment of the 21st century. The achievement of purposes is based not only on the system of specifically established types of relations used to compete for limited goods (resources, markets, qualities, etc.), but also on the system of invisible bonds that help make up the GBN system.

A competitiveness system is open, which means that it constantly interacts with the environment, resulting in a continuous evolution of strategies, structures, and image. A GBN system is a structure made up of subsystems that are tightly bound but which often use various tools and perform their own, seemingly independent functions on the outside.

Therefore, a GBN is a system of international competitiveness – an entirety whose specificity is expressed mostly through its relationship with its own elements, whose functioning contributes to the success of the entirety.[32] The whole GBN, in turn, has a deciding impact on the welfare level among its components. This system is more similar to the relations in a national economy than in a typical enterprise. Therefore, the assessment of its competitiveness, compared to the assessment of traditional (microeconomic) approaches, must be modified.

The accumulated potential alone does not determine the ability to obtain and maintain a competitive advantage. For that, a complex, corporate, congruent and creative competitive strategy is needed. An assessment of one's position in the global space, taking into account the size and structure of resources possessed is required, followed by a skilful selection of a toolset and competition methods. A competitive strategy becomes a factor which determines how an agent functions.

Traditional measures of enterprise competitiveness generally focus only on measuring economic capital, almost completely bypassing the issue of network layers, despite them being responsible for the creation and multiplication of intellectual capital. The use of purely quantitative measures results in the inability to include a complex range of competitive factors in the studies. That prevents a thorough explanation of the determinants and perspectives of competitiveness in complex business systems – the GBNs. Thus, a model should be created to describe the elements of international competitiveness among enterprises which act as global business systems and, therefore, do not fit into the framework of analyses for microeconomic agents.

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32 Ethical duties are considered to be strictly linked to the management of the corporation system. In particular, the dichotomy between the economic success of corporation networks and ethics, stakeholder engagement and ethical responsibility and competition in a cooperative context. G. Rusconi, *Ethical Firm System and Stakeholder Management Theories: A Possible Convergence*, "European Management Review" 2019, vol. 16, pp. 147–166.

4.3. The concept of the international competitiveness of enterprises

This subchapter analyses selected models of assessing the international competitiveness of economies (ICEC) to provide recommendations for the concept of the international competitiveness of enterprises (ICEN). The starting point for these reflections is the assumption that a GBN is a complex organism that cannot be submitted to the simple analysis that is applied to agents in the microeconomic zone. Therefore, it is necessary to follow another model – the model of system competitiveness – and take into consideration a wide range of factors.

For that purpose, the definitions of competitiveness formed for the most complex organisational systems (national economies) were referred to. The analysis of the subsequent definitions of ICEC presented by the World Economic Forum (WEF), the International Institute for Management Development (IMD) or the World Bank Group (WBG), suggests that correctly interpreting them would make it possible to draw conclusions for the analysis of structures such as GBNs.

The WEF claims that agents are competitive if they have the economic foundations to achieve quick and long-term development. They emphasise the role of the economic level that has been achieved as the foundation/potential for competitiveness.

The IMD also believes competitiveness to be initially conditioned by an agent's economic situation. The ability to maintain it depends on the quality of regulatory institutions (the efficiency of the governing system) and the management model (condition and perspectives for the evolution of the infrastructure, the R&D zone, human resources).

The WBG emphasises that resources alone (whether in the form of raw material deposits, workforce or financial capital) do not determine prosperity – they merely constitute potential. The group also stresses the significance of the capability for continuous active participation in the global innovation process (reinforcement and improvement) – the ability to transform potential into an advantage. It considers the creation of value-added per unit of resources involved.

Even though the factors that determine the competitiveness of GBNs and economies are similar, there is no possibility of equating either the agents or their purposes; it is only possible to apply an already known methodology to a new research ground.

References to the elements of the models of assessing macroeconomic competitiveness (after applying the proper adaptation procedures) during a GBN competitiveness analysis are only possible when it is assumed that in a dynamically changing environment, adjustment capabilities are the factor that determines the leader (which is able to pursue a selected development strategy, regardless of its identity). Therefore, identifying solutions applied by various agents is significant in meeting new challenges.

The concept of the international competitiveness of enterprises (ICEN) has been prepared as a model for assessing the competitiveness of the most powerful transnational corporations and global business networks. Five models of assessing the international competitiveness of economies (ICEC) were referred to through appropriate interpretations of competitiveness factors (presented in the five models) for the concept of ICEN:

- the WEF model – *The Global Competitiveness Report*;[33]
- the BEG model – *Business Environment Group of the World Bank*;[34]
- the IMD model – *The World Competitiveness Yearbook*;[35]
- the American model (AM) – by Bieńkowski;[36]
- the system model (SM) – by Esser, Hildebrand, Messner and Meyer-Stamer.

33 The WEF model is based on the Global Competitiveness Index (GCI). GCI analyses competitiveness along 12 pillars, which are, in turn, organised into three sub-indices in line with the three main stages of development: basic requirements, efficiency enhancers, and innovation and sophistication factors. It should be noted, however, that in *GCI 4.0*, the pillars fall under four categories: enabling environment, human capital, markets, and innovation ecosystem. K. Schwab, *The Global Competitiveness Report 2018. Insight Report*, World Economic Forum, Geneva 2018, http://www3.weforum.org/docs/GCR2018/pdf [accessed: 22.11.2019]; *The Global Competitiveness Report*, http://reports.weforum.org/global-competitiveness-index-2017-2018/ [accessed: 22.11.2019].

34 The BEG model includes conditions for a knowledge-based development process that would seem to include an educated and skilled labor force, a dense and modern information infrastructure, an effective innovation system, and an institutional regime that offers incentives for the efficient creation, dissemination, and use of existing knowledge. The Group of Finance, Competitiveness & Innovation in the World Bank works with governments to create an enabling environment where provide a foundation to accelerate equitable growth. The World Bank, *Building Knowledge Economies. Advanced Strategies for Development*, WBI Development Studies, The World Bank, Washington, DC 2007, http://siteresources.worldbank.org/KFDLP/Resources/461197-1199907090464/BuildingKEbook.pdf [accessed: 12.11.2019]; The World Bank, *Doing Business 2020: Comparing Business Regulation in 190 Economies*, The World Bank, Washington, DC 2019, https://openknowledge.worldbank.org/handle/10986/32436 [accessed: 12.11.2019]; The World Bank, *Industry Competitiveness and Jobs*, The World Bank, Washington, DC 2017, http://documents.worldbank.org/curated/en/171501476992732097/pdf/ [accessed: 12.11.2019].

35 The IMD World Competitiveness Ranking (established in 1989) incorporates 235 indicators. The ranking takes into account a wide range of "hard" statistics, such as unemployment, GDP and government spending on health and education, as well as "soft" data from an Executive Opinion Survey that covers topics such as social cohesion, globalisation and corruption. This information feeds into four categories: economic performance, infrastructure, government efficiency and business efficiency. IMD World Competitiveness Centre, *Methodology and Principles of Analyses,* https://www.imd.org/wcc/world-competitiveness-center-rankings [accessed: 03.11.2019].

36 W. Bieńkowski, M.J. Radło, *Amerykański model rozwoju gospodarczego. Istota, efektywność i możliwości zastosowania*, Oficyna Wydawnicza SGH, Warszawa 2006; M.J. Radło, *Międzynarodowa konkurencyjność gospodarki. Uwagi na temat definicji, czynników i miar*, Warszawa 2008, pp. 1–33, http://www.radlo.org/mkg.pdf [accessed: 02.01.2019]; W. Bieńkowski, *Reaganomika i jej wpływ na konkurencyjność gospodarki amerykańskiej*, Państwowe Wydawnictwo Naukowe, Warszawa 1995.

The WEF model distinguishes twelve groups of factors that influence the level of competitiveness: institutions, infrastructure, macroeconomic environment, health and primary education, higher education and training, goods market efficiency, labour market efficiency, financial market development, technological readiness, market size, business sophistication and innovation. Taking into account these parameters (relevant elements include openness of the economy, role of the country, finances, infrastructure, technologies and innovation system, quality of management, human capital, institutions), their equivalents that are of significance in the analysis of enterprise competitiveness are enumerated below:

- the degree of openness to cooperation, expressed through trade and investment activities on a global scale, including, for example, the number of agencies or joint venture agreements;
- the role of the orchestrator as a regulator of internal processes in a corporate system, including the size and structure of participation in shares and sales of the whole organisation as well as the function in the whole organisational system;
- the stability of the market situation, which can be measured by means of the market value of units that make up the network, the size of their assets, and sales volume;
- infrastructural development factors, i.e., the quality of the production and logistics base, where the assessment can be conducted based on the spatial distribution of branch offices and other dependent units, affiliated units and their structural diversity (in terms of production, trade, science and research);
- the ability to become involved in the international innovation system – expenses for research and development, investments in promising technologies (e.g., pro-ecological); the number of patents approved; involvement in the creation and popularisation of new quality standards;
- the quality of methods of both personal and marketing management – an agent is assessed as a friendly workplace, facilitating the development of human resources (the applied motivational and reward systems); the performance of the structure of the brand portfolio that covers a multi-segment market;
- the structure and potential of human resources – in a knowledge-based economy, this factor is assessed by analysing the education structure of employees and their ability to create value-added (measured by, e.g., the dynamics of employees per sales unit, the innovative solutions suggested by employees);
- the institutional and management system – the nature of institutions that control an organisation (degree of structure formalisation), the system model (the command and control model, based on the market legitimisation of authority – regulative/democratic).

The key advantage of the concept of assessing competitiveness based on the WEF model is the comprehensiveness of the approach, as it encompasses all

groups of environmental factors. This eclectic nature of the model corresponds to the definition of ICEN.

The second of the ICEC models is the BEG model, which contains five groups of factors (the general economic situation, financial dynamics, the investment infrastructure and climate, and human resources), which determine competitiveness according to specialists from the World Bank. Their interpretation for the ICEN model involves:

- a general (initial) assessment of market position – the position at a given moment against the competition;
- an assessment of changes of basic parameters (analysis *ex-post*) – the dynamics of sales, asset productivity, investments as well as changes to the structure of trade activities;
- an assessment of the financial liquidity ratio – especially the profits–investments relation;
- an assessment of developmental foundations – the state of production and service wealth (physical infrastructure) as well as organisational and structural wealth (information and communication networks); the accumulated infrastructural potential as a type of investment climate is crucial for the future improvement of an agent's position on individual markets;
- an assessment of the condition of human resources – the role of intellectual capital as a force that determines competitiveness in a knowledge-based economy.

The BEG model can be related to the structure of the competitiveness system and the layers of capital. Competitive potential is determined by the first four categories of factors assessed: the first two are market capital, the third one is financial capital, and the fourth one is organisational capital. The last group of factors combines INNC and INSC. The concept avoids the issue of tools and building competitiveness altogether and pays only slight attention to the sources of competitive advantage. However, it accurately presents the potential that is owned (especially infrastructural) as a foundation for the achievement of competitive advantage, and it emphasises the role of human resources.

From the perspective of the analysis of ICEN bases, the BEG model conveys a vital message that system competitiveness, which results from the creation of value-added, must be based on operational competitiveness (innovative), competence competitiveness (distinguishing) and base competitiveness (initial). It emphasises the importance of these foundations – therefore, a permanent and significant competitive position cannot be obtained overnight.

The third ICEC model is the IMD model, which names four groups of competitiveness factors (the economic situation, government efficiency, management efficiency, and infrastructure), which can be juxtaposed with the elements of the general system of international competitiveness:

- the depiction of the economic situation – i.e., the assessment of competitive potential based on the condition of AEC using parameters such as assets, sales, employment, stock share price;

- infrastructure – the basis of decisions regarding the competition instruments; basic and technological infrastructures correspond to production and trade infrastructures, while the scientific infrastructure goes with the R&D sphere of an organisation; a vital factor in the selection of tools to fulfil a competitive strategy, is the value system around which the business network system has been built – this may be treated as an infrastructure of values that are reflected in the contents of the network's brand portfolio and the widely-accepted, unwritten rules of the ethical code that determine the general framework for building relations in a network (i.e., prohibited practices, good practices);
- "government efficiency" and "management efficiency" – the assessment of the orchestrator's role in a global organisation system; institutional and business structures, or the rules and mechanisms of building a network as well as the role of an orchestrator in controlling intra-organisational transfers (of financial and human resources, and, above all, knowledge), should be assessed.

The IMD model, thanks to its condensed form, is much more transparent than the two previous models and visibly highlights the key elements of the international competitiveness system.

The fourth ICEC model is the American model (AM) of economic development. The author isolates five groups of factors (the size and structure of production resources, the efficiency of the use of production resources, social and economic system, the government's economic policy, international economic environment) that determine competitive capabilities. Interpreting them for the purposes of studying the origins of the competitiveness of business systems involves:

- the size and structure of production resources – gaining an advantage based on the OLI paradigm (ownership, location, internalisation);
- the efficiency of the use of production resources – which arises from the ability to choose the correct instruments (at a given time and place) of competition, using the Heckscher-Ohlin theorem (on the abundance of resources; labour intensity, material intensity, capital intensity) in order to achieve positive financial results;
- the organisational culture, in the sense of a group of values, purposes and principles of business that reflect the social and economic determinants;
- the politics of battling competition – the model of achieving advantage (in terms of costs, distinctions); it results in offer diversification and the composition of the brand portfolio or specialisation that leads to cost advantages (that stem from the scale of activities); the pursuit of either path results in different organisational and management systems;
- the position in the international economic environment – the position in the economy at a given moment (based on several indices[37]) is the starting

37 The challenges faced by companies that intend to consciously formulate their own competitive and internationalisation strategies should include companies' reflections on possible scenarios for the development of the macroeconomic situation in various markets. M. Dzikowska, M. Gorynia, B. Jankowska, *International Competitiveness of Polish Companies during and after the Global Economic Crisis*, Difin, Warszawa 2017.

point for the assessment of developmental perspectives on the basis of the degree of system openness and its global involvement (the scale of internationalisation of an agent's individual elements of activity).

The AM model takes into account the market, financial, institutional and organisation layers. It does not emphasise the role of the innovation subsystem. The last group of factors is "the control level of a system" – it checks the effect of the complete process of building competitiveness (using the four previous groups of factors) and, at the same time, constitutes a starting point where another cycle begins.

This model shows a very important aspect of the analysis of competitiveness – the overlapping of individual layers. It is necessary not only to analyze groups of factors that determine a given type of competitiveness but to pay attention to mutual interactions between the examined factors. Individual layers of capital should not be explored separately. Consequently, it confirms the need for system analysis.

The fifth ICEC model is the system model (SM),[38] which emphasises the importance of those interactions between individual spheres that can influence an organisation's competitiveness. This model isolates four levels of the analysis of competitiveness that correspond with the presented levels of regulation considered by enterprises:

- the meta level – which consists of axiological factors, i.e., social and cultural, historical and institutional determinants (including moral standards, traditions, habits and beliefs that influence market regulation and the shaping of strategic developmental determinants); the ability to meet the diverse requirements of individual areas in a global space is a condition for becoming part of a group of globally significant agents; the influence on the competitiveness that concerns being endowed with production factors is omitted (these factors are recognised as a standard minimum that conditions entering a competitive battle on a global level); an organisation creates its regiocentric structures, thus identifying the centres of regional competence;
- the macro level – the influence of the macroeconomic agents' (countries, international organisations) activities on creating the institutional determinants of international competitiveness; in relation to business systems, these include the influence of home and host countries on the agent's development through the adopted policy of shaping the economic environment; in part, the degree of the independence of decisions made by individual agents at the macroeconomic level may be measured through the range of full-form internationalisation of the business, since it makes it

38 K. Esser, W. Hillebrand, D. Messner, J. Meyer-Stamer, *Systemic Competitiveness – Key Policy Issues*, "Industrial Organisation and Manufacturing Competitiveness in Developing Countries" 1995, vol. 23, pp. 143–148; K. Esser, W. Hillebrand, D. Messner, J. Meyer-Stamer, *Systemic Competitiveness: New Governance Patterns for Industrial Development*, Frank Cass, London 1996.

possible to negotiate more beneficial rules for building business relations; countries are given support in order to fulfil their functions, e.g., in R&D, education, culture, and environmental protection, which improves the agent's position in the system;

- the meso level – the determinants that arise from the specificity of a given industry; the base competitiveness factor at this level is the position in a sector (the strength of the brand, involvement in one's own market segment); the dynamics of changes in sales volumes, an agent's assets against the sums of the whole sector; the scale of the sector's oligopolisation – the values of the HHI-score; moreover, the level of technological advancement as well as the organisational and management infrastructure; the principles of building relations between companies and the market, as well as the models of organisation and management systems; the creation of business coalitions and other mechanisms that serve to improve access to scarce resources, e.g., forms of agreements, the scale of the full-form internationalisation of a business in a sector;
- the micro level – factors associated with current activities of enterprises that comprise a network: changes to the values of product brands, necessary changes to sales and profits, investors' assessment of the correctness of companies' actions (the dynamics of market value, changes in share prices); mechanisms of the allocation of resources between competitive purposes, the completion of specific projects that aim to improve the current situation.

The presented model introduces other invaluable insights into the ICEN concept. It arranges its elements by ascribing them to subsequent levels of the economic system. Its core is the emphasis on the significance of structures at the meta level. They create a social atmosphere that forces competitiveness. The requirements for competitiveness, according to the authors of the model, include maintaining quality, a flexible attitude to change, and building integrated cooperation networks.

Competitiveness requires the development of pro-innovative, flexible structures based on multi-layered connection systems. The complexity of relations between the subsystems and the scope of relations with the environment depends on the agent's size and its potential (economic and political), the power system and its structure, the area where it functions (industry/region), and the range of influence (geographical/institutional).

In conclusion, it appears that the presented models of assessing competitiveness (WEF, BEG, IMD, AM, SM) can serve as the source base of parameters to be taken into account when creating the ICEN paradigm. Thanks to the wider perspective of the enterprise environment (four levels), it is possible to understand the essence and necessity of a systemic approach to competitiveness, especially when complex, global systems are to be studied. However, the use of ICEC models in the analysis of business networks requires that three conditions concerning the studied objects be met.

Firstly, there is a minimum level of ownership (accumulated development potential) that allows the entity to be recognised as part of the group that can compete in the global space. Therefore, only a few of the most powerful transnational corporations are considered capable of becoming GBN orchestrators, and the analogies of research on economies can be applied in competitiveness studies only in their case. This is crucial for deciding whether such comparisons should be allowed, since the concept of the assessment of the international competitiveness of enterprises is created only for a narrow group of Top-TNCs who are capable of becoming GBN orchestrators.

Secondly, the initial measure of a given business organisation being classified as part of this group is the stability of a given agent's market position. It is reflected by the levels of assets, sales revenues, employment, market value and the ability to operate on the global market, which is confirmed by appropriate levels of these values located abroad (outside of the home country). An agent must be included in the group of the most admired companies within a sector, have an established position in the industry (valuable brands that set standards), and have a system of international microeconomic relations in the form of M&As, joint ventures, R&D investments, etc., outside of the home country (it must go down the sequential path of business integration).

Thirdly, these agents' strategic actions and concepts (expansion models) must extend beyond the behavioural standards that are characteristic of typical enterprises. A TNC-orchestrator is obliged to conduct its own active policy (especially investment policy) in order to become independent of institutional and axiological factors. Additionally, its competitive strategies must contain records of its attempts to perform certain actions that, up until that point, had been reserved for countries (e.g., social responsibility for the environment, local communities, education, innovations, etc.). The pillars of the strategy must reflect that it has fulfilled the concept of sustainable development.

In conclusion, the basic assumptions of the paradigm of international competitiveness of enterprises are:

- base capital – the criteria for a given sector; it is a measure of the ability to compete on a global level;
- regulation system – the creation of value-added based on constant internal interactions between all subsystems (as part of the global structure);
- transparent global structures – the distribution of activities on a global scale, and simultaneously establishing regional centres of institutional competence;
- the model of the exploration of the "organisational knowledge capital" – treating intellectual capital as a basis for the multiplication of accumulated potential (economic capital); the use of the potential of all network subsystems;
- the strategy of system competitiveness – the four pillars of strategy: comprehensiveness, corporateness, congruence, and creativity; requirements include: innovativeness, glocalisation, coopetition, the creation of value-added, and orchestration;

- sustained development – active policy at the metaeconomic level, and social responsibility for the environment, local communities, the spheres of education, innovation and safety, etc.

These essential elements of the ICEN paradigm are the basis for selecting agents that are capable of becoming GBN orchestrators.

The existence of the minimum threshold that enables entrance to the path of the creation of international competitiveness signifies the necessity to accumulate a specific initial development potential. This potential makes it possible to consider a given TNC one of the main animators of the global business space. The level is determined for the whole sector at the level of the global economy. It is perceived through the appropriate parameter values, such as asset volume, turnover level, and size of employment, not only in general but also abroad, which confirms the activity on the international market. The measure of involvement outside of the home area is the transnationality index (TNI), whose value should constantly equal the minimum 30%. The stability of parameters, or the ability to maintain one of the leading positions in a given industry for minimum a decade, is crucial.

The requirement of functioning in accordance with the rules of the regulation system signifies the acceptance of changes to the bases of exercising power – from ownership to competences. It is a shift from the dominant position to the role of orchestrator, controlling the evolving network of relations. It requires the ability to conduct cooperative actions. In the studies on competitiveness, this shift results in the necessity to take the multi-dimensional approach, wherein it is possible to consider various forms of relations: proprietary (OL), strategic (SC), and cooperative (CR).

The glocalisation of structures emphasises the necessity to effectively combine globalisation and localness of actions, which demands the use of various investment types: joint ventures, buying shares, own branch offices, cooperation agreements. The purpose is GBN flexibility. The complexity of structures shaped in that way requires the establishment of regional competence centres, but also the simplification (flattening) of the structure of managing a GBN. Above all, it means establishing centres that control operations, and restricting themselves to several zones of subject competence (production departments) and several zones of geographical competence (region departments). From the level of the orchestrator, the transparency of structures improves the performance of network cooperation.

Following the model of the knowledge-based intelligent organisation involves exploring "organisational knowledge capital". It requires accepting the partial devaluation of the traditional resource-oriented approach and acknowledging that intellectual capital is the decisive factor in increasing market share as well as sales and profit volumes. It requires, above all, the creation of effective mechanisms of creative intra-network transfer as a basis for building competitiveness (including evaluating the market value higher than the accumulated equity).

An expansion strategy based on the pillars that fit the new requirements is crucial. It necessitates four things: (1) a systemic approach, using the potential of all stakeholders; (2) building coalitions, also with the competition; (3) synergy based on creativity, resulting from a skilful combination of diversities; and (4) involvement in innovative projects, including those that contribute to sustainable development.

The process of creating new solutions should fully exploit the synergy of network diversity. The management mechanism should make use of the local arrangement of phases of international lifecycles of individual products and the shifts of the phases of the business cycle in the world. All actions associated with building international competitiveness should show a decrease in labour intensity (the expenditures of tangible assets) and an increase in capital intensity, understood as an increase in the performance of the use of intellectual capital.

The last criterion for distinguishing orchestrators is metaeconomic activity. It means following the model of competing for value-added and putting pressure on sustained development. In practice, it signifies a wider application of management methods, enabling the use of diverse competencies of the multicultural environment (including isomorphism and benchmarking) or a full range of public relations tools (including social sponsorship). As a result, an organisation's image (including the evaluation of its brands or the assessments of the quality of the management model, for example in rankings such as the *Top 100 Brands* or *The Most Admired Companies*) improves.

Fulfilling these conditions appears to enable certain TNCs to obtain an above-average, long-term competitive position on the international market. As a result, the need to consider the indicated parameters as the basic elements of the paradigm (in the sense of obvious rules, undenied in further studies) of the international competitiveness of enterprises in corporate globalisation is justified. Fulfilling these conditions means that TNC-orchestrators possess attributes not considered by traditional models that assess enterprise competitiveness. Since the orchestrators draw their strength from the potential that is the "organisation's knowledge capital" their network (the OKC of the GBN), the creation of the model to assess GBN competitiveness, based on the exemplification of the study of an orchestrator's competitiveness, is justified.

Chapter V

Assessing the competitiveness of global business networks

This chapter focuses on finding measures that make it possible to assess GBN competitiveness. Measures that take into account the layers responsible for the strength of GBNs' intellectual capital, or the elements of the meso-, macro- and metaeconomic levels, are especially sought after. The key sources of GBN advantage are: networking, as the ability to build coalitions; full-form internationalisation, as the utilisation of the potential of both foreign investments and the international transfer of human resources; and coopetition, as constant cooperation, even with competitors, in the area of research and development. A study of the literature shows that these types of factors are analysed in detail in the models that describe the sources of competitiveness of complex economic organisms, i.e., economies.

This chapter aims to develop rules for assessing GBN competitiveness based on a complex, multi-dimensional assessment of a given network's orchestrator, who explores the "organisation's knowledge capital" of the system (multilayered GBN).

The first part of the chapter presents selected methods of assessing enterprise efficiency. Their authors have attempted to discover how to measure the influence of the complex structure of capital on an agent's competitiveness. They are mostly methods to evaluate intellectual capital and its role in improving the efficiency of an enterprise. Special attention has been paid to multi-dimensional, statistical evaluation as a concept that is appropriate for assessing the efficiency of complex structures.

The following part identifies the specificity of GBNs and attempts to find an appropriate concept to assess orchestrators' competitiveness. Ultimately, a decision was made to build a meter that measures the ability to create value-added that reflects the position of a given GBN against the position of its sector-specific competition by assessing its orchestrator and on the basis of measurable parameters.

5.1. Selected methods of a multi-dimensional assessment of complex structures

The subject literature presents various methods used in the assessment of the efficiency of complex-structured organisations, whose development is based on a multi-layered resource capital. Some of the effective methods of a multi-dimensional assessment of complex structures include methods that strive to evaluate wealth components, including intellectual capital, such as *Knowledge Capital Earnings* (KCE™) or the *Value Added Intellectual Coefficient* (VAIC™).

Another group consists of multi-dimensional statistical analysis methods, including the linear ordering of objects in taxonomic and economic studies, via, for instance, Hellwig's method[1] or the *Technique for Order Preference by Similarity to Ideal Solution* (TOPSIS), using a positive-ideal solution and a negative-ideal solution, as proposed by Hwang and Yoon.[2]

The *Principal Component Analysis* (PCA) model is yet another method with no ideal solution that uses the values of the first main component and is based on the values and own vectors of the covariance or correlation matrix.

This chapter discusses the following methods:

- *Knowledge Capital Earnings* – KCE;
- *Value Added Intellectual Coefficient* – VAIC;
- *Multidimensional Statistical Analysis* – MDA.

Contemporary methods of assessing competitiveness that take into account the stratification of an enterprise's capital, mostly strive to effectively evaluate IC components. Those include the methods[3] of KCE or VAIC.

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1 Z. Hellwig, *Zastosowanie metody taksonomicznej do typologicznego podziału krajów ze względu na poziom ich rozwoju oraz zasoby i strukturę wykwalifikowanych kadr*, "Przegląd Statystyczny" 1968, vol. 4, pp. 307–327. It was described in 1967 in an unpublished UNESCO Report *Procedure of Evaluating High Level Manpower Data and Typology of Countries by Means of the Taxonomic Method*.

2 K. Yoon, C.L. Hwang, *Multiattribute Decision Making: Methods and Applicaations*, Springer-Verlag, Berlin 1981. K. Yoon, C.L. Hwang, *Multiple Attribute Decision Making: An Introduction*, SAGE, California 1995; M.M. Yazdi, *TOPSIS Method for multiple-criteria Decision Making (MCDM) – package topsis*, 2015, https://cran.r-project.org/web/packages/topsis [accessed: 19.03.2018]; R Development Core Team, *R: A Language and Environment for Statistical Computing*, R Foundation for Statistical Computing 2017, http://cran.r-project.org [accessed: 14.03.2018].

3 A. Pulić, *VAIC ™ an Accounting Tool for IC Management*, "International Journal of Technology Management" 2000, vol. 20 (5–8), pp. 702–714; A. Pulić, *Intellectual Capital. Efficiency on National and Company Level*, www.vaic-on-net [accessed: 09.04.2019]; A. Ujwary-Gil, *Kapitał intelektualny a wartość rynkowa przedsiębiorstwa*, C.H. Beck, Warszawa 2009, pp. 72–87; G. Iazzolino, D. Laise, *Value Added Intellectual Coefficient (VAIC): A Methodological and Critical Review*, "Journal of Intellectual Capital" 2013, vol. 14, pp. 547–563; M.Ch. Wang, *Value Relevance of Intellectual Capital Valuation Methods: The Role of Corporate Governance*, "Quality & Quantity" 2013, vol. 47 (2), pp. 1213–1223; B. Atalay, S. Gokten, M. Turkcan, *An*

The concept of KCE™ emphasises income from knowledge capital as a return on physical and financial capitals. The productive function of an enterprise, which defines the economic result as a sum of results of using physical capital, financial capital and knowledge used, is the starting point. The method takes into account past and predicted incomes. It consists of seven stages of separate calculations of individual components. The formula for calculating the economic result (ER) is:

$$\mathbf{ER = a\ (Cphys) + b\ (Cfin) + c\ (IC)} \quad (1)$$

- ER – economic result
- Cphys – physical capital
- Cfin – financial capital
- IC – intellectual capital
- a, b, c – productivity coefficients of individual types of capital

The measurements of intellectual capital using the KCE™ method take into account:

- income during the period studied; income of an enterprise (IE) and income at the time periods t–1, t–2 and t–3, as well as predicted income for t+1, t+2, t+3;
- tangible assets (TA), expressed as the sum of the value of units of physical capital;
- reserves (R);
- long-term liabilities (LL);
- long-term investments (LI);
- short-term liabilities (SL);
- discount rate for intellectual capital (Dic).

The method involves calculating two indices – the return on assets of financial capital (ROAfin) and the return on assets of physical capital (ROAphys). Most of the necessary data are accessible in consolidated financial statements published at the end of the fiscal year. The balance sheet for the fiscal year-end contains information about resources.

The method assumes the following subsequent steps in the course of the study (in the order indicated below):

a) an enterprise's normalised earnings (ENE) are estimated on the basis of the weighted mean of incomes from the last three and next three years, wherein the future values have a coefficient twice as high as in the past years.

Overview of Measuring and Reporting Intellectual Capital, [in:] *Global Approaches in Financial Economics, Banking, and Finance*, H. Dincer, U. Hacioglu, S. Yüksel (eds), Springer, Cham 2018.

The formula for ENE is:

$$\mathbf{ENE} = \frac{IE(t-2)+IE(t-1)+IE(t)+2[IE(t+1)+IE(t+2)+IE(t+3)]}{9} \quad (2)$$

- IE(t) – an enterprise's income in year t

When relating an economic result to the effects of the use of capital, it is necessary to attach greater significance to income predictions, since these investments have a longer return period. The amount and scope of data for the research are contractual and can vary depending on the enterprise's business sector.

b) The formula for the value of physical capital (Cphys) is:

$$\mathbf{Cphys = TA + R - LL} \quad (3)$$

- TA – tangible assets
- R – reserves
- LL – long-term liabilities

c) The formula for an enterprise's normalised earnings created by physical capital and tax-free (ENE phys) is:

$$\mathbf{ENEphys = ROA\ phys * Cphys} \quad (4)$$

- ROA phys – return on assets of physical capital
- C phys – value of physical capital

d) The formula for the value of financial capital (Cfin – cash, bonds, the given enterprise's shares and other financial instruments of the studied unit) is:

$$\mathbf{Cfin = CA - R + LI - SL} \quad (5)$$

- CA – current assets
- R – reserves
- LI – long-term investments
- SL – short-term liabilities

e) The formula for an enterprise's normalised earnings as a result of financial capital and tax-free (ENE fin) is:

$$\mathbf{ENE\ fin = ROA\ fin * Cfin} \quad (6)$$

- ROA fin – return on assets of financial capital
- Cfin – value of financial capital

f) The formula for the share of intellectual capital in normalised earnings (ENEic) is:

$$\mathbf{ENEic = ENE - (ENEphys + ENEfin)} \quad (7)$$

- ENE – normalised earnings
- ENEphys – normalised earnings produced by physical capital
- ENEfin – normalised earnings produced by financial capital

g) The formula for the value of intellectual capital (IC) is:

$$\mathbf{IC = ENEic/Sic} \quad (8)$$

- ENEic – normalised earnings produced by IC
- Dic – discount rate for IC.

The VAIC™ method aims to obtain information about the creation of value based on intellectual capital (human and structural capital), and financial and material capital. The calculation of the value-added intellectual coefficient requires:

- operating profit (OP),
- human capital (HC),
- amortisation (Am),
- book value of net assets – physical capital; capital employed efficiency (CEE).

The research aims to establish competitive position. VAIC, in contrast to KCE, focuses solely on the current situation. The calculation of value-added is the starting point, while expenses on employees are treated as investments. The method consists of five stages:

a) Calculating intellectual value-added (VA)

$$\mathbf{VA = OP + HC + Am} \quad (9)$$

- OP – operating profit
- HC – human capital (HC is viewed as an investment and considered the total expenditure on employees); HC = total labour cost = personnel cost
- Am – amortisation

b) Calculating capital employed efficiency (CEE), or the use of capital employed (CE) in the creation of value-added (VA)

$$\mathbf{CEE = VA/CE} \tag{10}$$

- VA – value-added (VA = outputs – inputs)
  output = gross income + revenues
  input = operating expenses (excluding personal costs)
  VA = TOI – TOE + PE
  TOI – total operating income (revenue + other operating income)
  TOI = interest income – interest expense = net interest
  TOE – total operating expense
  TOE = personnel expenses + other administrative expenses + other operating expenses + loan loss provisions
  PE – personnel expenses
- CE – capital employed; book value of net assets (physical capital)
  CE = physical capital + financial capital = total assets – intangible assets

c) Calculating human capital efficiency (HCE), or the influence of HC on the creation of value-added (the influence of expenditures on the high quality of HC and the influence of HC management methods on the operating result)

$$\mathbf{HCE = VA/HC} \tag{11}$$

- HCE – human capital efficiency
- VA – value-added
- HC – human capital

d) Calculating structural capital efficiency (SCE) and its use in the creation of value-added

$$\mathbf{SCE} = \frac{\mathbf{SC}}{\mathbf{VA}} = \frac{\mathbf{(VA - HC)}}{\mathbf{VA}} \tag{12}$$

- SC – structural capital
- HC – human capital
- VA – value-added

e) Calculating value-added intellectual coefficient

$$\mathbf{VAIC = CEE + HCE + SCE} \tag{13}$$

- VAIC – value-added intellectual coefficient
- CEE – capital employed efficiency
- HCE – human capital efficiency
- SCE – structural capital efficiency

The value-added of the intellectual coefficient is the accumulated value of the indices of individual components. VAIC is the sum of the capital employed efficiency index (the accumulated economic capital AEC) and the intellectual capital efficiency (ICE) index. The latter is, in turn, the sum of the human capital efficiency index and structural capital efficiency index.[4] Therefore, in this sense, VAIC combines the evaluation of the layers of economic capital (AEC) and the subsystems of intellectual capital (IC). The VAIC index depicts the influence of a given category on individual IC elements, but as a single index, it does not provide a full assessment of an enterprise's intellectual capital on its operating result. A detailed analysis of the dynamics of changes to individual elements of the VAIC index and the interpretation of the index itself makes it possible to estimate the relations between individual IC elements and the operating result.

The efficiency indices of individual types of capital show to what extent capital type influences operating result. A value higher than 1 means that expenditures for this capital type cause a positive increase in the form of an increase in operating profit equal to this index. For example, index value 5 means a return of 5 USD with expenditures of 1 USD. Individual indices may have negative values, which means that despite the general return on expenditures for IC, the given elements do not bring value-added.

The application of the VAIC method makes it possible to determine the source of the creation of a given value or indicate which categories of tangible and intangible resources have contributed to the creation of this value. The data used in calculating components of VAIC are based on account books (the balance sheet) and standard financial documentation. Therefore, the method can be used by all types of GBN stakeholders.

The application of the VAIC method makes it possible to:

- study the efficiency of economic and intellectual capital in the creation of value;
- diagnose network functioning, while paying special attention to the creation of value-added;
- analyse processes, actions and projects as sources of value creation;
- identify the weakest points of the system of value creation (point them out and determine methods of increasing their efficiency or eliminating them);
- simulate value creation;
- use the results as the basis for making strategic and operational decisions.

It can be said that one universally accepted method of measuring IC does not exist. The methods referred to, i.e., Knowledge Capital Earnings or the Value Added Intellectual Coefficient are considered the most precise. However, even with all their merits, these methods still have a major flaw: they undervalue the

4 G. Gigante, D. Previati, *The Performance of Intellectual Capital and Banking: Some Empirical Evidence from the European Banking System*, [in:] F. Fiordelisi, P. Molyneux, D. Previati, *New Issues in Financial Institutions Management*, Business & Economics, Palgrave Macmillan, London 2010, pp. 41–47.

full-form internationalisation of the system, despite its significance in the modern developmental model. Additionally, neither of them takes into account structure networks and their organisational and management complexity.

Another method mentioned is the Multidimensional Statistical Analysis (MDA), which makes it possible to compare complex phenomena and objects with complex structures whose description requires the use of more than one feature. The processes used in the studies include zero unitarisation, the construction of synthetic measures and linear ordering.

The method of zero unitarisation makes it possible to compare numerous objects through selected criteria. The criteria may be expressed in various quantities, and the method aims to normalise the criteria. The method uses both elements with positive correlation with a dependent variable (stimulants) and elements with negative correlation with a dependent variable[5] (destimulants). The normalisation of qualities (according to the models for stimulants and destimulants) enables the creation of a matrix that serves to put entities in order and create rankings. The construction of a measure is based on calculations of a synthetic index of the taxonomic distance between a selected object and a theoretical model of development. A hypothetical object with the best-observed qualities serves as the model. The measure accepts values between 0 and 1 – the higher the value, the greater the similarity between the object and the model.

Linear ordering involves ordering the elements of a studied set according to the values of selected diagnostic indices, based on a defined superior criterion of their assessment. Ordering requires the construction of a synthetic assessment measure developed after the analysis of qualities that constitute the phenomenon. The indicator is constructed in the following stages:

1) Preparation of the research:
   - formulating the purpose of the analysis as well as research hypotheses;
   - determining the scope: objects, indices, and time frame;
   - creating a database and determining the values of acceptable indices;
2) Data analysis:
   - descriptive analysis of the indices: measures of position and diversity;
   - analysis of correlations and selection of diagnostic indices;
   - determining the nature of diagnostic indices and how they are stimulated;
   - determining the weights (significance) of diagnostic indices;
3) Linear ordering based on a synthetic indicator:
   - normalisation of indices (an attempt to make them comparable);
   - aggregation of indices (adding up the normalised indices for each object);

5 R. Zadrąg, T. Kniaziewicz, *Utilisation of the Zero Unitarisation Method for the Building of a Ranking for Diagnostic Marine Engine Parameters,* "Combustion Engines" 2017, vol. 171 (4), pp. 44–50; A.P. Balcerzak, *Europe 2020 Strategy and Structural Diversity Between Old and New Member States. Application of Zero-unitarisatin Method for Dynamic Analysis in the Years 2004–2013*, "Economics & Sociology" 2015, vol. 8 (2), pp. 190–210.

4) Interpretation of results:
   - analysis of the correlation between diagnostic indices and a synthetic indicator;
   - ranking of objects, graphical presentation, and interpretation of results.

The first stage is typical of scientific research. The second aims to assess the qualities of individual indices and select the least correlated diagnostic indices. The coefficient of variation v_j may be used to assess the variability of indices (indices where $|v_j| < 0{,}1$ are eliminated from the set) – using formula (14):

$$v_j = \frac{s_j}{\bar{x}_j} \tag{14}$$

where: $\bar{x}_j = \frac{1}{n}\sum_{i=1}^{n} x_{ij}$ is the arithmetic mean of index x_j, while $s_j = \sqrt{\frac{1}{n}\sum_{i=1}^{n}\left(x_{ij} - \bar{x}_j\right)^2}$ is the standard deviation of index x_j $(j = 1,\ldots,m)$.

The degree of correlation of indices is assessed using the method of the inverse correlation matrix (formula 15):

1) matrix R^{-1} inverse to correlation matrix R in the following form is determined:

$$R^{-1} = \begin{bmatrix} \tilde{r}_{11} & \tilde{r}_{12} & \ldots & \tilde{r}_{1m} \\ \tilde{r}_{21} & \tilde{r}_{22} & \ldots & \tilde{r}_{2m} \\ \ldots & \ldots & \ldots & \ldots \\ \tilde{r}_{m1} & \tilde{r}_{m2} & \ldots & \tilde{r}_{mm} \end{bmatrix}, \text{ for } R = \begin{bmatrix} 1 & r_{12} & \ldots & r_{1m} \\ r_{21} & 1 & \ldots & r_{2m} \\ \ldots & \ldots & \ldots & \ldots \\ r_{m1} & r_{m2} & \ldots & 1 \end{bmatrix} \tag{15}$$

with values:

$$\tilde{r}_{jp} = \frac{(-1)^{j+p} \det\left(R_{jp}\right)}{\det\left(R\right)} \tag{16}$$

where det(R) is the determinant of the correlation matrix and det(R_{jp}) is the determinant of a matrix which is constructed by removing the j-th row and p-th column from the R matrix, for $j = p$ $(j, p = 1,\ldots,m)$;

2) elements $\tilde{r}_{jp}$ where $j = p$, or the elements $\tilde{r}_{jj}$ on the diagonal of the main inverse correlation matrix that fulfil inequality $|\tilde{r}_{jj}| > r_0$ are distinguished – it is usually assumed that $r_0 = 10$. These elements are of a higher value than the set threshold value and are gradually eliminated from the set of indices to be analysed.

The next step aims to determine the nature of the diagnostic indices and possibly stimulate them. The purpose of this transformation is to standardise the nature (preferences) of the indices used to create a synthetic measure. The process precedes the stage of normalising them. The transformation of destimulants $X_j^D = \left(x_{1j}^D, x_{2j}^D, ..., x_{nj}^D\right)^T$ into stimulants $X_j^S = \left(x_{1j}^S, x_{2j}^S, ..., x_{nj}^S\right)^T$ can be obtained through:

- a quotient transformation, assuming that all values of the index are non-zero:

$$x_{ij}^S = \frac{b}{x_{ij}^D}, \ (i = 1, ..., n) \tag{17}$$

where constant $b > 0$.

- a difference equation:

$$x_{ij}^S = c - bx_{ij}^D \ , \ (i = 1, ..., n) \tag{18}$$

where constant $b > 0$.

In special cases, it can be assumed that $c = 0$ and $b = 1$, therefore, the opposite of the value of the diagnostic index, $c = 1$ and $b = 1$, or its inverse or values $c \geq \max_i x_{ij}^D$ and $b = 1$ for indices with negative values.

The weighting procedure aims to ascribe specific weights to diagnostic indices in order to diversify their significance. However, individual indices are frequently assumed to be equally significant, and are assigned equal weights:

$$\alpha_j = 1/m, \ (j = 1, ..., m) \tag{19}$$

The main purpose of the normalisation of diagnostic indices is to obtain dimensionless values and standardise the class of their quantities. Normalisation requires the preservation of the existing correlations between the indices and the values of basic measures concerning the shape of their layouts (obliquity, kurtosis). The above-mentioned properties are fulfilled by the linear transformation of the following form:

$$z_{ij} = \frac{x_{ij} - a_j}{b_j} \ , \ (j = 1, ..., m) \tag{20}$$

where, if a_j is the measure of the position of a given quality, e.g., the arithmetic mean $a_j = \bar{x}_j$, and b_j is the measure of its changeability, e.g., standard deviation ($b_j = s_j$), it is a standardisation-transformation; if b_j is the measure of changeability – the gap $b_j = \max_i x_{ij} - \min_i x_{ij}$, it results in a unitarisation transformation; if $a_j = 0$ ($b_j > 0$) then a quotient transformation is obtained.

In practice, one of the most frequently obtained transformations is standardisation with parameters $a_j = \bar{x}_j$ and $b_j = s_j$. Moreover, for the comparison of the values of synthetic indices in time to be possible, the values of diagnostic indices X_j

for the whole time frame of the study in relation to time $T\ (t=1,...,T)$ should be standardised:

$$z_{ijt}=\frac{x_{ijt}-\frac{1}{Tn}\sum_{i=1}^{n}\sum_{t=1}^{T}x_{ijt}}{\sqrt{\frac{1}{Tn}\sum_{i=1}^{n}\sum_{t=1}^{T}\left(x_{ijt}-\frac{1}{Tn}\sum_{i=1}^{n}\sum_{t=1}^{T}x_{ijt}\right)^2}},\ (j=1,...,m) \tag{21}$$

The proper stage of building a synthetic measure involves selecting the formula of aggregation of the diagnostic indices. Synthetic index *M* with values μ_i for $i-$ of this object $(i=1,...,n)$ calculated on the basis of normalised values z_{ij} and weights α_j $(j=1,...,m)$, ascribed to individual diagnostic indices $\left(\sum_{j=1}^{m}\alpha_j=1\right)$, can be expressed in the form of an arithmetic mean:

$$\mu_i=\frac{1}{m}\sum_{j=1}^{m}\left(z_{ij}\alpha_j\right) \tag{22}$$

The formula for aggregation based on the sum of normalised values of diagnostic indices z_{ij} weights α_j can also be used, providing the same results:

$$\mu_i=\sum_{j=1}^{m}\left(z_{ij}\alpha_j\right) \tag{23}$$

The last step of the analysis is determining the correlations between diagnostic indices and a synthetic variable, interpreting the results and giving a graphic presentation.

GBNs definitely belong to the category of objects that need to be described by more than one diagnostic index; therefore, they can be defined as complex. They are a somewhat abstract creation, depicting a qualitative state which is directly immeasurable yet related to the system of real objects. It appears that the presented concept of creating a synthetic indicator should be considered the most appropriate method of assessing the competitiveness of GBNs as structures, whose development is determined by complex factors. The VAIC and KCE methods may still constitute useful, additional concepts used to describe the competitiveness of GBNs' TNC-orchestrators.

5.2. A measure of the ability to create value-added – an aggregated assessment of GBN efficiency from the point of view of an orchestrator

The key assumption regarding GBNs was that the final stage of the sequential process of business integration involves the creation of a global network that encompasses numerous and diverse elements. Despite the lack of any formal connections, these elements function as a coherent system. Therefore, a GBN is a type of economic and social organism that interacts with the global (including institutional) environment.

The empowerment of a GBN is based on the common developmental idea. Network members concentrate around this idea, which is reflected in the strategy of the constant and systemic creation of international competitiveness, wherein an orchestrator is the heart of the system. The threads that make up the connections are a web-like system which is not managed through orders but is regulated by the collective wisdom of an organisation – it is orchestration based on a given GBN's knowledge capital.

In these reflections, it is highly significant that externally, a GBN is perceived from the angle of its orchestrator's actions. It resembles a government in the aftermath of an election – it is an elective governing body.

The legitimisation of an orchestrator's authority is the result of, firstly, the network's acceptance of the adopted developmental strategy, which refers to the international competitiveness system based on the potential of the whole GBN. Secondly, it is due to the majority of business system members considering the results achieved to be satisfactory.

The efficiency of GBN functioning is verified by the market through the network's global competitive position. Network members may vote to continue a given developmental direction or, if they have the required competence, attempt to provoke a revolution, i.e., network reconfiguration, including a change of orchestrator. An orchestrator, like the government in a national system, is merely a manifestation of the developmental priorities of its principal – the GBN community.

Since a broad spectrum of factors, or authority determinants, are considered when assessing the competitiveness of economies, a similar process seems justified in the assessment of GBN competitiveness.

The essence of the constructed Synthetic Indicator of Creation of Added Value (SICAV) is the use of indices that aim to reflect the significance of both the layers of economic capital and intellectual capital. The stages of constructing a SICAV correspond to the stages described in the previous subchapter.

The assessment of accumulated capital (AEC) is a much simpler procedure due to a much larger base of measurable parameters. One of the most popular indices used to assess AEC is the return on equity (ROE).

The simplified version of ROE expresses the current effectiveness (profit – P) of the capital accumulated by the stockholders (stockholder's equity – SE). However, in the analysis of the initial equation, the DuPont Identity, the interpretation of ROE as an aggregated measure of an agent's developmental potential is justified. The essence of identity involves determining the relations between individual indices and then aggregating them. The model makes it possible to concentrate on the most significant elements that determine management performance.

ROE takes into account the influence of the three following factors on the profitability of the involved capitals: operational effectiveness (return on sales – ROS), the effectiveness of accumulated assets (return on assets – ROA) and the difference between the profitability of equity and the profitability of possessions (financial leverage – FL), which reflects the influence of employing foreign capital on the increase in profits per unit of equity – equity multiplier (total assets to stockholders' equity – A/SE). The multiplier determines the structure of a given agent's employed capitals and how many times larger its wealth is than the employed equity. A/SE determines how many times ROE is larger than ROA. If a business is being financed solely by equity, the multiplier equals 1 and ROE = ROA.

The formula for the DuPont Identity[6] is:

$$\mathbf{ROE = P / S \times S / A \times A / SE = P / SE} \tag{24}$$

where:

- P – profit (net financial result= total income – total costs)
- S – sales (total income from sales)
- A – assets (total assets = fixed assets + current assets)
- SE – stockholders' equity (equities)

After formula (24) has been simplified, the calculation of ROE involves dividing the net financial result (P) by equities (SE). However, subsequent layers of the ROE index are also important. In the first layer, ROE = ROA × A/SE, the product of asset profitability and equity multiplier is calculated. Asset profitability depends on sales profitability and the effectiveness of asset use, or the total assets turnover (TAT).

6 J. Błach, A. Doś, *Zastosowanie modelu DuPonta w kontekście zarządzania środowiskiem w przedsiębiorstwie – możliwości wykorzystania w praktyce polskich przedsiębiorstw*, „Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu" 2014, vol. 330, pp. 34–42; E. Sokołowska, *Rentowność kapitału własnego przedsiębiorstw niefinansowych przy wykorzystaniu piramidy du Ponta*, "Kwartalnik Nauk o Przedsiębiorstwie" 2012, nr 4; E. Nowak, *Analiza sprawozdań finansowych*, Polskie Wydawnictwo Ekonomiczne, Warszawa 2005, pp. 188–189.

It can be calculated using the following formula:

$$\mathbf{ROA = ROS \times TAT = P / S \times S / A = P / A} \quad \mathbf{(25)}$$

where:
- P – profit, S – sales, A – assets.

The TAT index reflects the degree of asset use (A) in order to obtain a specific level of sales (S), and is known as the asset productivity index. Increasing its level does not automatically signify an increase in an agent's competitiveness (measured by an increase in sales), since it can be a consequence of a decrease in wealth value (e.g. through asset sales due to financial problems).

Confronted with mounting pressure from investors to improve shareholder value even further, companies pay attention to improving asset productivity. They need to factor asset efficiency into strategic decisions regarding the product and business portfolio and into the entire process of capital allocation. Companies estimate that through more regular operational reviews and a more efficient allocation of capital, i.e., the improvement in asset productivity, they can ultimately achieve annual savings "between 10 and 15 percent of capital."[7] ROA is usually improved by accelerating asset turnover, i.e., increasing sales volumes and lowering the profit margin per unit or, in the case of low turnover, increasing the profit margin per unit. That is how the second layer of ROA becomes visible.

In conclusion, ROE represents accumulated economic capital in a synthetic measure. The construction of GBN competitiveness is based on this capital. Therefore, the selection of ROE as an index that illustrates it is justified, since the index also introduces other factors that condition competitiveness to the analysis. ROE changes proportionally to the profitability of sales, asset turnover and the equity multiplier (financing structure). The application of the expanded DuPont equation enables the analysis of individual ROE components and facilitates the identification of causes for the changes in its level. A decrease in ROE value may occur for many reasons.[8] It may be the result of the insufficient use of accumulated assets (wealth) or flaws in sales policies (e.g. margin size) or financial management (poor use of financial leverage). ROE (based on the DuPont identity) can serve not only as a diagnostic tool (regarding the past) but also as a planning tool (regarding the future). Therefore, in the constructed synthetic measure, it is an accumulated measure of market (production and sales) capital and financial capital.

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7 R. Nicol, Ph. Amouyal, *Asset Productivity: The Next Wave*, BCG Discussion Paper "Perspectives" vol. 377, The Boston Consulting Group, Inc. 1999, https://www.bcg.com/documents/file13155.pdf [accessed: 19.02.2019].

8 For example, it allows you to assess the impact of environmental impact indicators on profitability ratios (ROE, ROA, and ROS). Ch. Dong-Shang, R.K. Li-Chin, *The Effects of Sustainable Development on Firms. Financial Performance – an Empirical Approach*, "Sustainable Development" 2008, vol. 16; N. Castro, J. Chousa, *An Integrated Framework for the Financial Analysis of Sustainability*, "Business Strategy and the Environment" 2006, vol. 15.

The evaluation of intellectual capital is a more complicated matter. Based on Sveiby's concept of the division of IC measuring methods, they can be described as:[9]

- market capitalisation methods – they focus on the difference between market value and book value; the indices used are: market value to book value ratio; market value-added – MVA; Tobin's Q ratio; investor assigned market value; the invisible balance sheet, and the financial method of intangible assets measurement;
- scorecards methods – which involve estimating the IC value using various indices and measures, depending on the type of component studied; their main flaw is the lack of possibility to create an aggregated measure (the results are presented as trend charts or unrelated tables containing data), for example: intellectual capital dynamic value; balanced scorecard; Value Chain Scoreboard™; holistic accounts; human capital intelligence; Skandia Navigator™; IC-Index™; Business IQ™; national IC; IC Rating™; Intangible Assets Monitor – IAM; value creation index; knowledge audit cycle; Danish guidelines, and the MERITUM Guidelines;
- methods based on return rates on intangible assets from an angle of resource structure – indices applied: Knowledge Capital Earnings™ – KCE™; Value Added of Intellectual Coefficient™ – VAIC™; Calculated Intangible Value – CIV; Economic Value Added – EVA;
- direct intellectual capital methods (DIC) – which attempt to quantify qualitative variables, for example: the Holistic Value Approach – HVA; the Intellectual Capital Benchmarking System – ICBS; Intangible Assets Valuation – IAV; Total Value Creation – IAV; Accounting For The Future – AFTF™; Technology Broker; Human Resources Costing and Accounting – HRCA; the Inclusive Valuation Methodology – IVM; Citation Weighted Patents – CWP, and the HR statement.

The construction of SICAV elements relied mostly on the following concepts: HVA,[10] ICBS,[11] the Intellectual Capital Dynamic Value (ICdVAL)[12] and, additionally, EVA, MVA, KCE™, and VAIC™.

The HVA concept proved the most useful. Its ability to create value-added is nearly identified with a proper IC as an accelerator of an "organisation's knowledge capital". It has been emphasised that IC constitutes merely developmental potential.

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9 K.E. Sveiby, *Methods*…

10 S. Pike, G. Roos, *Intellectual Capital as a Management Tool. Essentials for Leaders and Managers*, Routledge, London 2018; S. Pike, A. Rylander, G. Roos, *Intellectual Capital Management and Disclosure*, [in:] *The Strategic Management of Intellectual Capital and Organizational Knowledge*, W.C. Choo, N. Bontis (eds), Oxford University Press, New York 2002, pp. 657–671.

11 J.M. Viedma, M.R. Cabrita, *Entrepreneurial Excellence in the Knowledge Economy. Intellectual Capital Benchmarking System*, Palgrave Macmillan, London 2012; J.M. Viedma, M.R. Cabrita, *ICBS Intellectual Capital Benchmarking System: A Practical Methodology for Successful Strategy Formulation in the Knowledge Economy*, "Electronic Journal of Knowledge Management" 2013, vol. 11 (4), pp. 371–384.

12 A. Bounfour, *The IC*…, pp. 396–413; A. Bounfour, *Organisational Capital. Modelling, Measuring and Contextualising*, Routledge, London 2008.

Pike and Roos emphasised the role of human, organisational and institutional capitals (INNC, ORGC and INSC, respectively) as part of IC. The measurement was based on measures that concern financial and non-financial values (standardised between values 0 and 1) and then aggregated. Additionally, it has been observed that while organisation (GBN) members can have common purposes, they attach varying weights to achieving them. As a result, appropriate weights must be used – ones which would make it possible to interpret the results from the perspective of a specific agent (GBN member). These observations are especially significant since SICAV is constructed for GBN orchestrators, and the position in a network, and the specificity of knowledge, skills and competence of a given GBN element require the correct interpretation of results for a given agent.

In the ICBS method, Viedma distinguished human capital, structural capital, relational capital and social capital as elements of IC. They are a set that can be identified with an "organisation's knowledge capital" and the adopted system of division of IC layers (INNC, ORGC, INSC). The concept of benchmarking is also of great significance; benchmarks must be selected from among the leading agents in a given zone. That justifies conducting a sector-specific assessment (with the use of a measure) of direct competitors with stable positions in a sector. In the method discussed, the evaluation of individual capital layers is based on self-evaluations in business excellence models, using lists of questions (scored from 0 to 100). The degree of the fulfilment of criteria, between -5 and +5, reflects the position against the competition. Then, a balanced assessment is presented in the form of a weighted mean of individual assessments.

The ICdVAL concept, from the perspective of the construction of SICAV, attempts to identify the relations between an organisation's condition, expressed in the form of measurable parameters (financial value of resources), and the potential of developmental possibilities based on assets accumulated in the connection system. For this purpose, Bounfour used three groups of indices that relate to resources, processes and actions.[13] During the assessment of components (on a scale of 0 to 1), he calculated the index of an organisation's efficiency, which he multiplied by market value.

In conclusion, it should be emphasised that all methods of IC evaluation are, by their very nature, simplified, since, as M'Pherson and Pike correctly observed, these streams are not easily quantified.[14] Additionally, it is crucial that a complex study and measurement of IC makes use of methods that enable the integration of top-down and bottom-up approaches.

It should take into account the meaning of "know-what", or facts, "know--why", or their interpretation (i.e., what can be learned from them), as well

13 On the basis of research among practitioners, the author determined that IC comprises: organisation (structural) capital – 58%, human (innovation) capital – 29%, and relational (market) capital – 13%.

14 P.K. M'Pherson, S. Pike, *Accounting, Empirical Measurement and Intellectual Capital*, "Journal of Intellectual Capital" 2001, vol. 2 (3), pp. 246–260.

as "know-how", or the understanding of the significance of correct knowledge transfer (communication).[15] "Know-how" stands for the technical knowledge that is specific to a given field but, in contrast to "know-what" and "know-why", it is tacit – see diagram 6.[16] This knowledge is hard to transfer verbally or in writing. Its transfer is influenced by the precision of a given purpose, the applied methods of learning, teaching and assessment as well as internal and external features that are typical of the interested parties involved in the process.[17] Still, it is the transfer of "know-how" that guarantees efficiency and the high-quality performance of a specific task, since it combines the necessary knowledge reserve with experience (skills and competence).

The presented concept of SICAV attempts to meet these challenges. In SICAV, all indices carry the same weights. The measurement of knowledge resources on the basis of ICBS can be related to the concept of the assessment of subsequent layers of competitiveness: base competitiveness – assessment of potential; operational competitiveness – assessment of specific processes/brands; competence competitiveness – assessment of innovative processes; system competitiveness – assessment of social and relational capital. In these aspects, the strong and weak points of a studied object group can be compared, and then their influence on the aggregated result can be assessed.

The constructed measure makes it possible to analyse the issue studied for a period of time that is applicable to a constant group of objects, for example, ten years for the ten most powerful players in a sector. The values of the measure are a resultant of the aggregation of individual, final parameters, which represent the condition of individual subsystems in an organisation.

The rankings obtained may constitute the foundation for the long-term assessment of a given GBN's competitiveness against the strongest competitors in a sector. The ranking is analysed in relation to a specific GBN orchestrator and takes into account other GBN orchestrators in a given sector. It identifies the real key competences of a network and the conditions for building an agent's position in that sector – both in the past and in the future. The competitive position of individual GBN orchestrators depends on the development of global network structures and fulfilling the function of an orchestrator in them.

This results in the oligopolisation of individual sectors of the global economy, which signifies a decrease in the number of agents that determine the direction

15 According to the *International Chamber of Commerce*, it is the whole of knowledge, or specialist knowledge and experiences in the field of technology and production processes of a specific product.

16 Diagram 6 presents the role of knowledge resources in the process of building competitiveness.

17 M. Dubickis, E. Gaile-Sarkane, *Transfer of Know-how Based on Learning Outcomes for Development of Open Innovation*, "Journal of Open Innovation: Technology, Market, and Complexity" 2017, vol. 3 (4), pp. 1–19, http://hdl.handle.net/10419/176539 [accessed: 19.02.2019].

of development of the sector. These agents set the minimum standards for the sector, which brings the competition to a level of value-added above the standard in a given segment, country or model. Therefore, over a long period, the competitiveness of a given member of a global oligopoly, or a GBN orchestrated by one of the Top-TNCs, depends on the ability to accumulate a multi-layer (economic and intellectual) capital and use it to the fullest as the developmental potential that creates value-added. That is why the parameters that are considered in the construction of the synthetic indicator reflect individual layers of the capital of a GBN orchestrator.

In the concept presented here, it is crucial to emphasise that a significant stimulant of long-term competitiveness is the degree of networking. The development of a GBN is the result of the necessity to adapt to the requirements of the global business space. It also signifies the expansion of structures and, in consequence, the necessity to transform the organisational model. The development of GBN structures has a significant influence on the improvement of competitiveness in all stakeholder types, especially the orchestrator.

The most visible evidence of effectively implementing the strategy of building GBN competitiveness includes an increase in an orchestrator's profits, trading volume, market value, the percentage of intangible assets in the generated sales value, asset internationalisation indices, employment, sales, etc. These parameters were fully considered when constructing the measure, assuming that the position of an orchestrator is a resultant of the accumulated GBN potential.

The assessment of GBN orchestrators' competitiveness is based on the aggregated assessment of the ability to create value-added. A crucial feature of a GBN is its continuous development of connections. Network expansion is an instrument that stimulates development. It is a tool to release new energy from assets and equity as well as research and development expenditures, etc.[18]

The purpose of a synthetic indicator is to highlight the potential of the long-term creation of value-added, or the GBN's ability to adapt to the constantly changing requirements of a global market. Value is created by the skilful and systematic addition of new positive features to the standard. It requires the establishment of wider and wider connection systems, which improve arbitrage abilities, including coopetitive relations (cooperation with the competition). An inherent feature of GBNs is the growing level of full-form internationalisation of assets, sales and employment – these parameters must be included in the assessment of GBN competitiveness.

18 C. Zott, R. Amit, L. Massa, *The Business Model: Recent Developments and Future Research*, "Journal of Management" 2011, vol. 37 (4), pp. 1019–1042.

In the presented SICAV concept, the following issues are considered vital:[19]

- systematically developing and increasing the density of the international connection system while simultaneously adapting the management system to a multi-cultural network – it is reflected in the increase in the value of the TNI, and especially the increase in employment abroad and foreign assets relative to these total values;
- establishing strategic alliances and expanding brand portfolio while rearranging structures to maintain control over the developing network and prevent the efficiency of coordination mechanisms from weakening – it is evidenced by the establishment of effective coordination mechanisms, thanks to the systematic implementation of subsequent stages of the model of business integration; this process must include implementing mechanisms of reengineering, outsourcing, benchmarking, and isomorphism as inherent features of the developmental strategy;
- maintaining a constantly high level of expenditures for R&D as a basis for controlling the international life cycle of products – the measure of technological advancement as the foundation for innovativeness is not only expenditures on research and development against the background of industry competition, but also the extensive global structure of R&D centres;
- constantly restructuring the management system as a response to market suggestions – monitoring the requirements of competition and client assessments, the measures are: an integrated assessment of management quality (e.g. MAC); fulfilling the premises of sustainable development (e.g. CSR reports); maintaining the high quality of the brand (e.g. the value of the brand portfolio compared to competitors);
- implementing changes to the developmental strategy with the new requirements of competitiveness – entries in annual reports indicate that the pillars of the strategy confirm the shift of focus from a quantitative approach (maximisation of sales and profits) to a qualitative one (the role of intellectual capital, the role of intangible assets in creating sales value and market value of the company).

Since the range of factors that stimulate the ability to create value-added to a GBN is very wide, and some of the issues enumerated are hard to quantify, their analysis is always oversimplified.

Having accepted the role of economic capital as a basis for the selection of potential orchestrators, it is necessary to focus on the key aspects of each IC layer. This should be ensured by building parameters that enable the assessment of varying methods for building a competitive position based on intellectual

19 M. Rosińska-Bukowska, *Strategic Changes in Transnational Corporation as an Adjustment to the Challenges of the 21st Century*, "Entrepreneurial Business and Economics Review" 2017, vol. 5 (2), pp. 143–157.

capital into the measure. Issues such as how much they draw on the multicultural potential of human capital, arbitrage abilities that stem from investing assets in an international market, and the significance of intangible assets in the ability to create value-added are stressed.

The most problematic issue is determining the combination of parameters that would enable measurements based on statistical data that has been published (in accordance with widely recognised methodologies). Governed by this criterion, the following have been acknowledged as sources information: profit (P), market value (MV), expenditures for research and development (R&D), stockholders' equity (SE), asset value (A), assets value abroad (AVA), sales (S), sales value abroad (SVA), employment (E), and employment abroad (EA). Based on these sources, relative indices have been created. Table 6 presents the rules for calculating individual SICAV indices.

Table 6. Diagnostic indices of the GBN orchestrator's ability to create value-added

No.	Preferences	Specifics
1	stimulant	Return on equity [ROE] expressed in %.
2	stimulant	Expenditures for R&D per 1 employee [(R&D)/E] expressed in USD.
3	stimulant	Percentage of intangible assets in the creation of sales value [(MV–SE)/S] expressed in %.
4	stimulant	Percentage of assets abroad in the value of total assets [AVA/A] expressed in %.
5	stimulant	Percentage of employment abroad in employment in general [EA/E] expressed in %.

Source: own elaboration.

It was equally important to introduce a parameter indicator [(MV–SE)/S]. In this way, the "measurement" of the importance of a business network was attempted. The network entwined around an enterprise to make the central subject carry out the best sales volume. The difference between the market value and the stockholder's equity value [MV–SE] was considered to be the valuation of the network system. The share of intangible assets in the creation of sales value [MV–SE/S] was, therefore, considered to be a very important measure of intellectual capital's ability to multiply the economic capital of an organization.

Network capital is based on a system built by company relationships and business connections, which are not necessarily visible in materialised form, for example, owned holdings, joint ventures or formal cooperation agreements. The company possesses these types of assets through the skilful combination of cooperation and competition. It enables the company to acquire experience, increase the professionalism of its personnel, develop certain models of conduct, improve procedures and modify standards, introduce new brands of products relevant to the specific individual segments or regions, etc.

The index is an attempt to assess the impact of potential intangible assets whose key ingredients, unique skills and competencies which were worked out in the course of the interactions within the system, build the image of the organisation and systematically raise the value of the brands that belong to it. An important element of these assets is the quality management system, which is based on often unwritten internal codes of conduct that create the foundations of the organisational culture, including a unique sense of entrepreneurship and innovation. They include specific types of reactions of the organisation's members to the challenges of the dynamic and diverse environment, including the workflow in emergencies, rules for adjusting the offer to the unique local conditions or sudden challenges (e.g., activities of the main competitors, or changes in economic and legal situations).

Using [(MV–SE)/S], an attempt was made to take into account the impact that standard factors, which are not measured directly, i.e. soft stimulants of competitiveness, including coopetitive abilities, have on sales. It attempted to quantify the hidden factors that increase the competitive potential of intellectual capital.[20]

Innovation capital is represented in the indicator through expenditure on research and development per employee. Expenditure on R&D was compared with the level of employment in order to assess the technological advancement of the production system against competitors.[21] Today, subjects that are leaders in sectors that are competing for primacy in a particular market segment often work in another area. They observe their actions, utilise best practices and cooperate (also in the trade of items). This innovative capital assessment model makes it possible to capture development trends.

Two further indicators, i.e., the share of assets abroad in total assets [AVA/A] and the participation of employees abroad in total employment [EA/E], were introduced into the synthetic indicator as elements that were designed to reflect the internationalisation of the organisational system. In this way, it highlights both the ability to derive potential from the multicultural human capital and the ability to arbitrate, which stem from the investment of assets outside the home country. Both elements are essential in the era of corporate globalisation. The importance of the global spread of assets, i.e., the skilful following of trends, including the movements of the competition and building creative international teams, was underlined. The increase in the value of indicators shows the development of global network enterprise systems and confirms the system's ability to combine competition and cooperation.

It should be emphasised that SICAV serves to fully depict the sources of GBNs' competitive advantage, which are built around an orchestrator and based

20 B. Marr, G. Roos, *A Strategy Perspective on Intellectual Capital – Multidisciplinary Insights into Management, Measurement and Reporting*, Butterworth-Heinemann, Oxford 2005, pp. 28–41.

21 In order for the [(R&D)/E] indicator to properly serve its purpose, it must consider a properly selected set of companies.

on available and properly selected data. The measure created is not a perfect measuring tool, merely one proposed to arrange a given group of units that represent network-type structures in order by the strength of their competitive potential. It is a concept that statistically verifies the proposed hypothesis on the role of flexible, coopetitive organisation structures in strengthening competitive position on the global market. Appropriate indices were selected to assess the significance of each layer of capital of a GBN, including crucial qualitative factors, to create a competitive advantage.

In conclusion, SICAV is a form of integrated measurement. Its task is to combine indices that represent individual layers of GBN capital. The assessment of the significance of individual parameters by combining them and, therefore, determining the synthetic indicator, is crucial. That is how it is possible to take into account the essence of a GBN's competitiveness as a complex system. Efficiency is maximised through synergy as a result of correctly selecting the participating agents.

SICAV utilises indices that aim to reflect the significance of the layers of both economic capital and intellectual capital. For that purpose, the return on equity was adopted as the basis for the complex assessment of the strength of economic capital, since it contains ROA data as tools that enable the assessment of the efficiency of resource usage and ROS as a source of information regarding the amount of profit per sales unit. Additionally, four parameters were introduced to express the significance of intellectual capital: (1) the percentage of intangible assets in the creation of sales value, (2) expenditures on research and development per employee, (3) the full-form internationalisation of assets, and (4) the utilisation of the advantages of multicultural personnel.

Conclusions

The reflections presented in the monograph were meant to prove that in the 21st century, GBNs are, in reality, functioning business systems. Their cores are Top-TNCs that have evolved by adapting to meet the challenges of the changing global economy, thus becoming orchestrators of GBNs. The situation is reminiscent of the 1970s, when TNCs began to exert more and more influence over the global economy, thus creating the need to identify the causes of this phenomenon and determine the pillars of the new model of building effective business relations.[1] Putting knowledge in order was then necessary for the TNCs, and it is the same now for the GBNs.

This work referred to classic theoretical concepts, pointing out possible modifications in order to adapt them to the new realities of conducting business processes on the international market. There was an in-depth elaboration on the pillars of the GBN concept, their structure, the significant elements that characterise the business model and the requirements for measures of competitiveness that are suitable for GBNs.

The work includes the definitions of GBN attributes, which improve the GBNs' ability to react to the occurring changes flexibly. Methods of establishing a strong competitive position were enumerated, including the role of the systematic development of a layered structure, which combines ownership, cooperative and strategic relations (acquisitions, mergers, strategic capital and non-capital alliances, co-operation agreements). It emphasised that by consistently fulfilling the business integration process, GBNs attempt to improve their ability to create

1 Although we now know that networks hold our modern world together, we still lack a good understanding of what business networks are, and how they work and develop. Global business network analysis from a multidisciplinary perspective can enhance strategic management. We should explore the patterns of networking and the dynamics of network relationships, to show how we can begin to tap their full potential. E. Todeva, *Business Networks: Strategy and Structure*, Routledge, London–New York 2006.

value-added to constantly evolving standards (by exploring and not exploiting a given "organisation's knowledge capital" resources).

The development of GBNs is the effect of the progressing globalisation, which is, to some extent, a side effect of the evolution of the global economy. The current stage of corporate globalisation has forced TNCs to implement a networking approach and accept the principles of coopetition, orchestration and the regulation model. This means a partial devaluation of the classic paradigm of competitiveness, or, in other words, the reconstruction of the collections of those principles and factors that are considered crucial. This, in turn, requires appropriate modifications to competitive measures.

When searching for a theoretical anchor for the concept of GBNs, it should be emphasised that they are a type of a regulation structure (an open system) and not a typical organisational structure that focuses on internal adjustments. GBNs also function actively on the metaeconomic level and look for potential sources of competitive advantage within. It is not so much adaptative mimicry as a conscious use of the existing situation and conceptually striving to achieve a defined goal.

Only the Top-TNCs that have reached a certain level of organisational maturity in terms of resources and competences are capable of implementing a strategy that is based on networking, orchestration and coopetition. They must be prepared to take on this role not only structurally (i.e., building multi-level structures) but also mentally (through the proper organisational culture). Therefore, not every TNC is capable of performing the function of a GBN orchestrator.

The transformation of a Top-TNC into a GBN orchestrator requires a certain level of advancement of each of its capital subsystems (financial, market, innovation, organisational and institutional). The underdevelopment of any of them lowers the system's ability to create value-added.

The work aimed to prove that GBNs are a new model for building international competitiveness, based on the concepts of networking, orchestration and coopetition. For that purpose, the essence of the very specific function of the orchestrator, who fulfils a crucial role in a GBN system, was presented. It was explained why this agent is considered to hold all the positive qualities of the orchestrated GBN. The requirements for the complex assessment of GBN competitiveness was presented, highlighting the need to evaluate the synergic influence of the accumulated economic capital (AEC) and the intellectual capital (IC).

The research procedure required the verification of five hypotheses.

H1: A GBN has attributes that make it stand out against other network concepts.

Chapter I indicated that features that distinguish a GBN include internalisation, where the structure of bonds that make up the internal transfers is not necessarily a result of ownership; cooperation, which stresses the key competences of system

members and is the basis for both task division in the network and the continuous sharing of new knowledge; multiculturalism, which indicates that variety is treated as inspiration for innovative solutions, while the common values of the core remain unshakeable; and coherence, which suggests that the common vision, which enables cooperation even among competitors of development, is not necessarily a uniform strategy.

The precise conceptualisation of the notion of a GBN was based on four attributes – stratification, coopetition, orchestration and creation of value-added, thus distinguishing it from other network concepts. All the attributes enumerated are the foundations of the "organisation's knowledge capital" (OKC) and build a GBN's system competitiveness; therefore they must exist in a GBN and must function synergetically. This differentiates a GBN from other types of networks, which may have certain qualities but which are not obligatory.

The key issue which distinguishes a GBN from classic networks and pre-network forms (i.e., districts or clusters) involves determining the significance of accepting the regulation model as the model that constitutes the system. A GBN is a regulation model that combines market, hierarchical and mixed structures as alternate forms of conducting business processes. It is an exemplification of the competition–cooperation–control (CCC) paradigm. An orchestrator is the agent responsible for the efficiency of the system and is tasked with making sure the GBN elements are in harmony; they are not necessarily formally joined and often remain unaware of the correlations between them.

H2: **Top-TNCs conduct the process of business integration to obtain the position of a GBN orchestrator.**

Chapter II emphasised that the development model of GBNs is a process of sequential expansion of the Top-TNCs. This process gradually abandons emphasising the proprietary aspect, or the state of owning – and controlling – property, in favour of becoming more and more involved in direct foreign investments, and organising international production, trade and service business activities, as well as developing diverse structures and connections.

The integration process results in reinforcing the stratification of GBNs on three levels – ownership links (OL), strategic connections (SC) and cooperative relations (CR) – which intertwine and make up a web-like system of bonds. Top-TNCs conduct business integration in stages, attempting to build a strong coalition structure. The analysis indicates that this process can be compared with the stages of creating integration groups. A GBN is a model of market regulation that constitutes the final stage of sequential business integration.

The essence of the strategy of Top-TNCs, which strive to obtain, and later maintain the position of GBN orchestrators, must be the understanding that building long-term competitiveness requires the use of an organisational model based on knowledge. A GBN orchestrator must simultaneously be a leader-regulator, a coordinator-manager, and a conductor-administrator.

An orchestrator is tasked with stimulating the development of a GBN and maintaining its position in the global system, despite dynamic changes. It requires the constant accumulation, coordination and integration of network resources. To achieve that, a TNC-orchestrator needs to be economically strong, and charismatic. Therefore, the process of business integration is dynamic, continuous and infinite.

H3: By developing a GBN's knowledge capital, an orchestrator attempts to maintain its ability to constantly create value-added in order to maintain its position in the sector-specific oligopoly.

Chapter III discussed the systemic nature of the layers of capital in a network organisation and their importance in the creation of OKC. It explained that OKC is based on the ideas of networking (organisational capital – ORGC), orchestration (innovation capital – INNC), and coopetition (institutional capital – INSC). The chapter looked at the role of human capital as an activator of all three IC subsystems, focusing focused on the structure of an orchestrator's capital. Individual IC subsystems were assessed, since it was assumed that an orchestrator holds all the key qualities of the network, on which the long-term GBN competitiveness is based.

Based on a study of the Top-TNC leaders (three leaders per each sector) of 9 sectors,[2] using *Grounded Theory Methodology* and *Social Network Analysis*, it was determined that their models of OKC largely coincide. This coincidence concerns putting pressure on AEC parameters such as the growth of assets and profitability indices (financial capital – FINC); the expansion of structures to obtain local resources (market capital – MARC) and IC parameters, such as multi-centre R&D systems (INNC); reorganising management, increasing full-form internationalisation, and expanding the brand portfolio (ORGC); the development of the network of institutional relations with a diverse circle of stakeholders (INSC).

That is how the orchestrators of GBNs, whose core is OKC, implement network internationalisation strategies (NISs). The phenomenon occurs regardless of the sector, although its scope varies depending on the stage of the GBN orchestrator's business integration. The purpose is always to maintain a leading position in the sector-specific oligopoly thanks to the ability to create value-added to the evolving standards. That is why networking, coopetition and orchestration are the pillars of strategy among GBN orchestrators, although the Top-TNCs follow different development paths, depending on their key attributes.

The study confirmed that hierarchical management is being replaced with the regulation model, pure competition is replaced with coopetition, standardisation with glocalisation, and economic efficiency with attempting to create socially-useful values (*Creating Shared Value*). It means that to generate the effects of synergy and rely on their own multi-level networks, Top-TNCs have developed suitable pillars

2 252 TNCs: automotive – 17, electronics – 26, petroleum – 25, telecommunication & media – 38, chemical & pharmaceutical – 30, consumer goods & services – 36, industrial goods & services – 40, public services – 29, multi-branch holdings – 11.

of strategy that supply the classic development principles with the social aspect, cultural anchorage and orchestration.

To maintain their positions as leaders of sector-specific oligopolies, the GBN orchestrators took responsibility for the directions and speed of changes – all by coordinating the development of the network's knowledge capital (AEC and IC) and treating it as the foundation for the GBN's ability to create value-added to the evolving global standards.

H4: The competitiveness of GBN orchestrators is systemic, which requires a multi-dimensional assessment, and the paradigm of the international competitiveness of enterprises must be accepted as its basis.

Chapter IV showed that the competitiveness of GBNs should be considered on three levels: technical and adaptive (implementing standards and the use of the potential of accumulated resources), i.e., base competitiveness; practical and interactive (reflective reactions to diverse requirements, and potential of innovativeness based on diversity), i.e., operational competitiveness; and transformational and creative (expanding the standard, perfecting the quality of whole processes), i.e., competence competitiveness. Impulses from all three levels continuously intertwine and overlap, creating synergy effects. That is how system competitiveness – which is responsible for creating value-added to the evolving standards and utilising the potential of network diversity and network dynamics – is built in a GBN.

When assessing the competitiveness of a GBN orchestrator, it is, therefore, crucial to comprehensively perceive its following qualities: the level of key competences; the quality and structure of the brand portfolio; the skills and experience of the human capital; the leadership model; the level of technology, innovativeness and creativity; and the structure and rules of building vertical and horizontal connections to all stakeholder types. Assessing the competitiveness of GBN orchestrators requires a systemic approach or the holistic perception of the role of each of the five subsystems (FINC, MARC, INNC, ORGC, INSC) in creating value-added for the network.

A GBN orchestrator is a Top-TNC, which is a stable open system that relies on the strength of the knowledge capital of the orchestrated network. It utilises the accumulated resources of market, financial, innovation, organisational and institutional capitals of the whole network. The achieved position is the effect of the sequential process of business integration, becoming covered with subsequent, strengthening elements of individual layers. By contributing its own knowledge, competencies, and specific types of attitudes, each helps enrich the technical skills, adjustment abilities, but also the creative possibilities of a GBN. It is necessary to refer to the competitiveness assessment benchmarks used for advanced systems to define the essence of the Top-TNCs that fulfil the roles of GBN orchestrators and their operating methods.

Defining them in such a way, i.e. showing their incredible complexity and otherness from traditional classic enterprises, means that a different approach is

vital (such as for macro rather than micro-entities). That is because the specificity of GBN orchestrators indicates that their competitiveness is determined by the whole system of multi-level connections. Therefore, the systemic nature of their competitiveness demands a multi-dimensional examination, like one performed for the most complex systems, i.e., countries.

Chapter IV presents the paradigm of the international competitiveness of enterprises, which is modelled after the concept of the international competitiveness of economies, and identifies the requirements for its application. The consequence of accepting the admissibility of the assessment of Top-TNCs in accordance with the rules indicated is the necessity to search for recommended measures of competitiveness that make it possible to obtain an image as full and multi-dimensional as possible.

H5: **The measure of the orchestrator's ability to create value-added meets the requirements of the aggregated long-term assessment of GBN competitiveness.**

Chapter V presents selected methods of the multi-dimensional assessment of complex structures (since a GBN is considered a complex structure) in order to verify which of them fulfils the requirements of an aggregated measure that would consider the long-term nature of building system competitiveness. The study referred to the classic methods of assessing competitiveness which emphasise the role of IC. It explained why the concepts presented in the literature, for example, the VAIC or KCE models, do not fully convey the essence of the assessment of GBNs. Since a complex assessment of GBN competitiveness requires that the parameters that reflect the influence of all GBN capital subsystems on its ability to create value-added be considered, ultimately, it focused on an approach based on MDA.

The *Synthetic Indicator of Creation of Added Value* (SICAV) was proposed. It was based on the aggregation of quantitative parameters that constitute the image of all important components and that were meant for the GBN orchestrators.

In the indicator, the AEC valuation for GBN was introduced as the orchestrator's return on equity (ROE). ROE is the synthetic measure of the market and financial potential or several aspects of business activity that influence each other. To appreciate the influence of innovation as well as structural and institutional changes on the improvement of competitive position, two indices were introduced: the expenditure on R&D per employee [(R&D)/E] and the percentage of intangible assets in the creation of sales value [(MV–SE)/S].

When emphasising the significance of the multi-level connection system, which is developed during the sequential building of a GBN, the internationalisation of assets and employment were referred to. The research considered the indices of assets abroad in total assets [AVA/A] and employment abroad in total employment [EA/E]. In this way, the role of the global distribution of value chains, investment allocation, including the structures of strategic alliances, mergers and

international acquisitions, or resources, experiences and competencies of the GBN system have all been taken into account.

The presented concept of an orchestrator's SICAV, based on five indices, i.e. [ROE], [(R&D)/E], [(MV–SE)/S], [AVA/A], and [EA/E], meets the requirements of the aggregated long-term assessment of GBN competitiveness. It enables not only an *ex-post* assessment against a selected group of direct competitors (the linear ordering of objects researched) but also the prediction of competitiveness against the competition of the sector-specific oligopoly.

The research was based on the assumption that the transformation of Top-TNCs and the surrounding multi-layer business system into cohesive and highly-flexible GBNs results in Top-TNCs having all the positive qualities of the orchestrated GBNs. To be selected as a GBN orchestrator, a Top-TNC should meet all the requirements of the paradigm of the international competitiveness of enterprises, thus confirming the specificity of the position and role of an orchestrator in the GBN system. As a result, research that is based on the orchestrator's data can provide an image of the competitive position of its GBN.

Based on the research, all hypotheses formulated were positively verified, which justifies the following conclusions:

1. GBNs are a final effect of the Top-TNCs' pursuit of sequential business integration. The process is a response to the changes in the global economy, and it signifies the fulfilment of a competitive strategy based on the networking approach.
2. The cores of GBNs are the orchestrators, or the Top-TNCs that determine the directions of changes and trends in their business sectors; they successively and continuously develop the composition of the multi-level network. They compose structures of teams who are suitable for specific projects.
3. GBN orchestrators must have stable economic potential (ROE), their business must be highly internationalised, they must appreciate the role of intangible assets in creating sales value, and they must be heavily involved in the R&D of the sector.
4. The harmonious development of a GBN is based on the stratification of the network capital. This stratification encompasses three levels of connections – ownership links, strategic connections and cooperative relations, whose immanent feature is competitiveness.
5. The attributes of GBNs that distinguish them from other types of networks are systemic stratification, the abilities of coopetition and orchestration, increasing creativity and building the effects of synergy to create value-added.
6. The essence of a GBN is the release of the energy of its component agents. The orchestrator is responsible for continuously improving quality during the intraorganisational transfer, which increases the value of the OKC.
7. The development of GBNs is aimed at improving the ability to create value-added, due to the activation of system members at many levels, i.e., the essence of system competitiveness.

8. By fulfilling the function of the integrator of the network's knowledge capital, the orchestrator reflects the cumulative capacity of the entire multi-level relationship system of which he is the regulator, which is why the orchestrator's SICAV may illustrate the potential of the whole orchestrated GBN.

9. The oligopolisation of the global space is the consequence of GBN development. In each sector, there are several (up to a dozen or so) agents capable of becoming GBN orchestrators. These agents establish coopetitive relations. This lowers the probability of innovation shocks (cooperation between competitors) in the long-term.

Ultimately, the work confirms the theory that in the global economy of the 21st century there is an ongoing transformation of classic TNCs, which based on the division of functions and hierarchical structures into network organisations with hybrid, globally-dispersed structures. By striving to maintain the positions as sector-specific leaders and their long-term competitive position, the most powerful corporations (Top-TNCs) pursue the model of business integration, obtaining the positions of GBN orchestrators.

In conclusion, the cognitive concept of GBNs is based on the model of sustainable development of the whole system and its participating agents. It makes use of the dialectical nature of the new paradigm of competitiveness, wherein cooperation and competition, integration and disintegration, standardisation and diversity, globalness and localness, management and regulation, intertwine.

In this way, the concept of GBNs combines two contrasting approaches, i.e., the school of resources and competences with the school of the leverage strategy. The GBN model emphasises the significance of potential and continuously improving the management of all categories of capital (resources, skills). It also explores the possibilities of growth, thanks to the development of new levels of the increasingly external organisation structures. Although key competences are the essence of GBN competitiveness (Hamel and Prahalad's concept), the centre of gravity is moving from mere efficiency to sustainability development. This enables the creation of social and economic values, and it also takes into account the prosperity of all stakeholders.

The most valuable attributes of GBNs are intangible, in the form of OKC, which is the multiplier of AEC. GBN competitiveness must be based on a systemic model, which combines the qualities of base, operational and competence competitiveness. A GBN as a target model is based on three waves of the creation of competitiveness (Hagel and Brown's concept):[3] dynamic specialisation (which focuses on the competence core and outsourcing of additional processes);

3 The waves of building a company's potential presented by Hagel and Brown are considered "important components of the development of the business networks emerging on the global markets" by Chrzanowski. A. Chrzanowski, *Nowe koncepcje*… and J. Hagel, S. Brown, *Organizacja jutra. Zarządzanie talentem, współpracą i specjalizacją*, Wydawnictwo Helion, Gliwice 2006, pp. 32–42.

connections and coordination (flexible process networks, and the integrated potential of many cooperating agents); supported the building of potential (moving from the simple coordination of resources to advanced regulation methods which assume that participants are self-organised and self-controlled). The strategy of competitiveness formed in such a way is suitable for the challenges of the 21st century.

These reflections can be concluded with the statement that the relationship between the expansion of the Top-TNCs' network structures and the development of GBNs is undeniable. A GBN is a regulation model, positioned between the market and hierarchical control. It illustrates the Top-TNCs' implementation of the paradigm of the international competitiveness of enterprises in the conditions of corporate globalisation while taking into account the requirements of inclusive development.

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List of tables and diagrams

Tables

Table 1.	The stages of globalisation as a path of classical enterprises' evolution to global business networks (GBNs)	43
Table 2.	Model of business integration – the stages of development of GBNs	48
Table 3.	Layers of an organisation's capital	61
Table 4.	The juxtaposition of research results – by sector	81
Table 5.	Synthetic summary of the test results based on GTM and SNA – the sectoral approach	84
Table 6.	Diagnostic indices of the GBN orchestrator's ability to create value-added	140

Diagrams

Diagram 1.	The business network as a regulation structure on a global market	26
Diagram 2.	A global business network against selected network classifications	33
Diagram 3.	The system of attributes of transnational corporations	39
Diagram 4.	The idea of the creation of a global business network	52
Diagram 5.	An "organisation's knowledge capital" (OKC)	71
Diagram 6.	The role of knowledge in the process of building competitiveness	104
Diagram 7.	Elements of the competitiveness system	106