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Table of Contents

Tomasz Geodecki, *Marcin Zawicki*
Editorial
The Business Services Sector in Central and Eastern Europe: Territorial Embeddedness, Human Capital, and Growing Complexity 5

Tomasz Geodecki
The Dimensions of Territorial Embeddedness of the Business Services Sector in Central and Eastern Europe 15

Zoltán Gál, *Robert Marciniak*
The Human Factor in the Hungarian Business Services Sector Development in Comparison with Regional Competitors 32

Jakub Głowacki
The Potential of Developing Complex and Unique Fintech Solutions in Kraków's Business Services Centres 53

Małgorzata Zięba
Sustainable Urban Development and Office Location 67

Simon R. Greaves
Why Poland's Yacht Builders Are Among World Leaders 83

Rodion Sevastyanov
The Prospects of Ukraine's Integration into Global Value Chains Within the Framework of European Integration 100

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Tomasz Geodecki, Marcin Zawicki

Editorial

The Business Services Sector in Central and Eastern Europe: Territorial Embeddedness, Human Capital, and Growing Complexity

Abstract

This special issue focuses on territorial embeddedness and growth prospects for the fast-growing Business Services Sector (BSS) in Central and Eastern European (CEE) economies. In this editorial, we introduce the topic of the special issue and outline the dimensions of territorial embeddedness of the Foreign Direct Investment (FDI) in the sector in question, taking into account the risk of relocation and the linkages between investors and local contractors. With regard to development perspectives, we draw on theory and empirical research in the field of industrial upgrading. The contributions to this special issue include six selected articles that deal with the territorial embeddedness of the business services sector in CEE, the role of human capital, the increasing complexity of services provided by this sector, office location factors, labour costs in the region, as well as the prospects of integrating the neighbouring Ukrainian economy into global value chains.

Introduction

In the era of increased European integration, transnational corporations have organised their production systems and included developing economies in the Eastern parts of the continent in the provision of sophisticated goods and services. A review of the motives and circumstances for the development of the offshore services industry leads to the conclusion that "ICT made it possible, wage differences made it profitable" (Baldwin, 2012, p. 2). As a result of the emerging international division of labour, the economies that joined the European Union in the 2000s (namely Central and Eastern Europe – CEE) became important players on the global map of business services. Relatively low labour costs, considerable labour resources, improving transport accessibility of cities, political and economic stability are all important factors for locating business services centres especially in the Visegrád (V4) countries, i.e. in the immediate vicinity of Europe's economic core.

The business services sector (BSS) in CEE countries has seen robust development since the early 1990s. Its origins date back to the economic reforms implemented in this part of the world after the fall of communism; the local economies

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were liberalised, while state-owned enterprises were privatised and opened up for foreign direct investment (FDI). Its significant proportion went to manufacturing and trade, which triggered a demand for tailored business services.

The current potential of the BSS in the V4 countries is evidenced by statistics, according to which in 2019, the sector employed over 520,000 people (as compared to nearly 350,000 in 2016), whereas the number of established services centres exceeded 1,900 (in 2016, it was over 1,300). In 2016−2019, the mean annual employment growth rate in this sector was 14.7% (Zawicki, 2020). In 2020, in the CEE region,[1] the BSS (BPO, SSC/GBS, IT, R&D centres) employed 790,000 persons in more than 3,000 centres, with the total employment projected to increase to 980,000 by 2022 (ABSL, 2020). In the neighbouring countries aspiring to EU membership (Bosnia and Herzegovina, Serbia, and Ukraine), this potential is estimated at additional 300,000 people (ABSL, 2020). The dynamic development of the BSS in the region is accompanied by its qualitative upgrading. Within a decade after EU's enlargement, it began to specialise in a number of knowledge-based service areas (Geodecki, 2020).

The extremely dynamic growth of this sector in the last decade has accelerated over the last five years. The opportunities and threats inherent in this process are not new, but they become especially pronounced in places where the economic structure has changed most profoundly as a result of this sector's growth. Such places undoubtedly include the capitals of the V4 countries as well as some other centres, such as Kraków (population just under 1 million), where over 100,000 people are employed in broadly-conceived business services. In 2009, Kraków hosted economic geographers who reflected on the challenges to the sector from the perspective of building the knowledge economy (Hardy et al., 2011). More than a decade later, many of these challenges are still relevant as well as new ones have emerged, such as those related to the SARS-CoV2 pandemic and the shrinking human capital pool (cf. Bykova et al., 2021; Mazur-Bubak, 2020; Gal & Marciniak, 2020).

This is not to imply that previous problems disappeared. A careful observer will notice that the share of the CEE countries in EU employment in the BSS is clearly higher than their corresponding share in value added. Despite the high level of the internationalisation of some services sectors – especially professional business services and IT services – factor price equalisation is far from being achieved. If "ICT made it possible, wage differences made it profitable" indeed, then wage differences are the most important driver of this sector's globalisation. Specifically, the CEE economies in 2017 had a 19% and 17% share of employment in professional and IT business services in the EU, respectively, yet only 7% and 5% share in value added, which adds up to about 2.5–3 times less value added per employee than the EU average (Geodecki, 2020). Therefore, in order to maintain the sector's cost competitiveness, wages must be correspondingly lower. The challenges to the emerging European economies resulting from this disparity are associated with insufficient territorial embeddedness, as argued by the authors of chapters contained in the book titled *Outsourcing in European Emerging Economies: Territorial Embeddedness and Global Business Services* (Mamica, 2020).

The dimensions of embeddedness of the business services sector

Territorial embeddedness and the threat of relocation

Cost-benefit analyses undertaken in economic geography take into consideration "territorial embeddedness", which is a concept that describes how actors are anchored to – or embedded in – a particular area (Hess, 2004; Białynicki-Birula & Pacut, 2020). In this meaning, low embeddedness can be associated with a high risk of relocation as soon as investors find out that they can achieve

[1] Excluding Slovenia and Croatia.

further cost reductions elsewhere. A considerable challenge to the growing service industries in Eastern European economies turns out to be the lack of sunk costs, since – unlike in manufacturing – the former require little or no investment in infrastructure (Hardy & Hollinshead, 2011). Concerns about relocation were mainly expressed at the early stages of investment (Pavlínek, 1998; Nölke & Vliegenthart, 2009; Domański & Gwosdz, 2009). However, Micek et al. (2010) note that the role of sunk costs in services can be played by localised capabilities that cannot be easily replicated in other locations.

From this perspective, an important dimension of local embeddedness can be the distinction between vertical and horizontal foreign direct investments (FDIs). A vertical FDI is undertaken in order to take advantage of international differences in labour costs – investors are thus interested in exploiting labour rather than the human capital. On the other hand, a horizontal FDI seeks market access and offers a much wider range of high-quality jobs (Markusen, 2005; Buch et al., 2005; Sass & Fifekova, 2011; Antràs & Yeaple, 2014).

In our view, revisiting the economic theory makes it possible to predict not only that simplified and routine tasks will be relocated to CEE, but also that the risk of relocation of the BSSs' vertical investments from CEE has been overstated. Although wages grow fast, productivity turns out to grow even faster (cf. Astrov et al., 2019; Schröder, 2020). In the microeconomic analysis of incentives for the fragmentation of production, companies that reach a sufficiently large scale of operations choose to split into two (or more) production blocks in order to lower their average costs owing to specialisation. The larger the scale of production, the greater the benefits, even if it entails incurring extra coordination costs resulting from the maintenance of service linkages. Offshoring a part of production and coordination services to cheaper foreign locations makes it possible to add Ricardian comparative advantages to economies of scale and to the benefits that accrue from the fragmentation of production (Jones & Kierzkowski, 1990). In international trade theory, Grossman and Rossi-Hansberg (2006a, 2006b) discuss the benefits of international production fragmentation. Apart from the traditional exchange of wine for cloth, trade in tasks is becoming increasingly important. Two (or more) countries are involved in the production of one good and share tasks according to their level of productivity and the supply of both unskilled and skilled labour. Accordingly, skilled workers in the headquarter economy are engaged, e.g., in design, whereas unskilled ones in the factory economy are engaged in production.

A further explanation as to why factory economies can also be involved in design is provided by Markusen (2005), who identifies a third production factor, namely knowledge-based capital. Its owners – who have the necessary technology, know-how, and access to rich markets – may choose to engage skilled labour in the Global South for a fraction of the market wages offered in the Global North, even though these skills are (at least initially) scarce in the South. With the decreasing costs of long-distance communication (ICTs), globalisation has also reached the office (Baldwin, 2019). Not only production activities, but also more advanced accounting, human resources management, and Research & Development (R&D) tasks are being relocated to low-cost countries. The theory of FDI – together with Dunning's (1977) OLI (Ownership, Location, Internalisation) paradigm – helps explain why a large proportion of processes can be transferred abroad without capital control being lost. Apart from knowledge capital (ownership) and the benefits of low wages (location), it is also important to maintain control within the company (internalisation) over the quality of the most value-adding processes (Gupta et al., 2006; Moe et al., 2014; Radło 2016). If this is the case, the chances increase that a developing country attracts an efficiency-seeking foreign investment (Dunning, 2000; Narula & Pineli, 2017). Thus, also knowledge-intensive business services in CEE will grow as long as these countries

offer access to competitively-priced and abundant human capital.

Building local cooperation links

Even though the threat of relocation of services provision and production from CEE countries currently seems overstated, the CEE countries should urgently acquire the ability to perform those tasks that bring in higher added value. However, what prospects does offshoring, including services offshoring, offer for the economic development of CEE countries? A productive current of research on its consequences turns out to be the combination of Porter's (1985) concept of value chain with Wallerstein's world-systems theory (1974). By multiplying mono- and oligopolistic profits, modern capitalism has made it possible to separate the global core from periphery. The former is comprised of states – or, rather, economic entities supported by them – which implement high value-added processes. In the latter, in the absence of productive powers (List, 1909 [1841]), economic processes are characterised by low profitability, which is why political structures (states) also tend to be weak. Global supply chains involve asymmetric economic links between one area and another in terms of benefits, which enable the global core to perpetuate its dominant position (Wallerstein, 2004). A particularly intense period of the global value chain's (GVC) internationalisation took place in the 1990s and led to the relocation of a large part of economic activity, especially manufacturing, to previously peripheral countries (Baldwin & Lopez-Gonzalez, 2015). Companies from core countries tend to represent the initial and final links of value chains (headquarter services, R&D, design, and customer service), whereas those from peripheral countries focus on manufacturing, which is the least profitable industry (Wade, 2018; Stöllinger, 2021). This represents the second important dimension of territorial embeddedness; it stems from the fact that while global production sharing has helped developing countries to increase their exports, the value added does not always increase proportionally (Milberg & Winkler, 2013, p. 240).

In the 1990s, after the post-socialist economies had opened up to the world, the fact that a low proportion of value added remained in the host economies was attributed to weak linkages between foreign subsidiaries and their local collaborators. This was due to both a skills mismatch and the liberal policies of CEE countries, which did not require investors to develop cooperation networks locally (Hardy et al., 2011). Researchers thus spoke of "enclaves" and "cathedrals in the desert" (Grabher & Stark, 1997; Hardy, 1998; Micek et al., 2011). With the progress of globalisation, a further inflow of investors and rapid learning (Domański & Gwosdz, 2009) as well as mutual interconnectedness between investors and local co-ops all increased (cf. Stryjakiewicz, 2007, on the development of the pharmaceutical sector in Poland, and Pavlínek, 2017, on the automotive sector in the Czech Republic and the entire CEE region).

The analysis of value-added flows – made possible by the development of inter-country input-output tables (Koopman et al., 2010; Timmer et al., 2015; OECD, 2021) – facilitated the comparison of the reach of backward and forward linkages (cf. Hirschman 1958). Their measurement reveals the extent to which the value created in the local economy is embodied in either meeting final demand or exports, and thus represents the intensity of linkages between producers/exporters and local suppliers (cf. Stehrer & Stoellinger, 2015; Grodzicki & Geodecki, 2016). Most analyses are conducted for the most globalised sector, namely the manufacturing industry. Less frequent attempts are made to estimate the linkages of services sectors with local suppliers and customers (cf. Geodecki, 2020). An important supplement to such a characterisation involves measuring the extent to which an economy (sector) is involved in business functions – from R&D and headquarter activities through production (manufacturing) to logistics, marketing, and sales (Hagemejer & Ghodsi, 2017; Timmer et al., 2019; Stöllinger, 2021).

Building a classification of business functions for the services sector remains a challenge, as most research is done on manufacturing industries or entire national economies.

Industrial upgrading in the business services sector

The second school in the GVC current identified by Bair (2005), represented, among others, by Gereffi and his students, focuses not so much on the asymmetry of benefits as on the industrial upgrading prospects of peripheral countries. Gereffi (1999) and Amsden (2001) associate this capacity with occupying technologically-sophisticated capital- and skills-intensive economic niches. Accelerated learning from collaborators in value chains (cf. Collier & Venables, 2007; Pietrobelli & Rabelotti, 2011; Baldwin & Lopez-Gonzalez, 2015) led Milberg and Winkler (2013) to propose that in the globalisation era, functional advancement in value chains has become synonymous with economic development. Gereffi et al. (2005) identify several types of value chains that differ in terms of power asymmetry and the concomitant ability of suppliers to attain an increasing share of value added. Their three key characteristics include the complexity of transactions, the ability to codify them, and capabilities in the supply base. The classification of value chains with the use of these characteristics informed later studies into industrial upgrading (Coe & Yeung, 2015; Dicken, 2015).

The majority of analyses of industrial upgrading, especially in CEE countries, are conducted for manufacturing industries (cf. Domański & Gwosdz, 2009; Pavlínek, 2017). In the last decade, however, more attention was directed to the services sector affected by globalisation in the wake of the the revolution with regard to the ICTs (Wirtz et al., 2015; Baldwin, 2019; Geodecki, 2020), although research on upgrading in services tends to concern non-European countries. Fernandez-Stark and Gereffi (2010), as well as Fernandez-Stark et al. (2011), studied selected branches of services mainly in Latin America in order to describe the process of industrial upgrading in the offshore services industry (especially their acquiring the capacity to shift to more value-added activities). The relationship of local actors with lead firms in the industry is crucial. Taking advantage of the fact that in the IT industry the capacity to provide services is more likely to be codified than not after acquiring the ability to serve their Western buyers, Indian IT companies began to provide similar services at home. In this way, Indian IT providers became independent players earning high profits after eliminating Western companies as intermediaries to access clients from affluent markets (Fernandez-Stark et al., 2011; Dicken, 2015).

Thus, given that artificial intelligence and machine-learning enhance the ability to codify transactions (Brynjolfsson & McAfee, 2014), two other factors have become the key drivers of advancement. The first one comprises capabilities in the supply base – particularly relevant in services where the physical capital is less important and the human capital becomes the crucial resource. The other factor involves transaction complexity that reflects both the level of the human capital and the level of managerial capabilities to capture these types of tasks in the value chain that require more knowledge and offer the potential to generate economic rents based on learning.

Contributions to this special issue

This special issue consists of articles devoted to the topics mentioned above. In the article titled "The Dimensions of Territorial Embeddedness of the Business Services Sector in Central and Eastern Europe," Tomasz Geodecki proposes a range of measures of territorial embeddedness in order to outline the above-mentioned challenges. The author uses these measures to determine the level and dynamics of the embeddedness of the BSS in CEE economies when compared with their Western European counterparts. The analysis of unit labour costs as well as backward and

forward linkages in this sector enables the author to gauge the intensity of relationships with local collaborators, thus making it possible to assess the risk of relocation. The rapidly improving skills of employees in the Central European BSS as well as the growing importance of knowledge-intensive services in the structure of value added can further contribute to the importance of CEE as a location for business services in Europe. The study relies on basic statistical data and calculations with the use of the input-output tables. The availability of data made it possible to carry out this analysis up to 2014. Geodecki's paper also provides the background for the subsequent articles, which describe the situation and dynamics of change in the sector in years to come.

Innovations and the trajectory of technological upgrading in the services sector are of a slightly different nature than in manufacturing, which is due to, among other things, their perishability. In other words, it is impossible to store services, which induces their providers to locate service centres in places where the human capital is available in abundance (Fernandez-Stark et al., 2011; Morrar, 2014). In the modern services sector, technical change becomes important insofar as production techniques are not capital-intensive so that the barriers to the entry of potential competitors can be constructed from a different raw material. Therefore, competition in the services sector tends to be based on competencies and the human capital (Sirilli & Evangelista, 1998). In their article, Zoltán Gál and Robert Marciniak discuss this key resource by comparing the market position of the Hungarian business services centres with their counterparts in the other Central and Eastern European countries. The development of the service sector in the region is reflected in the analysis carried out for the period 2015–2020. The paper presents the dynamics of the sector's development in the context of a still large but gradually decreasing number of employees associated with the limited supply of human resources and competences. The authors propose a range of recommendations, including more effective promotion of investments and human-resource development policies.

The article by Jakub Głowacki, one titled "The Potential of Developing Complex and Unique Fintech Solutions in Kraków's Business Services Centres," deals with the complexity and uniqueness of tasks undertaken by employees in the BSS in Kraków, which is one of the most important centres in CEE. The methodology adopted for the study refers to the concept of Product Space as proposed by Hidalgo and Hausmann (2009), in which the ability to create added value for the world's economies results from the limited distribution of managerial capabilities on the global scale. The research was based on surveying over 316 employees of the BSS's companies. The technical change that has taken place over the last five years is associated with a change in the degree of the complexity and uniqueness of the provided services. The analysed companies show a great potential for development in the area of new financial technologies.

In her article titled "Sustainable Urban Development and Office Location", Małgorzata Zięba identifies the criteria for locating new office-space investments by developers. Based on the literature of the subject, the author concludes that the most important factors include accessibility, proximity, availability of amenities, facilities and urban services, quality, the influence of planning, as well as fiscal tools and public investments (Rebelo, 2011). The empirical study covers the Kraków office market, which is the second largest real estate market in Poland. The findings show that developers emphasised access to well-developed public transportation networks as well as access to urban amenities and services as crucial features of a good location that would be attractive to end users. Therefore, the attractive location for an office building is, to a large extent, consistent with the principles of sustainable urban development.

The article by Simon Greaves, one titled "Why Poland's Yacht Builders Are Among World Leaders," appears to be more loosely related to the BSS in that the author discusses the factors that

affect the development of superyacht production in Poland. However, it turns out that competitiveness factors in this manufacturing industry are similar to those in the BSS. The key ones include labour cost and path dependency, which is consistent with the observations that Poland, like other countries in the region, owes its competitiveness in the manufacturing industry to low-cost but relatively well-trained labour (cf. also Nölke & Vliegenthart, 2009; Stehrer & Stöllinger, 2015). Such conclusions are supported by the observation that prior production levels, especially in the case of luxury goods, reflect not only cost, but also the level of productivity associated with having the right capabilities (Amsden, 2001). Greaves' paper supports the observations concerning the competitiveness factors characteristic of CEE countries, since it is for their sake that business-services companies choose to invest in this region.

Last but not least, the objective of Rodion Sevastyanov's article, titled "The Prospects of Ukraine's Integration into Global Value Chains Within the Framework of European Integration", is to explore the current determinants of Ukraine's foreign economic activity in the context of European integration. The theoretical framework for the study is provided by the concept of global value chains (GVCs), which builds on the idea of 'global production networks', as formulated by Henderson et al. (2002). The author argues that GVCs are a powerful driver of productivity growth, job creation, and the increasing living standards. For this reason, Ukraine can generate growth by moving to higher-value-added tasks and embedding more technology and know-how in its agriculture, manufacturing, and services. The author's research proves that the economic ties between Ukraine and the EU have strengthened significantly in the recent years. Statistical trends also demonstrate that foreign trade within GVCs tends to increase. For example, based on a recent analytical survey, most agricultural and industrial products exported from Ukraine accounted for 42.1% of the country's total international sales in 2020; moreover, over 70% of the Ukrainian IT software development exports are estimated to be outsourced to third parties.

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The Dimensions of Territorial Embeddedness of the Business Services Sector in Central and Eastern Europe

Abstract

Objective: The purpose of this article is, first, to propose a range of measures of territorial embeddedness in order to describe the phenomenon in question, and, second, to use these measures to determine the level and dynamics of the embeddedness of the Business Services Sector (BSS) in Central and Eastern European (CEE) economies.

Research design & Methods: In the debate about the future of the BSS in these low-cost economies, two challenges have been identified. The first one involves the threat of relocation. The other one is associated with linkages between service companies and local customers/suppliers weaker than that of in Western Europe. These two challenges can be addressed by tackling the third one, namely the increasing of process efficiency. In consequence, even an increased share of foreign contractors does not have to reduce the scale of cooperation with local entities. In the empirical part of this paper, changes in these three areas that make up territorial embeddedness are explored in depth. Eight divisions covering the BSS in the CEE-11 countries were compared with their Western European counterparts (the EU-17) at two points in time, i.e. in 2000 and in 2014. The study relies on basic statistical data and calculations with the use of the World Input-Output Tables.

Findings: It was found that due to productivity growth, the cost competitiveness of the BSS in CEE countries was maintained in the period of interest. Moreover, despite the growing internationalisation of the sector, the scale of cooperation of the BSS with local actors has increased. The rapidly improving skills of employees in the Central European BSS – as well as the growing importance of knowledge-intensive services (KIS) in the structure of value added – can further contribute to the importance of CEE as a location for business services in Europe.

Implications/Recommendations: The studied period saw an improvement in the structure of value added, as an increasing share of it was accounted for by knowledge-based services. This implies a high probability of further productivity growth of the BSS in CEE, and bodes well for the degree of territorial embeddedness both in terms of decreasing the likelihood of relocation and amplifying the capacity of local actors to act as the suppliers and the recipients of state-of-the-art services.

Contribution/Value Added: I have recognised that when service provision is subject to massive offshoring, it is not so much the intensity of service provision (exports) as the intensity of value added creation in the local economy that is of significance. Moreover, the relative gains in this respect should determine the scale of territorial embeddedness, the competitiveness of individual sectors, as well as their growth prospects.

Keywords: business services, territorial embeddedness, global value chains, wages, labour productivity, skills

Article classification: research article

JEL classification: D57, F21, J24, J31, O14

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Introduction

One of the characteristic features of globalisation is the spatial separation of management and production in search of cost savings, which increases the demand for coordination services (Jones & Kierzkowski, 1990). Advances in long-distance communication led to the realisation that savings can also participate in coordination processes by outsourcing them to specialised companies or relocating them to countries with lower labour costs (Baldwin, 2012; Wirtz et al., 2015; Radło, 2016). Once the barriers to production-factor flows between European countries had been removed, global players in the business services sector (BSS) started to invest in the low-cost economies of Central and Eastern Europe (CEE).

Therefore, is this sector the area where Eastern European economies will be able to gain competitive advantages and, in the long run, develop high skills as well as obtain high value added in knowledge-based services? Or, on the contrary, will the factors related to remote communication and labour costs that had originally contributed to the emergence of the BSS in CEE cause its closure in the future? After all, service provision can be relocated further east and south once wages in CEE have approached the levels similar to that of London and Frankfurt.

These questions – relevant from the perspective of public governance in emerging economies in terms of creating physical infrastructure and human capital for the BSS – address the extent to which this sector is territorially-embedded. The term "territorial embeddedness" describes how actors are anchored in a particular area (Hess, 2004) and to what extent they "interact and build relationships with local actors in order to exchange resources, knowledge and information" (Wright, 2010; Białynicki-Birula & Pacut, 2020). Embeddedness of the BSS in EU's Eastern economies is facing two main challenges.

The first challenge is to build long-term relationships between investors and local actors such as suppliers, institutions, schools, and communities in order to improve the perception of the benefits of investing in a given location. These elements make up territorial embeddedness, which in the CEE countries is considered from the perspective of the danger of relocation (Nölke & Vliegenthart, 2009; Domanski & Gwosdz, 2009; Micek et al., 2010). Alongside the invested capital, localised capabilities can play the role of sunk costs, because they cannot be recreated cheaply elsewhere.

The other challenge for territorial embeddedness arises from the fact that the benefits of networking do not necessarily spill over to the local economy. If a given economy is only engaged in the least profitable links in the value chain, the increase in value added is not necessarily proportional to the increase in trade in services. Moreover, subsidiaries of multinational companies can maintain very limited contacts with local suppliers and customers (Hardy, 1998, Milberg & Winkler, 2013).

The first aim of this paper is to propose measures of territorial embeddedness to describe this phenomenon and the two challenges that developing economies are facing in the era of globalisation. Nowadays, free-labour flows and factor price equalisation can rapidly erase the cost advantages enjoyed by developing economies, whereas the large scale of exports of a given sector does not necessarily mean that the value added generated by it remains predominantly in the local economy.

The other aim of the article is to use the proposed measures to determine the level and dynamics of the sector's embeddedness in CEE economies. I set out to test the hypothesis that the level of territorial embeddedness in the CEE economies increased between 2000 and 2014.

The novelty and originality of our approach lies in recognising that when service provision is subject to massive offshoring, it is not as much about the intensity of service provision (exports) as about the intensity of value-added creation in the local economy. The relative gains in this respect should determine the scale of territorial embeddedness, the competitiveness of individual sectors, as well as their growth prospects. In

order to capture this difference, I measure the position of the BSS in global value chains and its comparative advantages in generating value added using the World Input-Output Tables (Timmer et al., 2015) by comparing eight NACE Rev. 2 divisions covering the BSS in CEE with their counterparts in North-Western and Southern European countries (EU-17).

Subsequent parts of this paper, which serve to testify the above-mentioned hypothesis, are organised as follows. Section 2 reviews the literature on its catching up in the context of knowledge intensity of a given sector and the benefits it generates for investors. The review also considers the most recent findings on local linkages in global value chains and industrial upgrading. Section 3 proposes a quantitative research model for measuring territorial embeddedness and industrial upgrading, which expands embeddedness in local economic structures by boosting the productivity of business actors. Section 4 presents the findings of a comparative analysis of BSS in the CEE-11 and the EU-17; it also discusses their implications. Last but not least, Section 5 discusses offers concluding remarks.

Literature review

Catching-up on productivity – the contribution of knowledge-intensive activities (KIA) to embeddedness

Classic works on economics and political economy tend to explain a large proportion of business actors' behaviour in terms of profit generation and capital accumulation (e.g. Schumpeter, 1983 [1912]; Wallerstein, 1974, 2004). Thus, the development of knowledge-based sectors characterised by relatively high productivity depends on a cost-benefit balance, which is being continually calculated by economic entities. The rate at which less developed economies advance can be explained by conditions which determine the propensity to invest in innovative projects. If these conditions are favourable, catching up occurs, i.e. the gap with the leading economy in terms of factor productivity begins to close (Fagerberg & Godinho, 2004).

As individual sectors of the economy differ in their capacity to catch up, three approaches to this issue have emerged (Stehrer & Wörz, 2001). In the first one, the relative productivity gap is larger in industries characterised by high-technology intensity. Assuming that gaps in all industries narrow at an equal pace, those characterised by a larger technology gap increase their productivity faster. In the second approach, sectors climb up the productivity ladder. Initially, developing countries have comparative advantages in low-tech sectors and it is only by closing the technology gaps in these sectors that they can compete in high-tech ones. By contrast, in the third approach, called 'leapfrogging' (Grodzicki, 2018), the skill-intensive sectors have the greatest opportunity to catch up, because this is where the difference between the (high) world price and the (low) local labour cost is the greatest, as is the potential for profit. These sectors are characterised by rapid productivity growth spurred by demand growth as well as a high capacity to learn. In services, such sectors are mainly considered to include several divisions of sections J and M (NACE Rev. 2) due to their knowledge-intensity and rapidly growing demand for their services. In services, investment in Research and Development (R&D) is smaller, while innovation is mostly associated with their core characteristics such as intangibility, heterogeneity, inseparability, and perishability (IHIP for short) (cf. Morrar, 2014; Wirtz et al., 2015; Geodecki & Głowacki, 2020). These features render the quality of an individual service difficult to standardise; to a considerable degree, it is also dependent on the interaction between the provider and the recipient. Besides, services cannot be stored, so their sale is limited by the human potential available to the provider. Consequently, service delivery centres tend to be located in places where human capital is abundant (Sirilli & Evangelista, 1998; Wirtz et al., 2015). For this reason, the knowledge-intensity

classification in this sector in based on the level of human capital (Miles et al., 2018). Micek et al. (2010) note that in such circumstances, human capital is to services what physical capital is to manufacturing industries. Investment in it and the ability to create competent human teams not only is a prerequisite for building a profitable subsidiary providing business services, but it also prevents the head office from easily relocating its service centre (see also Domański & Gwosdz, 2009; Stephan, 2013).

Therefore, the first dimension of embeddedness reflects concern about the willingness of investors in the BSS operating in CEE countries to relocate to other, cheaper locations. Hence our research question: *Does the CEE's BSS see productivity growth faster than the rest of the EU while at the same time maintaining its high cost competitiveness?*

Domestic value added in global value chains

An important aspect of embeddedness is the spillover of the benefits of global networking to the local economy. The tension between being embedded in a global network and being embedded in a given territory becomes perceptible due to the fact that more intense relationships with network participants entail less intense relationships with local actors (Coe & Yeung, 2015). The inability of local economies to establish lasting relationships with investors can result in the benefits of investment location being limited to the employment of local workforce only, leading to the construction of the so-called "cathedrals in the desert" (Hardy, 1998). For this reason, while global production sharing helps developing countries to increase their exports, value added does not always increase proportionally (Milberg & Winkler, 2013). Several reasons for this have been proposed, but the most important one derives from the intrinsic feature of global value chains (GVCs). If "ICT made it possible and price differences made it profitable" (Baldwin, 2012, p. 4), then low-cost labour would be the main motive for investment. Therefore, labour-intensive stages are relocated to low-labour-cost locations and thus create less and less value added along the value chain (OECD, 2013). As a result, subsidiaries in low-cost countries acquire intermediate inputs (headquarter services) relatively expensively and, because of low wages, add little value by reselling finished products back to their headquarters relatively cheaply. Even the industrial upgrading of local subsidiaries in services sectors reported by some analysts (see Hardy et al., 2011; Stephan, 2013; Münich et al., 2014) did not bridge the gap between value added per worker in the BSS in the eastern and the western parts of the European Union. Moreover, expensive headquarter services and inexpensive subsidiary services mean that with similar export volumes from both locations, relatively less local value added is embodied in subsidiary exports than in headquarter exports. Owing to advances in intercountry input-output databases, it has become possible to compare domestic value added in both locations embodied in the provided services. This way, the presupposition contained in the expression 'cathedrals in the desert' – one denoting the scant level of cooperation of multinational enterprises' (MNEs) affiliates with local economic environment – can be quantitatively verified.

Research question no. 2 refers to the relationships between the BSS in CEE and their local business actors – national suppliers and customers – or the extent to which added value created in this sector feeds into local economies.

Industrial upgrading in the business services sector

Industrial upgrading (IU) is a concept associated with the global value chains framework, devised, among others, by G. Gereffi (cited in Bair, 2005). Ernst defines IU as "significant changes in national specialization and knowledge base that increase the ability to create value" (2000, p. 1). In this context, it is important to state that the creation of added value (at the macro level) or the generation of profit (at the company level) are the primary goals,

whereas increasing skills and capabilities is a means to achieve them. Participation in global value chains has become an opportunity for developing economies to gain competence in knowledge-intensive activities, because improving the quality of products and the efficiency of processes to meet the requirements of the chain is a precondition for joining it (Baldwin & Lopez-Gonzalez, 2015; Pietrobelli & Rabellotti, 2011; Milberg & Winkler, 2013). On the other hand, in the services sector, large customers prefer to deal with well-established companies with reputable track records, making it difficult for local players to reach the most lucrative markets (Fernandez-Stark et al., 2011; Dicken, 2015). Thus, local actors provide services to recipients in developed countries through global players who reap the highest profits. By reconciling these perspectives, Markusen (2005) explains why developing economies can specialise in knowledge-intensive services, although the traditional trade theory implies that more productive and technologically-advanced Western European economies should maintain a large advantage in exports. However, when a third factor is added to low skills and high skills – namely the knowledge-based assets available to global lead companies – the specialisation of catching-up economies in exporting white-collar services can be explained more convincingly. The growing demand for skills in the developing world, in turn, leads to higher wages and, consequently, an increased supply of skills. Thus, upgrading the capabilities in the supply base can take place under the dominance of global companies with resources such as managerial sophistication, marketing channels, and access to markets or brands and trademarks (Fernandez-Stark et al., 2011; Markusen, 2005).

Concurrently, however, IU provides opportunities for developing economies to move away from low-cost competition. The paradox noticed by Kaldor (1978) and confirmed by Fagerberg (1996) is that some countries are able to increase their share of world exports despite losing their cost competitiveness. It is technology – which translates into the uniqueness and complexity of the sold goods – that renders competitors unable to provide substitutes. Thus, technological leaders gain a monopolistic position and reap high profits.

Our research question no. 3 refers to the ability of CEE countries to build skills in the knowledge-intensive BSS (KIBS) and to create value added in them, which would lead to the industrial upgrading of the latter and, consequently, to the improvement of the sectoral structures of their economies.

Materials and methods

The hypothesis and research questions

In the empirical part of this article, I test the research hypothesis stating that the level of territorial embeddedness of the BSS in the CEE economies increased between 2000 and 2014. By referring to a range of dimensions of embeddedness, I shall answer the following three research questions:

- Is the Central European BSS experiencing faster productivity growth in relation to wages than what is the case in the EU, i.e. does the cost competitiveness of the sector increase?
- To what extent does the Central European BSS rely on local suppliers and customers for added value?
- Does skill-building in the BSS and the structure of value creation in CEE improve over time?

The Central European business services sector – defining the research subject

In order to answer the above-mentioned research questions, I divided the European economies into two groups:

- Central and Eastern European economies which joined the EU in 2004 or later (the CEE-11): Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia;
- North-Western as well as Southern European economies or European Union member states

before 2004 (the EU-17):[1] Austria, Belgium, Cyprus, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Malta, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom.

For the sake of simplicity, I shall treat the first group as low-cost economies characterised by a negative investment position, whereas the second group as headquarter economies whose companies invest in low-cost CEE-11 locations in order to build up cost savings.

According to the Eurostat methodology[2], business services include the following activities:
- *technical services* (such as engineering, architecture, and technical studies);
- *computer services* (such as software design and database management);
- *other professional services* (such as legal, accounting, consultancy, and management services).

They comprise the following NACE Rev. 2 divisions: 62, 69, 71, 73, and 78; groups 58.2, 63.1, and 70.2; and the enterprises or parts of enterprises that carry out those activities.

Using the World Input-Output Database (Timmer et al., 2015), in which the collected data cover 56 sectors, I performed an analysis at the level of two-digit NACE codes (divisions), and sometimes at the level of single-digit ones (sections). With certain simplifications, the business services sector (BSS) shall comprise six WIOD sectors, to which eight NACE Rev. 2 divisions have been assigned:
- *IT business services (ITBS)*:
  - 58 (J58) – Publishing activities;
  - 62 and 63 (J62_J63) – Computer programming, consultancy and related activities; information service activities;
- *Professional business services (PBS)*:
  - 69 and 70 (M69_M70) – Legal and accounting activities and activities of head offices; management consultancy activities;
  - 71 (M71) – Architectural and engineering activities; technical testing and analysis;
  - 72 (M72) – Scientific research and development;
  - 73 (M73) – Advertising and market research.

In NACE Rev. 1.1, the economic activity groups of interest to this research include divisions 64 and 71–74.

When considering the division of services by knowledge intensity for the purposes of the qualitative analysis of the services sector structure, I shall also refer to the Eurostat classification. It recognises knowledge-intensive activities (KIA) in the services sector on the basis of their share in employment of persons with a specific level of education. This category includes mainly the following sections (NACE Rev. 2):
- J – (Information and communication);
- K – (Financial and insurance activities);
- M – (Professional, scientific, and technical activities).

Since sectors (sections) J and M comprise services that tend to be offshored most readily, I shall focus on these two sections combined, i.e. as knowledge-intensive services (see Miles et al., 2018) and the offshore services industry (Fernandez-Stark et al., 2011). I will discuss them against the background of the entire commercial services sector (NACE Rev. 2, sections G–N).

The selection of the studied period (2000–2014) was dictated by the availability of the WIOD data compatible with NACE Rev. 2, and by the fact that its first part (2000–2004) comes just before the CEE-11's accession to the European Union, whereas 2004–2014 covers the decade after the accession, i.e. when certain trends related to the functional separation of these two groups had already become evident.

[1] Cyprus and Malta joined the EU in 2004, but on account of their strong links with the Southern European economies, I decided to consider them along with the EU-15 (hence EU-17).

[2] See: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Business_services (accessed: 06.08.2021).

Methods of estimating unit labour costs, position in global value chains, and revealed comparative advantages

Unit labour costs

The unit labour cost (ULC) shall be defined as the relationship between labour compensation and global output of a sector. The ULC will, therefore, reveal how much a business pays its workers to produce one unit of output. I obtained the data from SEA WIOT (Rel. 2016) and used it to calculate the labour productivity of the sector (LP_i), workers' wages in this sector (W_i), and the unit labour cost, which is the ratio of W_i to LP_i.

$$LP_i = X_i/HEMPE_i \quad (1)$$

$$W_i = LAB_i/HEMPE_i \quad (2)$$

$$ULC_i = W_i/LP_i = (LAB_i/HEMPE_i)/(X_i/HEMPE_i) = LAB_i/X_i \quad (3)$$

where X_i is the global output of sector i in dollars; LAB_i is the labour compensation in that sector in the same unit; and $HEMPE_i$ is the number of hours (H) worked by all employees ($EMPE$) in sector i in a given year. ULC_i is, therefore, the ratio of wages and salaries to the sector's global output.

Positions in global value chains

The factors and circumstances mentioned in the aforementioned literature review suggest that international trade data can be inadequate to capture the benefits that accrue to local economies. In the past, a large volume of exports used to mean a large flow of locally-created value added. However, as economies are becoming more interconnected and developing countries more involved in GVCs, this relationship tends to become looser.

Question no. 2 refers to the relationship of the BSS with domestic suppliers and customers of services in the CEE countries when compared to the Western European BSS. Therefore, it is subdivided into two questions:

- *The supplier side*: What is the share of the domestic value added (DVA) embodied in final goods sold by the BSS?
- *The consumer side*: What share of the value added in the BSS is created by supplying domestic final goods' (DFG) producers and by foreign final goods' (FFG) producers, respectively?

Based on the methodology developed by Timmer et al. (2013), I used the World Input-Output Database (Release, 2016; Timmer et al., 2015) in order to estimate DVA and DFG, applying the approach proposed by Geodecki and Grodzicki (2015).

In order to determine the indicators of position in value chains, the following notation was adopted:

- $X_i(s)$ – gross product of sector i in country s;
- $y_i(s, t)$ – final demand for products of sector i in country s reported by final buyers from country t;
- $x_{ij}(s,t)$ – intermediate goods from sector i in country s used for production by sector j in country t;
- S – the number of sectors;
- N – the number of countries.

In order to calculate the indicators of position in global value chains, I estimated matrix V, which is the product of multiplying the following three matrices:

$$V = HLg^{-1}Y \quad (4)$$

where:

V is the matrix in which $v_{ij}(s,t)$ represents the total value added contribution of sector i in country s to final output in sector j in country t;

H is a diagonal 2464 × 2464 matrix (44 countries × 56 sectors = 2464 country-sectors), where $h_i(s)$ is the ratio of value added to global output in sector i and in country s;

Lg^{-1} is a Leontief inverse matrix estimated from the World Input-Output Tables;

Y is a diagonal SN x SN matrix, whose diagonal elements $y_i(s)$ represent final demand for products of sector i in country s.

The product matrix $V=HLg^{-1}Y$ (see also Grodzicki & Geodecki, 2016) makes it possible to track international value-added flows and determine the extent to which:

– a given sector relies on foreign value added when sourcing intermediate inputs (backward linkages) to produce the final product (foreign value added – FVA):

$$FVA_j(t) = \left[\sum_{s\neq t}^{N}\sum_{i}^{S} v_{i,j}(s,t)\right] \Big/ X_j(t); \quad (5)$$

$$DVA_j(t) = 1 - FVA_j(t) \quad (6)$$

– a given sector relies on foreign final goods (FFG) producers as forward linkages of its value added:

$$FFG_i(s) = \left[\sum_{j}^{S}\sum_{t\neq s}^{N} v_{i,j}(s,t)\right] \Big/ \left[\sum_{j}^{S}\sum_{t}^{N} v_{i,j}(s,t)\right]; \quad (7)$$

$$DFG_i(s) = 1 - FFG_i(s) \quad (8)$$

Measuring industrial upgrading – skills and revealed comparative advantages based on value added

The level of skills in a given sector corresponds to the share of staff with a specific level of educational attainment to total employment. Relevant data was obtained from SEA WIOT (Release 2013) and EU-KLEMS. Considering that it was impossible to obtain data for both time points (i.e. for 2000 and for 2014) for sectors as per NACE Rev. 2:

a) for 2000–2008, aggregated data according to NACE Rev. 1.1 was used;
b) for 2008–2014, EU-KLEMS data was used for NACE Rev. 2.

In the first case, the BSS was represented by NACE Rev. 1.1 sectors 64 and 71–74, which cover professional and IT services together. In the second case, NACE Rev. 2 data was aggregated for the entire section J as well as sections M and N together (also covering divisions not classified by Eurostat as the BSS).

Given that in the era of globalised value chains, even large comparative advantages in foreign trade do not always translate into comparable advantages in income from the sale of traded products, Timmer et al. (2013) proposed modified indicators of revealed comparative advantages (RCAs). Instead of export advantages, it is possible to estimate in which sectors of a given economy the revenues from participation in GVCs are proportionally larger than in the group of countries used for comparison. Since these revenues represent the sum of the value added of a given sector embodied in the value of final sold goods estimated on the basis of inter-country input-output flows, they came to be called the global value chain income (GVCI) (see Timmer et al., 2013). It includes the value added obtained by selling final goods to domestic and foreign customers.

The RCA in GVCI is presented in a similar way to RCAs in exports, i.e. by means of analysing whether the GVCI share of a given sector in the total GVCI for all the services sectors in a given country is greater than the same share calculated for the whole world. An RCA GVCI above one represents an advantage in obtaining added value. RCAs were estimated on the basis of the GVCI share of individual services sectors in the total GVCI of commercial services (sections G to N) compared to all the 28 European Union member states.

$$RCA\_GVCI_i(s) = \frac{GVCI\ of\ country\ s\ in\ sector\ /\ GVCI\ of\ country\ s}{GVCI\ of\ sector\ i\ /\ GVCI\ of\ the\ EU28} \quad (9)$$

Findings

Territorial embeddedness in terms of benefits for investors in the BSS

The continuous presence of favourable conditions that enable investors to benefit from the BSS at the macro level creates opportunities for catching-up economies. At the micro level, the prospects for profit and its margins affect the propensity to do business in a given location or

to relocate to places that offer better conditions. Such calculations invariably involve the most important cost component in services, namely the unit labour cost (ULC).

Table 1 presents the components of a basic calculation of the ULC in the BSS, as well as data on exports of this sector.

In the EU-28, the growth rate of the BSS's global output was higher than that of the entire services sector, reflecting the growing importance of the former. Moreover, the growth rate of exports in the BSS significantly exceeded the growth rate of global output, which reveals that international trade in business services is gaining in importance for companies operating in this sector.

Productivity in the CEE-11 BSS grew at a fast pace – faster than in the EU-17 – leading to a convergence of productivity levels in the European BSS. Comparing productivity growth with wage growth in the sector under scrutiny reveals that in the CEE-11, although it was fast, it was nevertheless slower than wage growth, which contributed to the decrease in the cost competitiveness (the ULC) of the BSS. The ULC has increased significantly particularly in IT, although it has not surpassed 90% of the UE-17. By contrast unit labour cost in the PBS remained relatively low due to a fast increase of wages in the Western countries of this sector. As a result, in 2014, an investor's comparison of the ULC

Table 1. Selected economic categories of the BSS in the western and the eastern parts of the EU in 2004 and 2014

		ITBS		PBS		Commercial services (sections G-N)	
		EU-17	CEE-11	EU-17	CEE-11	EU-17	CEE-11
Global output (bn USD2000)	2000	356	10	736	27	6039	290
	2014	608	40	1191	80	9208	741
	Change	71%	290%	62%	200%	52%	156%
Exports (bn USD2000)	2000	38	2	75	3	535	28
	2014	145	13	191	14	1233	137
	Change	282%	482%	153%	313%	131%	382%
Productivity (USD2000/hour)	2000	80	19	80	18	76	15
	2014	107	40	97	43	105	34
	Change	33%	113%	22%	142%	38%	122%
Wages (USD2000/hour)	2000	30	5	30	5	22	3
	2014	41	13	41	12	30	7
	Change	35%	145%	36%	168%	37%	120%
ULC (wages/productivity)	2000	0.38	0.29	0.38	0.26	0.29	0.22
	2014	0.38	0.33	0.42	0.29	0.29	0.22
	ULCChg (p.p.)	0.01	0.04	0.04	0.03	0.00	0.00
Relative ULC (to EU-17)	2000	1.00	0.76	1.00	0.70	1.00	0.74
	2014	1.00	0.87	1.00	0.69	1.00	0.75
	ULCrelChg (p.p.)	0.00	0.11	0.00	–0.01	0.00	0.01

Source: Own calculations based on SEA WIOT and WIOT (Release 2016; Timmer et al., 2015).

levels between the CEE-11 and the EU-17 would have been more favourable to Eastern Europe.

With regard to the question no. 1, it can be noted that despite some increase in the ULC in the BSS, Central European BSSs' locations provided investors with an advantage over Western Europe in terms of cost competitiveness. This implies that the level of the BSS's embeddedness in CEE remained high.

Local and foreign added value in the BSS

To illustrate the degree of co-operation between the BSS and local economies in the CEE-11, the results of estimates of domestic value added in the EU-17 and the CEE-11 services sectors are shown in Table 2.

First, in the BSS, sales to the customers of services sectors (DFG) are characterised by clearly lower values of local co-operation than purchases of intermediate inputs (DVA). This can be due to the relatively high demand for the latter in the services sectors, where the human capital remains a more important production factor than what is the case in the manufacturing of goods. A comparison with the manufacturing sector makes it clear that in the case of physical movement of goods, domestic value added embodied in intermediate inputs can be much lower.

Second, European economies are becoming increasingly interconnected. In 2000–2014, they saw a decrease in domestic value added embodied in the acquisition of intermediate inputs to meet final demand in commercial services, sectors G-N, the ITBS, and the PBS. The exception was the ITBS sector in the CEE-11, which can reflect increased self-reliance of the CEE-11 actors following initially intensive purchases of equipment, technology, and services from abroad.

Third, in services, the IT sectors recorded the lowest DVA, which can illustrate the declining importance of localisation, with companies sourcing relatively more codified processes (for an elaboration on the ability of India-based IT companies to enter global markets as major players, see Fernandez-Stark et al., 2011). By contrast, on downstream markets, the smallest share of value added purchased by domestic buyers (DFG) was recorded in the PBS, which illustrates the readiness of companies in developed countries to outsource professional services by (e.g. HR, legal services, accounting) to specialised companies using international skills and wages arbitrage (Wirtz et al., 2015; Baldwin, 2019).

Fourth, this conjecture is supported by the differences between the EU-17 and the CEE-11 in terms of DFG. In the CEE-11, DFG values are significantly lower, suggesting that in these

Table 2. The positions in global value chains and value added in the European BSS in 2000 and 2014

		ITBS		PBS		Commercial services (Sections G-N)		Manufacturing (Section C)	
		EU-17	CEE-11	EU-17	CEE-11	EU-17	CEE-11	EU-17	CEE-11
DVA	2000	89%	82%	91%	86%	91%	86%	74%	66%
	2014	84%	84%	88%	85%	89%	84%	67%	56%
DFG	2000	87%	78%	79%	79%	87%	86%	72%	73%
	2014	78%	69%	74%	69%	83%	77%	65%	60%
VA (bn USD2000)	2000	189	5	419	13	3,682	158	1,411	73
	2014	324	22	654	41	5,620	404	1,647	188
	Change	71%	359%	56%	216%	53%	157%	17%	157%

Source: Own estimations based on WIOT (Timmer et al., 2015).

low-cost locations more resources are engaged in providing international coordination services. This can also be due to the lower purchasing power of local service users in the CEE-11.

Overall, both the small change in DVA in the CEE-11 and the decreasing DFG imply a non-decreasing embeddedness in local economies, with rising levels of embeddedness of the CEE-11 suppliers in global production networks. Cooperation with local suppliers becomes more intensive if it is analysed not only from the perspective of the share of local value added, but also by its volume. A large nominal increase in locally-created and delivered value added (see Table 2) implies an increasing scale of cooperation of the BSS with its local co-operators. After all, for example, 69% of value added in final demand obtained from the PBS's providers by domestic buyers in the CEE-11 in 2014 was more than 79% of value added in 2000, which was three times smaller.

Thus, declining territorial embeddedness understood as a decreasing share of local value-added flows is reconcilable with a rapid increase in local value added corresponding to an increase in the scale of both foreign and local economic exchange. The weakening interdependence with local actors seems to be compensated for with surplus by the growing scale of cooperation with them.

In conclusion, it can be said that business services are less territorially-embedded than commercial services in general, but they are more embedded than manufacturing is. The BSS in the EU-17 tends to be more local in nature; by contrast, in the CEE-11, the share of local customers gradually decreased, but the share of local suppliers of intermediate inputs remained stable.

Knowledge base in the BSS and industrial upgrading

In order to assess the prospects for further BSS's productivity growth in the CEE-11, I tracked one of its most important factors, namely the skills involved in providing services in this sector.

Table 3 shows the share of highly-skilled personnel in total employment in sectors corresponding to the BSS.

The proportion of highly-skilled personnel in the CEE-11's BSS increased rapidly – faster than in the EU-17. As a result, the corresponding

Table 3. Share of highly-skilled personnel in total employment in selected services sectors in 2000, 2008, and 2014 (% of total hours worked)

NACE Rev. 1.1	**ITBS&PBS (divisions: 64+71–74*)**		**Commercial services (divisions 50–52, 60–64, 70–74, sections H and J)***	
	EU-17	**CEE-10****	**EU-17**	**CEE-10****
2000	31.8	23.9	20.5	13.0
2008	35.4	32.7	24.8	20.4
Change (p.p.)	3.6	8.9	4.3	7.3

NACE Rev. 2	**J (ITBS+)**		**M-N (PBS+)**		**Commercial services (sections G-N)***	
	EU-17	**CEE-11**	**EU-17**	**CEE-11**	**EU-17**	**CEE-11**
2008	48.0	54.4	36.9	37.7	24.3	22.8
2014	57.7	65.9	42.0	44.8	29.8	30.5
Change (p.p.)	9.7	11.5	5.1	7.1	5.5	7.7

* Weighted average by sector's shares in hours worked by the engaged persons.
** CEE-11 excluding Croatia.

Sources: SEA WIOD (Release 2013), EU-KLEMS.

proportions in both groups became nearly equal in 2008. In the other period under scrutiny, particularly high proportions of highly-skilled personnel in the CEE-11 BSS were noted in sectors J and M–N (NACE Rev. 2). Not only were they higher than in the EU-17 in 2008, but they had been growing much faster until 2014. As a result, in 2014, the CEE-11 had a significantly higher proportion of highly skilled persons in employment in sections J and M-N than what was the case in the EU-17, although these shares were equal in total services.

Therefore, a change in skills should trigger changes in export specialisation as well as in income advantages in global value chains (GVCI). The observations made in the theoretical and methodological sections above explain why the specialisation of an economy in exports does not necessarily entail its corresponding specialisation in income generation. The impact of RCAs on

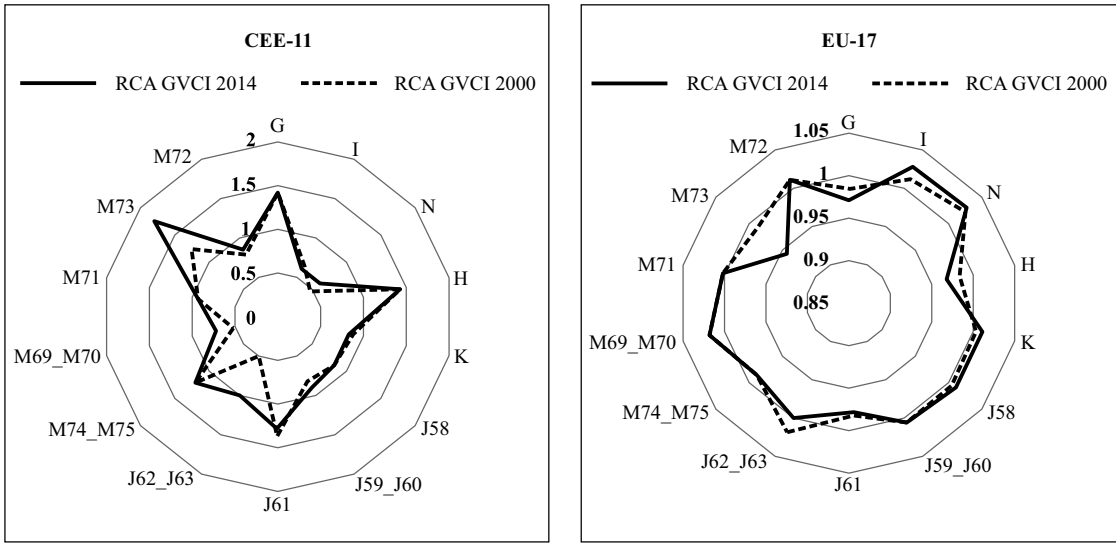

Figure 1. Revealed comparative advantages (RCAs) in the global value chain income in commercial services: CEE-11 versus EU-17 in 2000 and 2014

The service sectors are ranked clockwise from the least knowledge-intensive ones:
G – Wholesale and retail trade, repair of motor vehicles and motorcycles
I – Accommodation and food service activities
N – Administrative and support service activities
H – Transportation and storage
K – Financial and insurance activities
J58 – Publishing activities
J59_J60 – Motion picture, video, television programme production; programming and broadcasting activities
J61 – Telecommunications
J62_J63 – Computer programming, consultancy and related activities; information service activities
M74_M75 – Other professional, scientific and technical activities; veterinary activities
M69_M70 – Legal and accounting activities; activities of head offices; management consultancy activities
M71 – Architectural and engineering activities; technical testing and analysis
M73 – Advertising and market research
M72 – Scientific research and development

Source: Own compilation based on WIOT (Timmer et al., 2015).

generating the GVCI got modified after Timmer et al. (2013) had captured the altered distribution of advantages which emerged with globalisation and the inclusion of underdeveloped economies in export exchange.

Figure 1 shows the revealed comparative advantages (RCAs) in the global value chain income (GVCI) in 2000 and 2014 with regard to the two groups of the studied countries.

From the perspective of individual sectors, the advantages of the CEE-11 in service provision can be seen in M73, M74–M75, and J61. Besides M73, the largest increases in RCA GVCI (of up to 1.8) were found in M69–M70 and J62–J63, i.e. professional and IT services, although they still remained below 1. Moreover, as anticipated, high RCA values but small increases were also found in trade and transport. The RCA patterns in the EU-17 mirrored those in the CEE-11[3], with clear declines having been recorded in trade and transport as well as in some professional and information services (J62_J63 and M73).

From the perspective of changes in the economic structure of the services sector in the CEE-11, both charts reveal that increases in RCA GVCI occurred mainly in IT and professional services. As was argued above, they represent more knowledge-intensive sectors (KIS), which is illustrated by their respective clockwise rankings on the chart from least (sections G and I) to the most knowledge-intensive ones (sections J and M). This illustrates that with a growing interconnectedness it was not only labour-intensive activities but also skill-intensive ones that were being moved to low-cost locations in Central Europe.

In summary and in response to the question no. 3, it can be argued that between 2000 and 2014 the creation of knowledge base in the CEE-11 BSS improved markedly, as is evidenced by the increasing skill levels of the ITBS's and the PBS's personnel. The structure of value creation also improved in line with knowledge-based services steadily gaining an increasing share.

Discussion of the findings

Assuming that the human capital in services performs a similar function to the physical capital in manufacturing industries (Micek et al., 2010), I can interpret the trends outlined in the response to the research question no. 1 in the Gerschenkronian spirit. The so-called "backwardness advantage" (Gerschenkron, 1962) is supposed to reward less-developed countries that invest in manufacturing; since they have had little machinery and equipment so far, what they buy is usually newer and more efficient. The same can be true of services – it is easier to employ educated young people in emerging business service centres than to replace incumbent staff in the existing centres. However, this can mean that relatively backward sectors have more potential to catch up in terms of productivity. By contrast, the "leapfrogging" pattern of catching up (Stehrer & Wörz, 2001; Grodzicki, 2018) also seems more appropriate to describe productivity gains of catching-up countries, as the analysed knowledge-intensive PBS sector caught up with the Western European BSS slightly faster than other sectors did. According to the theory of international exchange, intensive trade leads to factor price equalisation, which is reflected by the convergence of wages in the most internationalised services sectors. Over time, this trend should reduce the cost competitiveness of the CEE-11. Nevertheless, wages in the economy remain fairly homogenous in terms of both their level and their growth rate. By contrast, productivity is more heterogeneous in nature, especially when rapid technological progress and susceptibility to learning enhances a given sector's growth prospects. Therefore, investors benefit from rapid productivity gains in the sector with slower wage growth, which generates savings on the ULC. These observations led Stehrer and Wörz (2001) to conclude that knowledge-based industries provide less-developed countries with greater catching-up potential.

[3] Owing to the design of RCA GVCI, advantages for CEE-11 (RCA>1) represent disadvantages for EU-17 (RCA<1).

Data on the BSS in CEE does not provide a clear-cut answer as to which catching-up pattern is closer to the reality, since neither the more productive ITBS and the PBS developed visibly faster than it is usually the case with other service sectors. Certainly, however, productivity convergence seems to be fostered by these sectors' offshorability.

As the BSS involves mainly knowledge-intensive activities, it seems to be a fairly valuable sector from the perspective of capacity development of local economies. The BSS in the CEE-11 proved capable of rapid productivity growth due to the improving skills of its local employees. The increase in knowledge in the supply base (the services sectors in the CEE-11 became such a supply base for Western European GVCs) can explain the narrowing gap between the East and the West with regard to the generation of this sector's value added. Gereffi et al. (2005) identify skills convergence as one of the main factors that contribute to reducing power asymmetry in GVCs between lead firms and their suppliers. At the macro level, the ability to transform the economic structure towards knowledge-intensive activities is identified with economic development (Amsden, 2001). Therefore, skills play a much more important role in embedding the offshore services industry than what is the case with manufacturing. No costly industrial infrastructure is needed to provide services, whereas technological advantages are embodied in human skills rather than in machinery and equipment. Hence, localised capabilities can play the same role that capital invested in a factory plays in manufacturing (Domański & Gwosdz, 2009; Micek et al., 2010; Geodecki, 2020). This can also mean that the human capital will be rewarded with a higher share in value added than what will be the case in industry, since it is more important for competitive advantage.

Our observations confirm the theoretical considerations made by Markusen (2005), who analysed the case of offshoring white-collar services. If there is no demand for white-collar services, multinational companies (MNCs) can hire even scarce high skills in host-countries at a fraction of the wage in a high-income country. Traditional trade theories tend to suggest that demand for unskilled labour should increase in backward economies, but the specificity of services combined with mobile knowledge-based assets result in the demand for high skills increasing faster in less-developed economies. The findings of empirical studies conducted among foreign investors in CEE (Stephan, 2013; Münich et al., 2014) confirm that low cost was gradually becoming a less important consideration in the decisions taken by investors, who increasingly sought highly-skilled individuals, especially in the services sectors.

Concluding remarks

The presented research findings imply that the research hypothesis about the increasing level of territorial embeddedness of the BSS in CEE economies in 2000–2014 is correct. The study provides satisfactory answers to the research questions concerning the three dimensions of embeddedness:

1. Due to lower unit labour costs in the BSS in CEE, or even their relative decrease in some specialties, the region remains a cost-competitive location for investment in this sector. This determines its fairly high degree of territorial embeddedness in terms of investment attractiveness.
2. With regard to cooperation with local suppliers and customers, the level of embeddedness of the BSS sector in CEE economies remains relatively high when compared to other industries. This can be due to the important role of the human capital in services. The high rate of added-value growth in this sector means that although the share of the local suppliers of intermediate inputs as well as the recipients of services slightly decreased, the scale of cooperation increased significantly.
3. Between 2000 and 2014, the knowledge base in the BSS in CEE improved markedly, as evidenced by the increasing skill levels of personnel employed in the ITBS and

in the PBS, and by the fact that it outpaced the services sector in the EU-17 in this respect. The studied period also saw an improvement in the structure of value added, as an increasing share of it was accounted for by knowledge-based services. This implies a high probability of further productivity growth of the BSS in CEE and bodes well for the degree of territorial embeddedness both in terms of the decreasing likelihood of relocation and the amplification of the capacity of local actors to act as suppliers and recipients of state-of-the-art services.

During research and at the stage of formulating conclusions, important issues emerged that reveal the limitations of this research and suggest potential areas for further study. Firstly, it is worth noting that intra-corporate prices may not fully reflect market prices. In fact, head offices can charge their foreign affiliates higher than what global rates for services suggest, forcing them to charge less for their services and skills (Chang, 2012; Váryová & Košovská, 2016). This allows productivity and value added to be kept at higher levels than would be the case if these services were simply outsourced, which suggests that the actual differences in productivity can be smaller than the official statistics lead one to believe.

Secondly, the *distribution* of value added between domestic and foreign actors should constitute an important research area along with its mere *creation*. Locally-generated value added is not necessarily involved in local economic processes, given that part of it can be repatriated to headquarter economies as dividends. This raises the question of how to measure not only the *shares* in the value added of profits and wages, but also the *proportion* of profits paid out to foreign parent companies when compared with what remains in the local economy as reinvestment or taxes. After all, it is the latter that largely funds the development of the human capital.

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The Human Factor in the Hungarian Business Services Sector Development in Comparison with Regional Competitors

Abstract

Objective: The Hungarian Business Services Sector (BSS) is an important part of the CEE business services market. As this market is not homogenous, Hungary is in several aspects different from the other regional countries. The study aims to examine the market position of the Hungarian Business Services Centres (BSC) in the Central and Eastern European region with special attention paid to the available human resources and the comparison of its advantages and disadvantages with that of Poland, the Czech Republic, Romania, and Bulgaria as the main competitors.

Research Design & Methods: The research is based on literature review and statistical comparison made using databases of international and national business services associations and national statistical organisations.

Findings: First, the study explores the literature on the development of the global, regional, and Hungarian BSS. Then, through a comparative statistical analysis, it presents the situation of the Hungarian market within the CEE region. The development of the region's business services sectors was unbroken between 2015 and 2020, but there was a downward trend as to growth in most countries in terms of the number of employees.

Implications/Recommendations: The study underlines the significance of intrinsic labour market and spatial distribution factors in the competition for business services investments, as well as it reveals how these factors influence the development paths of the countries under scrutiny.

Contribution/Value Added: Different growth trajectories can be explained by different quantitative, qualitative, and spatial distributions of human resources. However, the study not only sheds light on regional disparities, but also helps to overcome inequalities, thereby recommending more effective investment promotion and human resource development policies.

Keywords: regional development, business services sector, outsourcing, shared services, Hungary, Central and Eastern European region

Article classification: review paper

JEL classification: F21, F23, F63, F66, M16, M19

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Introduction

The novelty of the topic

The service sector plays a more and more essential role in the transition economies of Central and Eastern Europe (CEE), and it has been an important host to inward foreign direct investments (FDIs) in Visegrad countries (the Czech Republic, Hungary, Poland, and Slovakia). The significance of the research is given by the fact that, as in many countries, the development of the business services sector (BSS) has played a prominent role also in Hungary since the late 1990s (Gál, 2014; Marciniak, 2014a). The growth in business services has been of utmost significance in a massive relocation of services functions of western multinational corporations (MNCs), the purpose of which is to meet the cost-efficiency and provide both captive and outsourcing services cross-border from lower-cost CEE destinations.

Over the past two decades, the sector has been able to grow steadily at a rate of more than 10% per year without receiving much attention from economic policymakers for a long time. It was the fastest-growing segment not only within the services sector, but also in the whole economy. The majority of FDIs took place here in the period between 2005 and 2010, competing with the highlighted and supported automotive industry, ensuring the first or second ranking place for the sector. As a result of this development, in 2020, more than 210 services centres operated with more than 75,000 employees in business services centres in Hungary, which makes up 1.6% of all employees and 4.4% of university graduated employees (Marciniak, Baksa, & Nagy, 2020). The wages of those working in services centres are significantly higher compared to the average income in Hungary. In 2019, the average gross monthly earnings of employees in the Hungarian BSS were more than one and a half times the national average; 4.4% of the net revenue of the national economy and 4.7% of the value-added were provided by services centres and enterprises that had a services centre to support their main activity (Marciniak, Baksa, & Nagy, 2020).

The former Hungarian governments have also recognised the importance of the sector, and since the 2010s, under the relevant directives of the European Union, the subsequent governments have introduced and continuously developed a targeted investment promotion policy to attract as many investments as possible in the sector. These government subsidies have certainly contributed to the further sustainable growth of the sector, as several studies have shown that almost half of the larger business services centres in Hungary have benefited from such subsidies (Gál & Marciniak, 2021).

Based on the sectoral classification of the business services sector, operative business services were the first to appear in Hungary (e.g. administrative services, accounting services, temporary staffing services, facility management, cleaning services); they were mainly leveraged the cheap and abundantly available labour driven by the widespread of the outsourcing model. Later on, business services in the knowledge-intensive category were introduced, such as financial, legal services, software development, market research, and data analysis. The sector is now clearly dominated by these activities (Wood, 2020). The increase in the number of shared services centres with higher added value activities (compared to outsourcing) contributes to this significantly. This growth, in turn, has increased the demand for highly-skilled, graduated labour. The digitalisation and the COVID-19 pandemic have both highlighted the significance of the adequate labour factor in the CEE economies (Dudė et al., 2021; Kuzior & Sobotka, 2019). Among the CEE countries, there were different development trajectories; however, the literature on this is incomplete and fails to analyse them thoroughly, and so the real explanation remains in the background.

Contribution to the literature

Although the Hungarian business services market was one of the very first sectors in the region fifteen years ago, several regional countries came to overtake it. This study aimed to reveal the reasons for which these competitors could grow faster, and why Hungary stabilised its lagging position. The differences in progress cannot be explained simply by labour shortages, which are typical of the region as a whole, with unemployment typically fluctuating between 2% and 7% in these countries. The Czech and Polish figures are the lowest values in the European Union in 2021, with the Czech Republic at 2.4% and Poland at 3.1% (Eurostat, 2021c). This research paper intended to reveal the most significant reasons behind the different development paths of CEE countries, thus filling the gap in the literature.

The research questions and method

The study focuses mainly on the examination of human resources as a primary deployment factor that influences the business services centre market in the region. The main research questions were also formed in this field. What are those factors that influence the growth differences of CEE countries and how can Hungary regain growth momentum again? The research is based on literature analysis and statistical comparison using databases of international and national business services associations as well as national statistical organisations.

The paper is structured as follows. The section on the theory and literature review is followed by the introduction of the main feature of the Hungarian global business sector when compared to its regional peers. The subsequent section presents the results of the human-resources characteristics of the sector. The last section summarises the main findings and concludes the paper with policy recommendations.

Literature review

A key feature of the second global shift is the relocation of a range of service functions from the USA and Europe to low-cost developing countries. The second global shift is part of a worldwide structural shift towards service-based foreign direct investments (FDIs), and also a new direction of managerial and localisation-related strategy of corporations (Blinder, 2006; Bryson, 2007; Hardy, 2006). Supporting this, "fragmentation" and "trade-in task" theorems developed by Jones and Kierzkowski (1990) and Grossman and Rossi-Hansberg (2008) examine the new role of services in international trade. Advances in this process have made it easier for companies to disaggregate their value chains around the globe – all the while maintaining management control over them – or to disperse service production among numerous supplier companies, even those based in distant locations.

The rapid surge in globalisation – and the opening up of formerly isolated regions such as Eastern Europe, Russia, and China to global trade – has substantially boosted task trade and service-related cross-border investments. Many Eastern European countries, invigorated by the EU enlargement, became important locations for offshoring services.

The relocation of services also reflects the types and impacts of FDIs on business services within the Global Production Network (Fernandez-stark et.al., 2011). A bulk of research examines offshoring as a part of a worldwide structural shift towards services-based FDIs (Bevan & Estrin, 2004; Bryson, 2007; Fernandez-stark et.al., 2011; Grote & Täube, 2006). Due to the problems with collecting data on business-services investments in recent studies, the statistics used herein have been supplemented with qualitative research (Capik & Drahokoupil, 2011; Fifekova & Hardy, 2010; Hardy, 2006; Hardy et al., 2011).

FDIs are of the outstanding importance for the Central and Eastern European (CEE) countries, and among them the Visegrad economies. FDIs

played an important role in the transition processes of these countries (Benacek & Holland, 2000; Kalotay, 2010; Meyer & Peng, 2005). Because of the significant inflow of FDIs, by the end of the 1990s, foreign ownership had become dominant not only in the key manufacturing, but also in service industries of the economies in transition, and among them in the Visegrad countries (Piazolo et al., 2001).

The impact of FDIs on the host economy is widely analysed. In theory, companies with foreign participation can affect the economic performance of the host country mostly in a positive way (Blomstrom & Kokko, 1997). However, for the time being, empirical evidence is inconclusive and the negative 'backwash effects' related to FDIs are increasing. For example, Görg and Greenway (2001) overviewed 30 empirical surveys on the growth effects of FDIs in various countries and they found that positive and negative impacts usually affect the host economies simultaneously. The interference of these two impacts can eliminate measurable positive effects. Majcen, Radosevic and Rojec (2003) drew a similar conclusion for transition economies. Iwasaki and Tokunaga's (2014) meta-analysis of the macroeconomic impacts of FDIs within transition economies found that its impact depends on study conditions (e.g. estimation period, data type, estimator, and the type of the FDI). Thus, one reason for not finding conclusive evidence on the positive impact of FDIs within the host transition economy at the aggregate level might be that studies usually do not distinguish between different types of FDIs (Beugelsdijk et al., 2008; Buckley et al., 2007).

An important distinction in the FDIs theory is between vertical and horizontal FDIs (Barba Navaretti & Venables, 2006; Helpman, 1984). Theoretical analyses show that these two types of FDIs differ not only in their motivations, but also in their impact on the host countries (Barba Navaretti & Venables, 2006; Blomstrom & Kokko, 1997). A horizontal FDI is usually more embedded in the host economy (Chen et al., 2004). Driffield and Love (2007) argue that spillover effects are more substantial for horizontal FDIs. Beugelsdijk et al. (2008) showed the superior growth effect of horizontal FDIs over vertical FDIs in the host economy. Lankes and Venables (1996) found a useful distinction of vertical and horizontal FDIs within transition economies for identifying their most important motivating factors.

An important reason for the low number of studies separating the impact of horizontal and vertical FDIs on the host economies is that the distinction between these two types of FDIs is problematic (Markusen & Maskus, 2002); it is methodologically unresolved (Herger & McCorriston, 2016). Analyses keep distinguishing vertical and horizontal FDIs in cross-border acquisitions going down to the deal-level and the company-level (Herger & McCorriston, 2016). When the company-level data is not available, usually export per sales ratios are used as proxies[1]. Gál (2014) uses services to export data adopted from the Balance of Payments statistics in order to support the assumption that an expanding export in other business and ICTs-related services have been associated with the relocation of services centres created by FDIs into the six new member states. This provides a good approximation to identify those sections of service trade which are considered to be offshorable. This analysis helps in determining the horizontal and vertical nature of the analysed industries.

The analysis of the impact of FDIs-related services on the host economy is relatively scarce in the case of the Visegrad countries. Fifekova and Hardy (2010) and Myszkowska (2014) documented export growth in business services and ICTs-related services, associating these with the significant amount of FDIs' inflow in the examined service industries. Melikhova, Bazó, Holubcova and

[1] Other approaches rely on industry-level characteristics – e.g. in Görg, Mühlen and Nunnenkamp (2009), the horizontal-vertical distinction is made on patterns of bilateral trade between Germany and the Czech Republic, using the Revealed Comparative Advantages (RCA) of the given industry. Where the destination country has a positive RCA, vertical FDI is assumed.

Camacho (2015) demonstrated the increasing role of business services in the foreign trade of Visegrad countries. Micek, Działek and Górecki (2011) analysed the local economic impact of foreign business services centres in Kraków. They found that the positive impacts are much more modest than those indicated by politicians, lobbying groups, and companies. According to the results of the research by Capik and Drahokoupil (2011), business-services FDIs had a very limited impact on the development of the knowledge economy and on the increasing level of innovation in the four Visegrad countries.

Furthermore, also the distinction between horizontal and vertical FDIs in services is quite rare in the empirical analyses (Sass & Fifekova, 2011). Based on in-company interviews, Hardy et al. (2011) compared the impact of horizontal and vertical business services in three Visegrad countries: the Czech Republic, Hungary, and Slovakia. The most salient static impacts of these FDIs are on the labour market, where horizontal investments provide fewer but more skilled jobs than vertical investments. Dynamic effects (such as forward and backward linkages, knowledge-human capital) were contradictory in that although learning and spillover effects were modest, vertical investments demonstrated the propensity to move up the value chain. Strategic coupling with local actors involved the institution's bending, enhancement, or harnessing in changing the spaces of production. Thus, the various impacts of vertical and horizontal FDIs-related services in the case of former transition economies have not been analysed yet through the econometric analysis of the available data.

Sass, Gál and Juhász (2018) examine four service industries that have a significant share in the FDIs' stock of the Visegrad countries, and categorise these four service industries as vertical, horizontal, and "confluent" (i.e. containing both vertical and horizontal elements). Besides looking into export, the authors examined the impact of vertical and horizontal FDIs on employment in the four Visegrad countries. They showed that the impacts on exporting and on creating employment are different for vertical and horizontal service-industries FDIs. As far as the impact on employment is concerned, in terms of the number of jobs created, we expect that vertical FDIs have the most significant effect, because they most intensively use the factor which is abundantly – and relatively cheaply – available in the host economy, namely skilled and semi-skilled labour (Hardy et al., 2011; Micek et al., 2011). This pattern is followed in magnitude by confluent FDIs' impact on employment (because of their vertical elements), and then by horizontal FDIs' impact. The export-generating impact and the employment impact were both evident in the vertical industries. However, the employment impacts tend to be less intense or significant in confluent FDIs, and hardly perceptible in the horizontal financial service industries. The analysis of employment was problematic due to the availability of data at a higher level of aggregation. In the real-estate and (the predominantly vertical) business services industry, a significant positive correlation was detected, similarly to the horizontal financial and insurance services, while stronger impacts were found in the vertical case rather than horizontally. However, the crisis terminated the significance of the employment impact (Berczyńska et al., 2021). The confluent (horizontal and vertical) nature of computer activities could not have been proven.

Gál and Marciniak's (2020) recent study discusses the evolution of the Budapest-centred Hungarian business services industry. Their paper analyses the major location-related factors of the Budapest-centred Global Business Services (GBS) sector in Hungary, as well as the motives for the belated decentralisation. New trends – generated by the upgrading towards higher value-added services and digitalisation – were also discussed.

Despite the automation and robotisation trends present due to the digitalisation of service processes, the business services sector is still a highly labour-intensive segment of the separate economies. In the last two decades, a continuous replacement has taken place in the service portfolio of business

services centres, resulting in a more complex and diverse knowledge-based profile. It transformed the role and judgement of these services centres in the internal value-chain of organisations. This quality change in the services needs more trained and higher-skilled employees, which raised the significance of talent attraction, engagement, and retention at all levels of these organisations. In addition to this upgrading of services provision, in the Visegrad countries, a young, trained workforce is employed in those services centres that are in short supply. Moreover, this generation constantly seeks new challenges and frequently experiences changes in jobs, thereby raising the attrition rates and challenging the internal or external recruiters. All these factors influence a riskier operation and increase the importance of human resources in the sector development (Fries & Noldus, 2016; Marciniak, Baksa, & Nagy, 2020; Marciniak, Moricz, & Baksa, 2020; Rothwell & Herber, 2011).

Responding to the sector's trends and HR challenges, managers and human-resources experts are striving to find proper solutions such as quicker and more conscious recruitment and selection, well-communicated employer branding actions to maintain the commitment, identifying more transparent and attractive career paths in the organisation, upskilling the employees to work with new digital technologies, or finding and integrating new segments of the human-resources market with retraining. Despite the complexity of these several motives, our hypothesis is as follows: *because of the high human intensity of the business services sector, the key competitive factor influencing FDIs and the growth paths in this sector continues to be human resources*.

Research methodology

The study first explores the literature on the formation and development of the regional and Hungarian business services sector, and identifies the most important factors that have led to the fastest economic growth in the region's business services sector in the last two decades. Among the analysed factors, the characteristics of human resources exceed the other investment factors and determine the differences within the region. These factors are the following: the different sizes of the countries' population and the proportion of capitals in the total population, the number of advanced cities in the countryside, the number of trained workforces (especially in some fields of the economy), the foreign-language proficiency of the workforce. As there is no database based on a unified method for examining the region's business services sector, this study uses statistics from various professional organisations for the purpose of presenting the regional position of the Hungarian market by simple statistical analysis. In addition to business databases, the European Union's data, as well as national databases (Poland, Romania, the Czech Republic, Bulgaria, and Hungary), were used in order to examine the business services market in the region and to explore regional differences in human resources.

Results and discussion

The size of the Hungarian Business Services Centre Market in the CEE region

The development of a given market alone is difficult to measure objectively, which is why in order to realistically evaluate the growth and opportunities of the Hungarian business services centre market, it is important to examine it taking into account other markets in the region.

There is a lack of a sufficient and comprehensive picture of the real size and growth of the business services sector in the Central and Eastern European region. Typically, market research conducted by professional organisations in each country provides an insight into a country's market. According to the Corvinus University of Budapest and the Hungarian Service and Outsourcing Association's (HOA) 2020 autumn research, the five most important markets in the region include Poland, Romania, the Czech Republic, Hungary, and Bulgaria (Marciniak, Baksa, & Nagy,

Table 1. The number and employment of Business Services Centres in some CEE countries

	Poland	Romania	Hungary	the Czech Republic	Bulgaria
Number of BSCs (2020)	1500	280	205	310	510
Employment of BSCs (in thousands) (2020)	330	131	74	112	72

Source: developed by the authors based on Marciniak, Baksa, & Nagy, 2020.

2020). Other important markets in terms of size are Ukraine, Lithuania, Slovakia, Estonia, Latvia, Serbia, Bosnia and Herzegovina, and Belarus. Poland stands out in the region, which is by far the most important market in terms of both the number of service organisations and the number of people employed in the sector (Table 1).

A comparison of the individual countries in the region is interesting, because although the investment benefits of the countries – such as the availability of a well-trained and relatively cheap workforce, advanced service culture and infrastructure, or linguistic diversity – are more or less uniform, there is already competition for new investments between the countries of the region. Other countries can learn and develop from the individual countries' incentives and actions, or their environmental conditions.

The regional position of the Hungarian Business Services Centre Market

A relatively objective picture can be provided by examining the service indices of international investment companies; it will also reveal where Hungary is competing with the countries of the region (see Table 2).

In one of the most internationally-known service investment rankings prepared by Kearney, Hungary is ranked as the 31st, down from 2019, and it ranked 37th in 2021, with an increasing emphasis on digitalisation. Ranked as 12th, Hungary is ahead of this ranking when it comes to the CEE region, followed by Latvia (20th), and Lithuania (30th), in addition to the examined countries. Another international consulting company, Tholons, also ranked the regional countries in 2021. After a drop

Table 2. Regional positions of some CEE countries based on International Rankings

	Poland	Romania	Hungary	the Czech Republic	Bulgaria
Kearney's GLSI (2021)	14th	32th	37th	34th	17th
Tholons Global Innovation Index (2021)	14th	34th	37th	24th	41st
Ernst&Young's (EY) Europe Attractiveness Survey (2021)	6th	18th	20th	n/a	n/a
IBM Global Location Trends Report (2019) -Top-ranking destination countries by estimated jobs, per million inhabitants	19th	n/a	5th	14th	7th

Source: developed by the authors based on the following references: Dencik & Spee, 2019; Sethi et al., 2021; Teigland et al., 2021; Vashistha et al., 2021.

by 13 places, Hungary was 37th in its investment rankings, with Poland (14th), the Czech Republic (24th), Romania (34th), and Bulgaria (41st) also appeared in this ranking. In the Tholons index of large cities, Budapest ranked as the 31st with a significant rise, overtaken by Kraków (20th) and Prague (22nd), but followed by Warsaw (35th), Bucharest (64th), and Sofia (74th). The Ernst&Young's (EY) international investment company's European investment ranking lists the top 20 European countries based on international investment projects, with Hungary falling from the 13th place in 2020 to 20th place in 2021. In 2021, the Czech Republic and Bulgaria did not make it to this ranking. However, Serbia, being 17th in the ranking, is ahead of Hungary. In the list of jobs created by the IBM in the Global Location Trends Report 2019, Hungary ranked 5th, Lithuania was 4th, Bosnia and Herzegovina was placed 6th, Estonia ranked 9th, and Slovakia ranked 15th (Dencik & Spee, 2019; Sethi et al., 2021; Teigland et al., 2021; Vashistha et al., 2021).

The progress of the Hungarian Business Services Centre market in the CEE region

It is worth examining how much growth dynamics business services markets have had. However, comparing individual markets is problematic, because, for example, when determining the size of markets, the terminology and methodology behind each market research are not uniform, i.e. each country considers different organisations as business service organisations. This is particularly interesting given that when countries compete to attract new capital investment, it does not matter what the size and growth dynamics of each market points to (see Figure 1).

It is worth looking at how the growth of the market in some of the countries under scrutiny has developed in recent years based on the number of people working in business services centres. In this light, Poland's steady and sustainable growth is striking; other countries in the region lag far behind. Slow-paced growth is typical

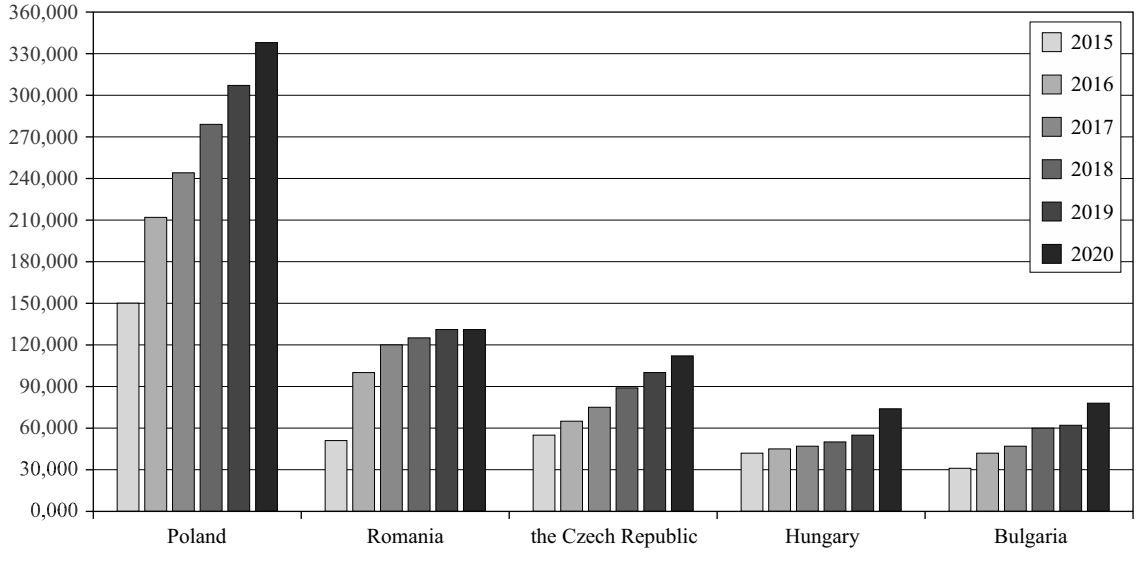

Figure 1. Progress of Business Services markets by employment in some CEE countries

Source: developed by the authors based on the following references: AIBEST, 2019, 2020; Appleton et al., 2015, 2016, 2017, 2018, 2019, 2020; BAO, 2018, 2015, 2017; Brodzicki et al., 2020; Dan et al., 2020; Górecki, 2017, 2018; Górecki et al., 2015, 2016; Marciniak, Baksa, & Nagy, 2020; Panczyj et al., 2020; Pelinescu et al., 2018; Perrin et al., 2015, 2016, 2017; Ștefan et al., 2019).

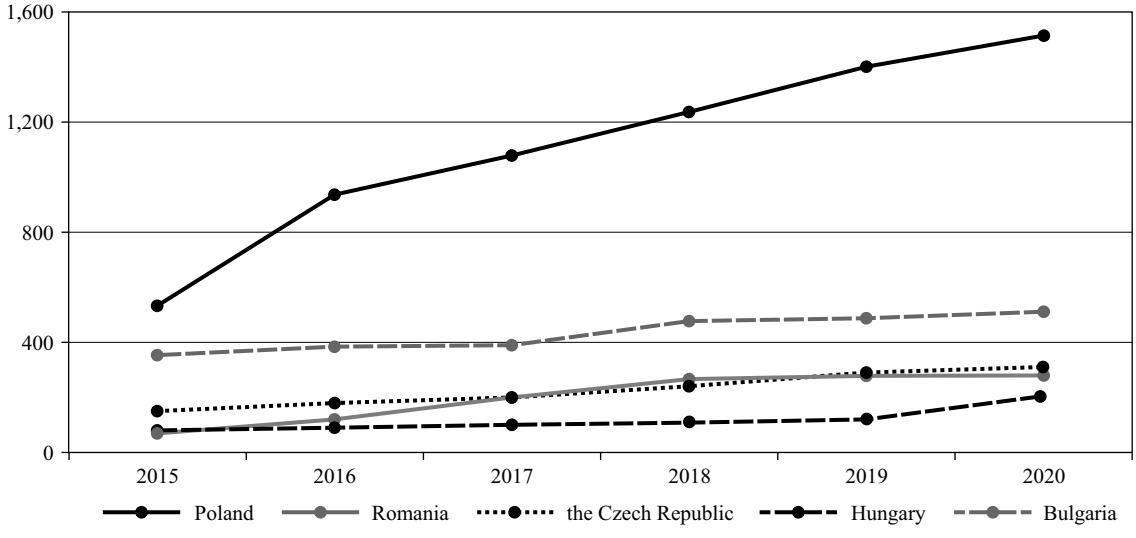

Figure 2. Progress of Business Services markets by the number of Services Centres in some CEE countries

Source: developed by the authors based on the following references: AIBEST, 2019, 2020; Appleton et al., 2015, 2016, 2017, 2018, 2019, 2020; BAO, 2018, 2015, 2017; Brodzicki et al., 2020; Dan et al., 2020; Górecki, 2017, 2018, 2019; Górecki et al., 2015, 2016; Marciniak, Baksa, & Nagy, 2020; Panczyj et al., 2020; Pelinescu et al., 2018; Perrin et al., 2015, 2016, 2017; Ștefan et al., 2019.

of the rest of the region, with Romania alone showing stabilisation after a big jump. If one looks at the number of centres in these countries, similar trends can be discovered. While the Czech Republic and Hungary were already on a consolidated growth trajectory around the period 2015–2016, Poland was the absolute winner of that period, while the growth of Romania and Bulgaria, which joined the European Union later, was outstanding around the period 2017–2018 (see Figure 2).

The compound annual growth rate (CAGR) of the number of centres varies greatly, ranging from 8% to 35% in the countries under scrutiny during the discussed period. However, if one looks at the annual growth of employment in the sector, it appears that the average annual growth rate in the countries of the region has fluctuated between 13%–25% in recent years (see Table 3).

Although there were outstanding values in this, such as that the number of employees in the sector

Table 3. The Compound Annual Growth Rate (CAGR) in the sector's employment, and the number of Centres (%)

	Poland	**Romania**	**Hungary**	**the Czech Republic**	**Bulgaria**
CAGR in employment	18	25	13	15	21
CAGR in the number of centres	25	35	23	16	8

Source: developed by the authors based on the following references: AIBEST, 2019, 2020; Appleton et al., 2015, 2016, 2017, 2018, 2019, 2020; BAO, 2018, 2015, 2017; Brodzicki et al., 2020; Dan et al., 2020; Górecki, 2017, 2018, 2019; Górecki et al., 2015, 2016; Marciniak, Baksa, & Nagy, 2020; Panczyj et al., 2020; Pelinescu et al., 2018; Perrin et al., 2015, 2016, 2017; Ștefan et al., 2019.

almost doubled in Romania from 2015 to 2016 (96% increase), or that the annual growth value was over 30% in Bulgaria and Hungary, these are more methodological changes resulting from market research. Romania has reached the highest growth among the analysed countries. Unfortunately, among the examined countries, Hungary shows the lowest average growth value of those employed in the sector in the discussed period. In order to understand the growth benefits of the countries under scrutiny, it is worth examining the factors that influence this the most.

Challenges in the international context

Although ABSL research provides the most comprehensive market image in the analysed countries, the examined organisations do not exactly overlap. In most countries, these include BPO, SSC/GBS, IT, and R&D centres, but e.g. in Romania, start-ups also appear in some ABSL's reports from 2017. In Hungary, R&D centres are not examined in the HOA's reports. In Bulgaria, AIBEST's and BOA's reports identify two different outsourcing organisations (ITO and BPO) to differentiate between service providers, where the HRO, VBPO, KPO, FAO, other BPOs, and SSC are interpreted within the BPO. However, the methodology also differs from country to country according to the size of centres included in the survey or as to whether a company's headquarters at different locations appear as a company or as different centres in the reports.

Klimek (2020) analysed the Visegrád Group countries (the Czech Republic, Hungary, Poland, Slovakia) and recognised the high level of competition for new investment projects among these countries. The author identified Bulgaria and Romania as important destinations that have a great potential for further expansion.

Different human factors behind the Regional Advantages

The results of the research suggest that in the five countries with the most significant business services sector in the region (Poland, Romania, the Czech Republic, Hungary, Bulgaria), the different dynamics of the sector's growth are the result of many different but interrelated factors (Marciniak, Baksa, & Nagy, 2020). To be able to draw usable conclusions, it is worth examining more closely the factors that may represent the most important differences. Deployment factors include financial incentives, available human capabilities, the evolution of the business environment, and, increasingly, the degree of digitisation. Out of these, the analysis now focuses primarily on the human factor, as the sector is still highly labour-intensive, with labour arbitrage being the most determinant with regard to the financial incentives specific to the region, but progress on digitisation is also driven by human versus technology costs as well as digital technology dominated by human abilities (Marciniak, 2019). Thus, overall, the differences in each country can be largely explained by the characteristics of human resources. Each of the analysed factors is related to the skilled workforce available in a given country, based on its quantitative, qualitative, and territorial dimensions. Each of these factors often plays a decisive role in the final site selection of an investment in the case of new capital investments.

One such factor stems from the different sizes of countries and their differences in the labour market. While Hungary and the Czech Republic have roughly similar populations and the same employment rate, the population in Romania is about twice as large, and in Poland four times as large as Hungary, and the employment rate is much lower in both Poland and Romania. This can be a crucial consideration when making an investment decision when a new service organisation needs to be set up. Although a different employment rate can be an advantage in the assessment of the labour market, as it is a reserve for employers, it does

not say anything about the structure of the labour market, such as the proportion of the unskilled. This is not necessarily a real advantage in sectors such as the business services sector, as this sector is dominated by a multilingual workforce (see Table 4).

If one looks at the employment rates among graduates, an even more diverse picture of these countries emerges. Considering that the graduate workforce is likely to speak at least one foreign language, thus better meeting the expectations of the sector, it seems much more so that this segment of the labour market has larger reserves in Hungary and the Czech Republic than in Poland or Romania. At the same time, one must not forget about the differences in size, as in the case of Romania and Poland one can still talk about two- and four-times bigger labour market.

Another factor is the territorial distribution of the labour market, as shown by the urbanisation and residence concentration of the population. With the continued advancement of urbanisation, the UN 2018 report states that 55% of the world's total population inhabits cities. This rate is expected to increase to 68% by 2050. Cities, especially capitals, are of particular importance to the business services sector, as a significant part of the foreign-language-speaking labour market is concentrated there. Considerable differences in the size and number of these can also be found between countries (see Table 5).

Klimek (2020) also considered that the different sizes of economies and populations should be underlined when analysing the impact and potential of business services markets. The author highlighted that the maturity of different business services markets could be compared by the number of persons employed and the intensity of employment measured as several employees to the size of the population. Klimek stated that Hungary, with its 9% in the total V4 employment, has only the 3rd position, right ahead of Slovakia (8%).

While the capitals of the four studied countries are roughly the same size (only Prague deviates downwards to a greater extent), the proportion of the capital in the total population and the number of cities with at least 200,000 inhabitants, excluding the capital, already show a much larger variance. The concentration of the population is indicated by the ratio of the capital to the total population,

Table 4. Total population and the employment rate in some CEE countries

	Poland	Romania	Hungary	the Czech Republic	Bulgaria
Total population (in millions) (2019)	37.9	19.4	9.8	10.6	6.9
Employment rate (2019)	71%	70%	75%	75%	76%
Employment rate among tertiary graduates (2020)	88.1%	88.8%	85.3%	83.9%	87.6%

Source: Eurostat, 2021a; KSH, 2019b, 2020.

Table 5. The population of the capitals and their proportions within the total population, and the number of medium-sized cities in some CEE countries

	Poland	Romania	Hungary	the Czech Republic	Bulgaria
The population of the capital (in millions) (2017)	1.7	1.8	1.7	1.3	1.2
Proportion of capital within the total population (2019)	4.5%	9.2%	17.5%	12.2%	17.4%
Number of cities with more than 150,000 inhabitants (excl. the capital)	23	12	4	3	5

Source: Eurostat, 2021b.

in which the value of 17.5% in Hungary and 17.4% in Bulgaria is outstandingly high among the five countries under scrutiny, and almost four times higher than in Poland at the bottom of the list. Romania represents twice the value of Polish figures, and the Czech Republic is three times the size.

It is also interesting to examine how the number of large cities outside the capital develops in the countries of the discussed region. The study included cities with more than 150,000 inhabitants, because when examining the business service sectors of the countries in the region, this is typically the size that already includes at least one higher-education institution, vibrant economic and cultural life, and international workforce. These, in turn, are important cornerstones of the business services sector, which builds on foreign language skills. Of course, cities with less than 150,000 inhabitants (or even less than 100,000 inhabitants) can operate a business services market, but for this to develop substantially, this population can be described as a kind of minimum; in fact, these are cities with 200,000–300,000 inhabitants. They represent a real growth market, considering, of course, that not only the population but also the geopolitical location and the historical and cultural characteristics, as well as the economic structure of a given city all have a major impact. At the same time, for a city with an industrial past, a real development alternative could be, for example, the establishment of business services centres serving the background services of the production companies operating there, i.e. if there is a sufficient number of suitably-qualified workforce. While there are 23 cities in Poland with at least 150,000 inhabitants, there are 12 such cities in Romania and only 4 in Hungary. There are even fewer such cities in the Czech Republic (3). In Bulgaria, there are 5, but in the Czech Republic and Bulgaria, the population of two out of these cities exceeds 300,000 inhabitants, while in Hungary only 1 city out of 4 reaches a population of 200,000. This disadvantage is difficult to overcome, although the development of the labour market and population retention of individual rural cities is already something that can be influenced at the governmental level. It is necessary to pay more and more attention to this, because smaller centres have been established in the countryside in Hungary in recent years. In many cases, they have already been established as satellite centres of services centres operating in Budapest in response to the labour shortage. This trend is exacerbated by the accelerated digitalisation and the strengthened home-office following the COVID-19 pandemic, which makes it possible even for workers living further away from the services centre's headquarters to join the sector. Consciously supporting this and thus encouraging more flexible forms of employment would be in the interest of not only the sector, but also the economy and society as a whole.

Differences in the educational structure of the studied countries are of significance as well. Of course, the activities of business services centres can be extremely varied, but it is generally true that the proportion of jobs requiring a degree in economics and technology is the largest, as these dominate the sector. As the vast majority of companies operating in the sector work with international clients, a high level of knowledge of at least one foreign language is required. As a result, many language graduates have previously been employed in the sector, most often as graduates of economics or technology. The number of students in higher education, especially when examined in proportion to the population, shows where there is a lot of labour market potential in students in higher education (see Figure 3).

Klimek (2020) also confirmed that the quality of human capital as skilled labour is the main input for this sector. These skills could be developed by education, which is one component of the Human Development Index (HDI), i.e. an important unit of measure of investment decisions. The education potential could be identified by the number of university students and their proportion in the total population. In this ranking, unfortunately, Hungary has got only the 3rd position and so is

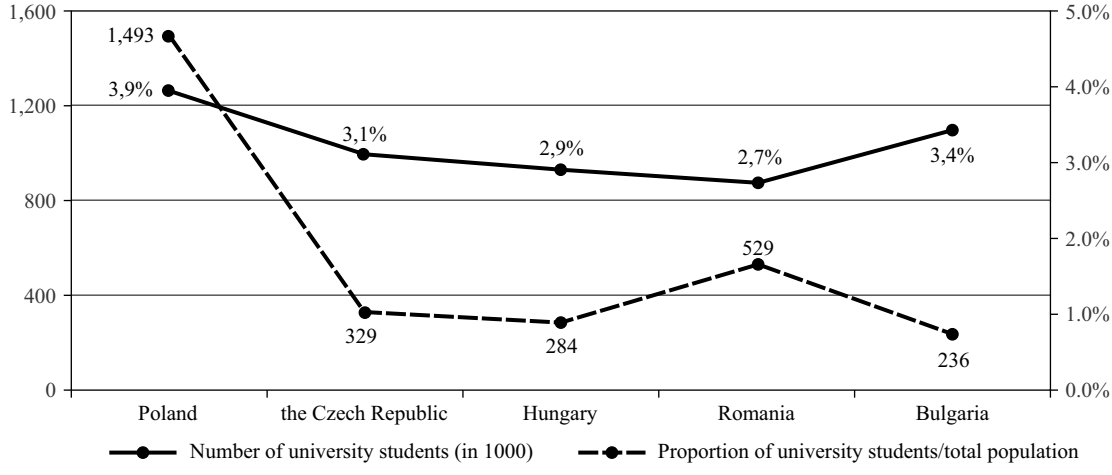

Figure 3. The number of university students and the proportion of university students/total population in some CEE countries in 2019

Source: KSH, 2019a.

placed behind the Czech Republic and Poland (among the V4 countries), respectively.

The number of students in higher education depends on the size of the country, its place in international value chains, demographic trends, educational infrastructure, and much more, but it also shows a country's approach to human resource development. After all, it is known that a highly-skilled workforce can produce more added value for a given country. In terms of GDP as a share of GDP for total education, according to e) data, Poland led the countries with 5%, followed by the Czech Republic with 4.9%, Hungary with 4.7%, Bulgaria with 3.9%, and, finally, Romania with 3.6%. In Hungary, the share of tertiary education among those aged 30–34 was 33.7% in 2018, which is lower than the 40.7% in the European Union. The decline in the number of students in higher education has been steady in Hungary since the mid-2000s, mainly for demographic reasons, but the decline has become more significant particularly since 2012, when the government reduced the number of state-funded places and tightened entry conditions (European Commission, 2019).

Of course, one can further add to this picture by looking at the proportion of students in IT, business, or mathematics and statistics in the studied countries (see Table 6).

Table 6. Total number of graduates, including in some specific fields of education in some CEE countries

	Number of graduates in HE (2018) (in thousands)	% in Business administration and law	% in Natural sciences, mathematics, and statistics	% in Information and Communication Technologies
Poland	470	23%	3%	4%
Romania	126	27%	5%	6%
the Czech Republic	76	20%	6%	5%
Hungary	65	25%	4%	5%
Bulgaria	54	32%	3%	4%

Source: Eurostat, 2018.

Based on the Eurostat data for 2018, one can see that there is no significant difference between the countries under scrutiny. Perhaps Bulgaria alone has a higher proportion of students in business, especially when compared to the Czech Republic. Moreover, if one looks at these three areas together, not all graduates present in the sector are included; on the other hand, the data even includes lawyers, which is not a typical degree among those working in the sector, but it is also the lowest combined ratio (30%). This can be experienced in Poland, while the highest (39%) in the case of Bulgaria, the others are scattered between the two.

Another such an installation factor is the degree of foreign language proficiency. It is very difficult to get a realistic picture of this, because there is little comprehensive data on the foreign language skills of the workforce in each country. The only international comparative database is provided by the Eurostat (2016) survey (the data on this is compiled every five years) (see Table 7).

It can be noticed that Hungary is only surpassed by Romania in foreign language skills in the European Union. Language skills are, of course, both historically- and culturally-defined, as minorities in some countries speak more languages almost naturally, and people in some countries find it easier to learn related languages (e.g. Slovaks speak Czech) if these differ only slightly from the mother tongue.

Nevertheless, when examining the proportion of those who speak one foreign language and those who speak only their mother tongue, the advantage of Poland and the Czech Republic in the region can be established. Of particular concern for Hungary are the statistics comparing the proportion of learners of at least two foreign languages in secondary school. In this comparison, Hungary (49%) was outperformed by the European Union's average (59%). Romania took the lead in this matter, followed closely by Poland, and the Czech Republic performed equally well. In terms of foreign language skills, people living in the capital are likely to have an advantage over the population in smaller cities and in the countryside, which further worsens the opportunities for expansion in the market for business services centres (European Commission, 2019).

The ABSL's EMEA report (2020) analysed the numbers of language students in tertiary education and found the following figures: the Czech Republic – 13,300; Hungary – 7,400; Bulgaria – 6,800; Romania – 22,000; Poland – 64,500. This data also reveals the advantage of Poland and the Czech Republic against Hungary, Bulgaria, and Romania.

Concluding remarks

Summary of the results and findings

The examination of human factors is of key importance in assessing Hungary's regional competitiveness. On the one hand, the region is

Table 7. Foreign language proficiency in some CEE countries

	Poland	Romania	Hungary	the Czech Republic	Bulgaria
Ranking about knowing one or more foreign languages among people aged 25–64 (2016)	19th	27th	26th	14th	25th
Ratio of those who do not speak any foreign language among people aged 25–64 (2016)	32.9%	64.2%	57.6%	21%	50.5%
Ratio of those who speak one foreign language among people aged 25–64 (2016)	45%	24.7%	28.6%	44.7%	32.5%
Ratio of secondary school students who learn at least two foreign languages (2016)	93.9%	95.1%	6.2%	65.2%	15.6%

Source: Eurostat, 2016.

an offshore area for North America and a nearshore area for Western Europe, mainly due to the low cost of the skilled and foreign-speaking workforce (Marciniak, 2014b; Sass & Fifekova, 2011). This is compounded by the fact that while the rise of digitalisation and automation in the sector is unstoppable – and more and more advanced technology is aiding or triggering the use of human resources in the business services sector as well – the services centres operating here remain highly labour-intensive (Marciniak, 2019; Marciniak, Moricz, & Baksa, 2020). This is still due to lower labour costs when compared to Western European and North American countries, which also determines the adaptation of digital technologies in the sector. On the one hand, it can slow down the spread of technologies on the cost side, and on the other hand – the capability side. This is because low labour costs worsen the return on technology investment, and digital capabilities related to the introduction and application of new technologies can also limit the implementation of investment projects. The latest ABSL's (2021) report also analysed the critical changes to the business services sector; it is expected to strengthen the skill market and intensify the struggle for talents that will underline the significance of the HR-oriented focus among the BSC leaders.

Although Hungary cannot change the country's population significantly, it can already have an impact on improving the population-retaining effect of rural cities through certain economic development measures. This is especially possible in the case of rural university towns, where the graduated workforce typically moves to Budapest or Western Hungary for better living conditions. Rural cities with declining populations cannot provide a real alternative to the capital-centric business services sector, thus curbing its growth prospects.

In the business services sector in Hungary, 85% of the workforce include university graduates and speak several foreign languages. The quantity and quality of the graduate workforce are particularly important for the sector to continue to grow and for an uninterrupted supply of labour. For this reason, it would be especially important to provide more resources for education in Hungary. There is a need to increase spending on education, improve educational infrastructure, encourage pedagogical careers, and increase the number of students in higher education.

One of the most important tasks is to develop foreign language skills. In this respect, Hungary is also lagging behind other countries in the region. Unfortunately, this position is reinforced by government measures that have in recent years made it easier to graduate without a language exam. Improving foreign language skills is not possible without greater government support and regulation, since, for example, a higher number of foreign language lessons in education is not possible without increasing the number of foreign languages teachers, but could have a positive impact not only on the sector, but also on the economy as a whole.

Despite the above-mentioned deficiencies, Hungary has competitive edges with which it stands out among its CEE competitors. It has an advanced office and transport infrastructure, excellent educational institutions with a colourful programme portfolio, a diverse human resource market with a lot of talents, a safe legal and financial environment, and attractive incentives from the local and national governmental institutions.

Practical implications and recommendations

Although in recent years there has been a convergence in the methodology of professional organisations in the region to cover companies in the sector as accurately as possible, there are still large differences and often inaccurate data for making international comparisons. This also explains the larger jumps in data from each country and the significant differences between countries of similar size. A shift in this could be the establishment by national statistical offices in the countries of the region of targeted data services that can more reliably show changes in the size of the sector. This is made more complicated

by the fact that the sector is cross-functional, which makes it difficult to identify actors based on activity. In Hungary, the Central Statistical Office has started investigating this direction in recent years. A separate data sheet examines organisations providing business services, but it is expected that it will take years for the research methodology to get refined and for the data to show market trends credibly.

Research limitations

The limitation of the research is that the data on the size of the business services sector comes from the reports of professional organisations operating in each country, which due to different methodologies and insufficiently accurate data collection can potentially amplify differences between countries and sometimes distort the growth trend in that country.

The study analysed the situation in Hungary primarily through human factors, but it did not address several financial incentives or important deployment factors in the business environment, such as tax and regulatory issues, service infrastructure, or the regulation of intellectual property management.

The study also did not cover government incentives used by individual countries for two reasons. On the one hand, these subsidies are regulated externally by the European Union, so the room for manoeuvre is narrow, and, on the other hand, several studies have confirmed that less than half of the Hungarian business services centres used such self-sufficiency packages for their investments. Nevertheless, some of the findings are suitable for government decision-makers to consider and, where possible, could be incorporated into the investment incentive system for further growth in the sector.

Future research directions

Although the human factor remains the most important deployment factor for the region's business services sectors, it would be worth examining differences within the country in regulatory environments such as taxation, labour standards, intellectual property management, etc., or office infrastructure environments, with a particular focus on rural cities which carry future growth opportunities.

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Jakub Głowacki

The Potential of Developing Complex and Unique Fintech Solutions in Kraków's Business Services Centres

Abstract

Objectives: The development of the concepts of the Internet of Things and the Internet of Services gave rise to changes in the financial sector, especially in the area of Fintech. The aim of this article is to assess the increase in the complexity and uniqueness of services provided by outsourcing and offshoring companies operating in Kraków, Poland.

Research Design & Methods: The paper contains an analysis of a survey conducted among the employees of Kraków's branches of business services centres (BSCs); the survey was carried out in order to determine the relationship between the technological changes that occurred in companies in the last 5 years and the complexity and uniqueness of the provided services.

Findings: The results of the analysis reveal that BSCs-related companies in Kraków have a high potential to develop services in the field of new financial technologies. Research has shown a significant relationship between the technological changes that took place in the last 5 years in the BSCs sector and the complexity and uniqueness of the services provided by this sector.

Implications/Recommendations: The research results might be important for public authorities, which should support the development and embedding of BSCs through a number of activities (e.g. support high-quality education by creating conditions and encouraging cooperation between universities and BSC companies).

Contribution/Value Added: The added value of this article is an estimate of the relationship between the technological changes that have occurred in companies in the last 5 years and the complexity and uniqueness of the services provided serviced.

Keywords: Fourth Industrial Revolution, Fintech, business services centres, Kraków, Internet of Things, Internet of Services

Article classification: research article

JEL classification: G200, G280

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Introduction

The world of finance is constantly changing. It is very often one of the pioneers in implementing new technological solutions. Particularly dynamic changes were noticeable in the last few years, when the concept of the Fourth Industrial Revolution has become a catalyst for progressive changes not only in industry, but also in the service sector. In the financial sector, innovations are very often created in the Fintech industry, which has changed the landscape of the financial sector in recent years. It has stirred up strong emotions around the world, both positive and negative ones, as Fintech solutions enter hitherto dominated markets, offering new customer-friendly solutions. Such trends manifest not only in the financial markets of highly developed countries, but also in developing countries, including those being part of Central and Eastern Europe. The aim of this article is to assess the increase in the complexity and uniqueness of services provided by outsourcing and offshoring companies operating in Kraków. It begins with a presentation of various definitions, history, and classifications of the Fourth Industrial Revolution, and goes on to Fintech definitions and typology. The paper also explores a range of factors that determine Fintech's success and its impact on the financial sector. The final part of the manuscript contains an analysis of a survey conducted among the employees of Kraków's branches of business services centres. The added value of this article is an estimate of the relationship between the technological changes that occurred in companies in the last 5 years and the complexity and uniqueness of the provided serviced.

Literature review

The logic of this part of the article is based on the assumption that dynamic technological changes that have been observed in the financial industry for at least several years have their source in the Fourth Industrial Revolution. The development of process automation in the production sector based on the integration of various systems was possible owing to the development of the concept of the Internet of Things (IoT). It also gave impetus to the creation of new solutions with regard to the Internet of Services (IoS), and in turn has driven and continues to drive change in the Fintech sector.

From the Fourth Industrial Revolution to the Internet of Services

The Fourth Industrial Revolution, also known as Industry 4.0, is a paradigm that aims to improve the productivity and efficiency of manufacturing companies by implementing advanced systems based on modern communication systems. The so-called intelligent manufacturing integrates the operation of equipment, hardware, and technology in order to optimise the production process, reduce costs and risks, and also maximise profits (Tesch da Silva et al., 2020). The concept of Industry 4.0 (Gr. *Industrie 4.0*) was formulated by a German team working under the aegis of the Ministry of Education and Research, consisting of scientists from higher education trechnical institutions and universities together with leading representatives of major companies (ThyssenKrupp AG, Deutsche Telekom AG, BMW AG, Deutsche Post DHL AG, Software AG, TRUMPF GmbH & Co. KG, Infineon Technologies AG, Hewlett-Packard GmbH, Daimler AG, Festo AG & Co. KG, ABB Ltd) (Kagermann et al., 2013).

The idea of Industry 4.0 also had important political ramifications. It was devised to a large extent in response to the ever-deepening economic crisis in Europe, and its main objective was to secure the future of German manufacturing and its leading position in the production engineering sector. In its original form, Industry 4.0 primarily involved the use of the Internet of Things and Services in the production process. The Internet of Things (IoT) includes smart energy networks, smart products and smart buildings, whereas the Internet of Services (IoS) comprises smart mobility and smart logistics. It is worth noting

that Industry 4.0 was one of the first concepts to combine the IoT with the IoS.

Industry 4.0 aroused great international interest and marked the beginning of discussions on the so-called Fourth Industrial Revolution. Thus, the number of publications dealing with this subject increased, both in the academic community and in the private sector (Beier et al., 2020). Apart from further development of the concept itself and the assessment of its impact on socio-economic development, attempts have been made to create a vision of the development of this trend in the literature (Lee, Kao, & Yang, 2014). It has also attracted a fair amount of criticism, which mainly concerned the lack of a precise definition of this phenomenon (Heng, 2014; Lasi et al., 2014). One of the attempts to define a precise framework for Industry 4.0 was made by Stock and Seliger (2016). They identified three dimensions characteristic of this paradigm:

- horizontal integration across the entire value creation network;
- end-to-end engineering across the entire product life cycle;
- vertical integration and networked manufacturing systems.

The first dimension describes the intelligent networking and digitalisation of value creation modules (VCM) (Halstenberg, Steingrímsson, & Stark, 2017) both within individual companies and among different actors. The second dimension represents a comprehensive engineering approach to a product at all stages of its life-cycle: from raw material acquisition through production and use to the end of its life-cycle (i.e. disposal). The third dimension is associated with the intelligent networking and digitisation of VCMs at different levels of production, from all the components of production lines to ancillary value chain functions such as marketing, sales, and R&D.

This vision of the production process leads to the concept of the Intelligent Factory (Gilchrist, 2016), which is an almost futuristic idea, since in its ideal form, it can produce and deliver goods that far exceed our expectations, especially if we take into account the dynamic development of Artificial Intelligence Systems, which can additionally support the basic tenets of Industry 4.0.

One of the basic tenets of Industry 4.0 is the use the Internet of Things (IoT) in the production process. The idea is that nearly every physical object can be connected to the Internet. Naturally, it does not mean that all of them will turn into computers, but for some time now, there has been a growing tendency to install in pieces of everyday equipment (but not only) small computer chips capable of communicating with other devices (Fleisch, 2007). Such things are then called smart, because they perform the purpose for which they were made in a slightly better way. Let us take as an example the simple electric kettle: all it needs is a temperature sensor and a Bluetooth module. Owing to its capacity to communicate with a smartphone, it becomes capable of boiling water at a given time and up to a specified temperature. The smart home or the smart car are being developed according to the same principles.

Apart from the IoT phenomenon, the Internet of Services (IoS) trend was being developed. Initially, it was rather an underdefined theoretical concept in telecommunications and Internet services (Soriano et al., 2013), or something that used to describe the transformation of the financial sector (Black et al., 2001), which, due to highly standardised procedures and large capital resources, has moved a significant proportion of its activity to the virtual world. The popularisation of the Industry 4.0 concept not only in the production area, as well as the development of the IoT, permitted a broader view of the IoS. New services that could not be provided before or that were provided inefficiently now began to emerge.

Thus, with properly-equipped components of the system, companies were able to offer services more efficiently and at a lower cost. Popular vehicle rental networks that charge fees by the minute are but one example. In order to launch such a service, in principle one needs only a smartphone, a car equipped with a GPS tracker, and a universal broadband access to the Internet.

This made it possible to rent cars by the minute without incurring staff costs, as is the case with traditional companies.

Fintech – definitions and typology

Fintech can be defined in a variety of ways. On the one hand, the term is used in an instrumental sense to cover innovative solutions in the financial sector, and on the other, it denotes a company (usually a start-up) that offers this kind of services. The latter approach is supported by Nicoletti, who describes Fintech as "reshaping the financial services industry, offering customer-centric services capable of combining speed and flexibility, backed by forward-looking strategies, and cutting-edge business models" (2017, p. 3). The sectoral approach is also present in the literature: Fintech is a "new financial industry that applies technology to improve financial activities" (Schueffel, 2017, p. 13).

Fintech is not a new phenomenon in the financial services industry. It can be described as a process that has been going on continuously for almost 200 years and is characterised by variable dynamics. Arner, Barberis and Buckley (2015) identified three key stages in the development of Fintech, which resulted from specific technological breakthroughs. The first such breakthrough was the invention of the electromagnetic telegraph in 1833, which revolutionised the system of remote information transmission and had a considerable impact on the development of the financial sector (Du Boff, 1980; Winston, 1998). An extra factor that facilitated radiotelegraphic communication (not only in the financial sector) was the laying of a telegraphic cable across the floor of the Atlantic Ocean in 1866 (Russell, 2011). Such a radical increase in the flow of information between the capital markets of New York and London led to a situation in which quotes on the then London Stock Exchange almost immediately reflected the newly available data from the New York Stock Exchange (Hoag, 2006). The dynamic development of communication via telegraph coincided with the Second Industrial Revolution (Kagermann et al., 2013), which extensively used electricity in the production process and provided the driving force for the world economy in the second half of the 19th century. Until the outbreak of World War I, that era is now known as Fintech 1.0.

The second technological breakthrough in the financial industry took place in 1967 with the introduction of 'automated teller machines' (ATMs, i.e. cash machines) by the Barclays Bank. This British innovation was quite quickly adapted by American (NCR) and German (Siemens-Wincor) manufacturers, who later came to dominate the world market. The evolution of this technology perfectly illustrates the change that took place in the organisation of financial institutions. Firstly, they started to digitalise and automate financial transactions in real time, which later made it possible to create electronic banking systems. Secondly, ATMs freed up a large proportion of the human resources (tellers) needed at bank branches to serve customers who wished to withdraw cash. These two trends, i.e. the beginnings of the process of digitalising services and the gradual transfer of employees to other areas of a company's operations, are also characteristic of the Third Industrial Revolution, which began in the late 1960s and involved the use of programmable controllers for further production automation (Kagermann et al., 2013). The period from 1967 to 2008 is now called Fintech 2.0.

Today, Fintech is in its third stage of development and, unlike with the first or the second ones, it was not a technological breakthrough that marked its beginning. It is widely acknowledged that the third era started in 2008 with the beginning of the global financial and economic crisis, which provided the trigger for a further development of this industry. Given the problems faced by large financial institutions all over the world, new start-ups and established technology companies began to provide financial products and services directly to the public, bypassing the major players in the field, mainly banks. This change was made possible by altering the way consumers think about who in the industry has the legitimacy and

resources needed to provide financial services (Arner, Barberis, & Buckley, 2015).

A number of different Fintech classifications (Gimpel, Rau, & Röglinger, 2018) can be found in the literature and industry reports. One of them (Deloitte, 2016) divides Fintech solutions into two parts:

1. **Established financial technologies**, which include banking, insurance, asset management, and capital markets; in particular, they comprise IT solutions developed directly by the employees of a given financial institution or by an external supplier in support of such primary areas of activity as CBS (Capital Budget System), CRM (Customer Relationship Management), billing, online/mobile banking, trading, compliance, etc.; other solutions concern aspects such as: improving the offer, sales and service model, capabilities or process efficiency of banking, insurance, and asset management players (e.g. API – Application Programming Interface, alternative trading schemes, foreign exchange platforms);
2. **Emerging financial technologies**, which comprise:
   - payments, i.e. IT solutions supporting payments, money transfers, and cash handling, which may include, e.g., mobile payment terminals (mPOS) or NFC payments, software and infrastructure for Internet and mobile payments, cryptographic or prepaid and non-bank debit cards;
   - capital raising and personal finance, i.e. systems designed for non-banking capital raising and financial management, e.g. peer-to-peer (P2P) lending markets, micro-loans, social finance, mobile financial advice, solutions intended to encourage saving habits;
   - cybersecurity, i.e. solutions for increasing security both at the level of the entire financial system (including data security, protection against fraud, customer verification schemes) and at the level of individual users;
   - data and analytics, i.e. solutions enabling financial analyses based on large datasets, (e.g. analytical software, credit scores, and data-based market analyses for financial institutions);
   - other software – software not otherwise classified, including distributed ledger technologies (databases that can securely record financial, physical, and electronic assets for sharing across a network through entirely transparent updates of information) as well as systems and applications supporting the financial functions of companies (such as accounting, controlling, and debt collection).

Another convenient and up-to-date overview of Fintech's classification was presented by Chen, Wu and Yang (2019). Here, the Fintech industry was broken down into 7 areas: cybersecurity, mobile transactions, data analytics, blockchain, peer-to-peer (P2P), robo-advising, and the Internet of Things (IoT).

The development of Fintech in Central and Eastern Europe

The societies of Central and Eastern European countries quite readily accept various innovations in the area of finance. This provides a fertile ground for the development of assorted Fintech solutions, which is a trend supported by industry reports. For example, more than 90% of Slovenian companies issue and receive invoices in electronic format through their electronic banking systems (Deloitte, 2016). Data from MasterCard reveals that 50% of Slovak cardholders pay using contactless technology and 75% are willing to use (or will continue to use) it in the future. According to the ING International Survey 2015 (ING, 2015), 60% of smartphone users in Poland have already used or expect to use mobile banking apps, which is the third best result in Europe, just behind the Netherlands (67%), the United Kingdom (63%), and on a par with Spain. Another example of consumers' readiness to use financial innovations in the Polish banking sector is the use of contactless debit cards. Almost 80% of all the cards issued

in Poland have dedicated chips, compared to 54% in the UK.

According to Deloitte's calculations (2016), the value of the Fintech sector in 9 Central and Eastern European countries totals 2.2 billion euros. Poland emerges as a clear leader in the region, ahead of Austria and the Czech Republic.

In recent years, Fintech companies have shown a particular interest in payments, since in the era of numerous breakthrough solutions and the growing popularity of e-commerce, this area has become remarkably profitable. Poland and the Czech Republic have emerged as regional leaders owing to the development of sophisticated payment solutions where transactions are processed by robots, which enables rapid order execution.

The main barriers to further development of the CEE markets are posed by regulatory issues. Public institutions quite often introduce special requirements or restrictions which hinder the implementation of innovative financial solutions. Countries with less-developed economies and limited internal demand are usually less attractive for the Fintech industry. The favourable features of business environments, such as low tax rates and competitive labour costs, attract young start-ups intention to succeed in CEE countries (Deloitte, 2016).

Table 1. Fintech market in CEE countries

Country	Fintech market size (in million euros)
Poland	856
Austria	588
Czech Republic	190
Slovenia	121
Romania	119
Croatia	92
Hungary	83
Slovakia	73
Bulgaria	39

Source: Own elaboration based on Deloitte (2016, p. 75).

Development-related factors and impacts on the financial sector

Puschmann (2017) identifies a range of factors conducive to the development of Fintech in the traditional banking and insurance industry over the past several years. Firstly, it was the internal digitalisation of financial institutions. The first attempts to use the IT potential focused on internal processes, such as payment transactions or portfolio management. In the initial stages, banks and insurers embarked on the automation of financial services processes mainly with a view to increasing their efficiency. Firms offered only one or two customer service channels (branch/consultant or insurance agent + ATM) and focused on support, mostly through back-office services. The integration of IT systems at that time did not exist or was only partial. It emerged and developed at the third stage, where the first multi-channel approaches were adopted.

Chronologically speaking, the next development factor involved provider-oriented digitalisation. At this stage, financial institutions began to integrate their suppliers. To that end, they introduced uniform rules for the standardisation of processes and software functions. The outsourcing of business processes began with support areas such as IT, and only later did it involve the back-office areas such as payments, investments, and credit service. Currently, the degree of utilisation of own resources in business processes is relatively high in German-speaking countries, such as Germany (73.8% in-house production), Austria (77.5%), and Switzerland (90%). Other European countries usually display lower rates, e.g. Luxembourg 50.7% or Sweden 53.8% (Alt, 2016).

The latest Fintech development factor involved customer-oriented digitalisation processes. This area focuses on the needs and expectations of clients and it redefines the existing product-oriented logic towards creating new solutions. Early examples of this approach comprised electronic wallets, including not only payments, but also the ability to collect, store, and issue loyalty points and

other personal data. These new services also take advantage of the development of peer-to-peer (P2P) business models. In Poland, this development is perhaps best exemplified by the Internet exchange offices, which entered the market quite quickly and continue to operate successfully largely due to the demand for this kind of services on the part of people who pay off foreign currency loans. Owing to the automation of currency exchange processes, the scale of operations of these entities makes the currency spreads much more competitive than those offered by traditional exchange offices. In this case, Fintech's solution has, on the one hand, reduced the required human resources and, on the other, solved the problem of building expensive infrastructure needed to secure the premises of an exchange office.

The development of Fintech provoked a discussion on its potential threats to the traditional financial sector. In the literature and industry reports, opinions are divided. Although the innovations created by Fintech are considered to have a destructive impact on the financial services sector (Waupsh, 2017; Zalan & Toufaily, 2017; PwC, 2017), some analysts assert that both sectors will find their market niches and their services will prove to be complementary (Vives, 2017). Fintech solutions providers undoubtedly increase competition in financial markets, provide services that traditional financial institutions do less efficiently or not at all, and expand the pool of users of such services. Yet, they cannot replace banks in most of their key functions. Fintech solutions devise ever more efficient ways of delivering traditional financial services, but banks are also well-prepared to accept technological innovations and provide these traditional services themselves (Vives, 2017).

Fintech is an industry that commonly uses new technologies, which are inherently associated with high innovation, but also with the complexity and uniqueness of products and services (Gozman, Liebenau, & Mangan, 2018; Schueffel, 2017; Wonglimpiyarat, 2019). The literature even uses the term "technological complexity" (or "technology complexity") (Cagliano et al., 2019; Cheah, Bellavitis, & Muscio, 2021; Hoffecker & Hoffecker, 2017). "Complexity" is often used nowadays (in economy, in engineering, and in other disciplines), but different approaches to – and aspects of – complexity are often mixed up. Hausmann, Hwang and Rodrik (2007) suggested two simple empirical measures of product complexity. It is represented by the income level associated with that product, and it is calculated as a weighted average of the income per capita of the countries that export the said product. Products become more complex in terms of the capabilities they require; they become less accessible from the point of view of local production (Hausmann & Hidalgo, 2011). The operationalisation of the concept of uniqueness in literature is poorer than that of complexity. For the purposes of the research, it was assumed that uniqueness is the quality of being the only one of its kind, which is the opposite of ubiquiti.

Material and methods

For many years, the level of the embeddedness of Kraków's business services centres (BSCs) has been discussed by the industry's representatives and local government. In 2005, when a regular inflow of such companies to Kraków began and employment in the sector grew very dynamically (20–30% per annum on average (Aspire, 2019)), more and more concerns were raised about the stability of employment for a large proportion of the city's population in the event of a further increase in labour costs and potential relocation to other parts of the world (e.g. India). Nevertheless, the Kraków's BSCs environment believes that recent years have seen a steady increase in the complexity of services provided by them. In this light, the aim of the discussion below is, firstly, to verify this opinion, and, secondly, to identify the links between the change in the nature of services and the technological changes in the area of finance. The following are the findings of research conducted in 2018 and 2019 among the CEOs (15) in branch managers of companies operating in Kraków,

and their employees (316). In the part covering technological change, the survey contained questions about the complexity and uniqueness of the services provided. The respondents rated the current characteristics of the processes (on a 1–5 scale, where 1 meant "not complex/unique at all," and 5 meant "highly complex"), and the change in complexity/uniqueness that took place over the last 5 years (1 – "significantly decreased," 3 – "no change," 5 – "significantly increased").

The employees were also asked to evaluate the technological changes in the last 5 years (on a 1–5 scale, where 1 meant "no change," 5 – "very big change," whereas 0 – "don't know") that took place in the main areas of their companies' activity: finance, human resources, IT, research & development, supply chain management, help desk, information security, technology tools, cloud platforms, and others.

The research verified the following hypotheses:

1. The last 5 years saw profound changes in the complexity and uniqueness of services provided by BSCs in Kraków.
2. Changes in the complexity and uniqueness of the provided services are associated with the process of technological change.

Results and discussion

In order to verify the first hypothesis, a simple frequency analysis was used (see Table 3), which shows that more than 70% of the employees believe that the complexity of their services is high or very high; only less than 8% responded that the services are "not complex at all" or are "complex to a very small extent." As far as uniqueness is concerned, the distribution of responses almost perfectly follows normal distribution. This means that according to the employees of Kraków's BSCs, the services that they provide are characterised by an average level of uniqueness.

When analysing the changes in complexity and uniqueness that occurred in the last 5 years, one can see a clear upward trend in complexity (almost 73% of the respondents believe that the positive change in this respect was large or very large, whereas only 6.5% say that the change was negative) as well as a slight increase in uniqueness (almost 45% of the respondents believe that the positive change was large or very large in this respect, whereas less than 9% think that it was negative). However, it is worth noting that a large group of the respondents (46.5%) reported no change in uniqueness.

Table 2. The current complexity and uniqueness of processes performed by BSCs operating in Kraków in the opinion of their employees (N = 316)

Complexity				Uniqueness			
Rating	**No. of responses**		**Percentage**	**Rating**	**No. of responses**		**Percentage**
1	2		0.65	1	43		13.92
2	22		7.12	2	67		21.68
3	65		21.04	3	98		31.72
4	130		42.07	4	70		22.65
5	90		29.13	5	31		10.03
Mean	**Median**	**Mode**	**Standard deviation**	**Mean**	**Median**	**Mode**	**Standard deviation**
3.9191	4	4	0.91697	2.932	3	3	1.1837

Source: Own elaboration.

Table 3. Changes in the complexity and uniqueness of processes performed by BSCs operating in Kraków in the last 5 years in the opinion of their employees (N = 316)

Change in complexity in the last 5 years				Change in uniqueness in the last 5 years			
Rating	**No. of responses**		**Percentage**	**Rating**	**No. of responses**		**Percentage**
1	4		1.30	1	9		2.93
2	16		5.19	2	18		5.86
3	64		20.78	3	143		46.58
4	147		47.73	4	96		31.27
5	77		25.00	5	41		13.36
Mean	**Median**	**Mode**	**Standard deviation**	**Mean**	**Median**	**Mode**	**Standard deviation**
3.8994	4	4	0.88026	3.4625	3	3	0.90083

Source: Own elaboration.

Surveys conducted among the CEOs support the conclusions drawn from the employee-oriented survey. The distribution of answers concerning complexity is very similar. In terms of uniqueness, the answers of the surveyed CEOs suggest that it is indeed above average in comparison with other branches of their companies.

As to the change in complexity over the last 5 years, the CEOs considered it to be large or very large. No one reported a downward trend in this parameter in recent years. The CEOs also considered the change in uniqueness to be rather positive (71%), and the extent of this change does not differ much from the extent of change in complexity.

During the research, employees and the CEOs were asked about the impact of technological changes in the last 5 years on the area of finance. The results among employees show that over 40% of the respondents are not able to assess such an impact. This is probably due to a lack of knowledge in this regard. However, if we do not take these responses into account, there is a clear advantage of high ratings for such an impact. These conclusions are additionally reinforced by the results obtained from the CEOs' answers,

Table 4. The current relative complexity and uniqueness of processes performed by BSCs operating in Kraków in the opinion of their CEOs (N = 15)

Complexity				Uniqueness			
Rating	**No. of responses**		**Percentage**	**Rating**	**No. of responses**		**Percentage**
1	0		0.00	1	0		0.00
2	2		15.38	2	0		0.00
3	1		7.69	3	3		21.43
4	5		38.46	4	6		42.86
5	5		38.46	5	5		35.71
Mean	**Median**	**Standard deviation**		**Mean**	**Median**	**Standard deviation**	
4.1429	4	0.7703		4.0000	4	1.0801	

Source: Own elaboration.

Table 5. Change in the relative complexity and uniqueness of processes performed by BSCs operating in Kraków in the last 5 years in the opinion of their CEOs (N = 15)

Change in complexity in the last 5 years			Change in uniqueness in the last 5 years		
Rating	**No. of responses**	**Percentage**	**Rating**	**No. of responses**	**Percentage**
1	0	0.00	1	0	0.00
2	0	0.00	2	0	0.00
3	2	15.38	3	4	28.57
4	9	69.23	4	7	50.00
5	2	15.38	5	3	21.43
Mean	**Median**	**Standard deviation**	**Mean**	**Median**	**Standard deviation**
4.0000	4	0.5774	3.9286	4	0.7300

Source: Own elaboration.

Table 6. The impact of technological changes on finance

Rating	**Assessment of the impact of technological changes on finance**			
	Employees (N = 299)		**CEO (N=13)**	
	No. of responses	**Percentage**	**No. of responses**	**Percentage**
0 (I do not know)	126	42,1	0	0,0
1 (no change)	9	3,0	0	0,0
2	22	7,4	1	7,7
3	39	13,0	1	7,7
4	55	18,4	4	30,8
5 (very high change)	48	16,1	7	53,8

Source: Own elaboration.

Table 7. Correlations between the complexity/uniqueness of processes performed by BSCs operating in Kraków and technological changes (in the opinion of their employees)

		Change in complexity in the last 5 years	**Change in uniqueness in the last 5 years**
Technological changes in the last 5 years in…	finance	**0.2250**	**0.2182**
	human resources	0.1429	0.0677
	IT	0.1159	–0.0037
	research & development	0.1150	0.0555
	supply chain management	0.1225	0.0305
	help desk	0.0629	0.0823
	information security	**0.2503**	0.0877
	technology tools	0.1394	0.0944
	cloud platforms	0.1483	0.0568
	other	0.0656	0.0118

Source: Own elaboration.

as they almost unanimously indicated the high or very high impact of technological changes on the functioning of the financial industry.

The process of verifying the second hypothesis consisted in calculating the correlation between changes that occurred in complexity and uniqueness of the provided services, and technological changes in specific areas of operation. The analysis reveals that even though the correlations are positive, they are mostly very small. However, it is worth noting that finance (in comparison with both complexity and uniqueness) is characterised by a much higher level of correlation than other areas of operation. Moreover, a slightly higher correlation is noticeable between technological changes and complexity.

Based on the results (Table 7), it can be concluded that the information security (IS) area (0.2503) shows the highest value of the correlation coefficient with technological changes. It is quite obvious due to the specificity of this area and the increasing requirements for information security in recent years. It should be noted that in this area there was also a fairly low correlation between IS and uniqueness change, which may suggest that technological changes have influenced complexity change positively, but this is a change that is quite common. Finance is the only area of analysis that shows a clearly higher positive correlation of changes in both areas. This means that technological changes influenced complexity and uniqueness more than in other areas of the functioning of BSCs.

So far, not many in-depth studies have emerged that attempted to estimate the relationship between the Fintech sector and BSCs. Research on the activities of the BSCs sector in Kraków was conducted by Micek, Działek and Górecki (2010). Various forms of the impact of these companies on the environment have been distinguished. The first form is employment of service centres emerging at suppliers. The second form of influence is the income of local and regional budgets from taxes. The third type is the impact on the development of human capital in the city (the centres provide employment opportunities similar to the field of study and the use of knowledge and skills from studies). The last form of influence is shaping positive relations with local communities. An interesting result of these studies was also the statement that the degree of entrenchment of service centres is related to their size and the period of operation in Kraków. Larger and older centres are characterised by a greater network of local connections than smaller ones. Kliber et al. (2021) present the stage of the development of the Polish Fintech sector and identify the main opportunities and challenges to the formation of new companies. They observe positive trends in education, such as the constantly rising interest in IT, economics, and finance. On the other hand, the study demonstrates that regulations are the main obstacle for the development of Fintech. The companies consider them ambiguous, imprecise, and requiring too much bureaucracy. There have been several attempts to measure the average complexity of products. The proposed measures build on methods that infer the complexity of economies by iteratively weighing the variety of products produced in a country and the ubiquity of these products in other countries. Such indirect measures of complexity have been used to explain income differences across countries and their growth rates over time (Cristelli, Tacchella, & Pietronero, 2015; Hidalgo & Hausmann, 2009; Tacchella et al., 2012).

Concluding remarks

Automation and robotisation – two processes primarily associated with the manufacturing sector – began to expand into the services sector with the advent of the Fourth Industrial Revolution. It manifests in phenomena such as the Internet of Things, sharing economy, and robotic process automation. All of these have had a considerable impact on the outsourcing and offshoring sector. Fintech is one of the main beneficiaries of the Fourth Industrial Revolution in the services sector. Its success is primarily due to the specific features

of the offered products, which mostly involve data collection and processing with no physical element necessary in the process of service provision. Consequently, the vast majority of processes can be automated using algorithms, which offers a huge potential to the IT industry, especially if this is done by strong established financial institutions such as banks and insurance companies. However, the picture of the industry is diverse, since alongside the traditional financial institutions, small start-ups appeared immediately after the 2008 crisis and tried to take over part of the profitable market from banks.

The analysis of employee-oriented surveys shows that in recent years, the complexity of services provided by the BSCs in Kraków has increased appreciably, whereas their uniqueness remains average and has changed only slightly. This can translate into the employees' opinion that Kraków's BSCs have recorded a major change in complexity, but the global financial industry has also significantly changed and has benefited from automation and robotisation of the simplest processes, with human labour being needed to carry out increasingly sophisticated tasks. These conclusions are supported by the findings of a survey conducted among the CEOs, who opine that both the complexity and the uniqueness of services are high or very high in Kraków; moreover, the change in both parameters in the last 5 years has been identified as positive. Assuming that CEOs usually have more experience and have a broader view of the context of outsourcing and offshoring activities, their responses can be considered as mirroring the facts somewhat better. The results of the analysis show that BSCs companies in Kraków have a high potential to develop services in the field of new financial technologies. Research has shown a significant relationship between the technological changes that occurred in the last 5 years in the BSCs sector and the complexity and uniqueness of the services provided by this sector.

In many cities of CEE, the BSCs sector is one of the most important employers. For example, in Kraków, this sector employs approx. 10% of the city's population (Aspire, 2019), which is higher than the total employment in Kraków's Lenin Steelworks[1] in the 1970s. The research results can be important for public authorities, which should support the development and embedding of BSCs through a number of activities. One of the possibilities is to support high-quality education by creating conditions and encouraging cooperation between universities and BSCs-related companies. Such a cooperation could be carried out both in the area of staff education (e.g. participation of BSCs' employees in the training process) and by means of jointly carrying out scientific research. Considering that the Fintech industry is developing quite well in CEE countries, it can also be an important element of creating added value (Geodecki, 2020; van Dam & Frenken, 2020).

The limitations of the research mainly concern the local nature of the analysis. The results are based on a survey conducted in companies operating in Kraków. Therefore, in further research, it is worth examining in detail the analogous relationships in other BSCs, especially in other parts of Central and Eastern Europe (e.g. Prague, Budapest). Such research would provide a broader view of the issues of technological development in the financial industry as well as it would be a valuable reference point for more detailed analyses.

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Sustainable Urban Development and Office Location

Abstract

Objective: The paper explores the criteria of selecting a location for new office projects by developers, as well as analyses them in relation to the principles of sustainable urban development. Real estate market's participants should be part of the sustainable urban development process due to the impact of the built environment on cities' functioning. The overall research question has been about whether there is an intersection between the need for sustainable urban development and locational preferences of office developers.

Research Design & Methods: The paper discusses results of qualitative research (semi-structured interviews) among office developers in Cracow. The focus of the research has been narrowed down to selected aspects of the complex relations between the real estate market and urban development, namely the location of office buildings.

Findings: The developers emphasised access to well-developed public transportation networks as well as access to urban amenities and services as crucial features of good location, attractive for end-users. Thus, the attractive location of an office building is, to large extent, consistent with the principles of sustainable urban development.

Implications/Recommendations: The research findings emphasise the significance of the market participants' awareness of the concept of urban sustainability, as this leads them to exert pressure on developers to create more sustainable buildings and choose more adequate locations. Furthermore, local sustainable urban development strategies and policies create a framework for developers to make more sustainable choices of location.

Contribution/Value Added: This is an original contribution to knowledge on the dynamically-growing office market in Cracow, which I am hoping to have achieved by means of revealing developers' office location preferences as well confronting these preferences with the urban sustainability requirements. The article broadens the analysis of office location preferences by adding the context of urban sustainability. Due to the significance of these findings for urban development, the research opens opportunities for further analysis on a more comprehensive sample.

Keywords: sustainable urban development, office location, office developer, semi-structured interview, commercial real estate

Article classification: research article

JEL classification: R3; O18; Q01; Q56

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Introduction

Accelerating urbanisation is a fact. Scientific discourse and development policies focus on the quality of urban growth rather than mere facilitation of it, and the concept of sustainable development has been incorporated into urban development policies, since this seems to be the best solution to the negative consequences of economic growth nowadays. The concept of sustainable urban development (Hassan & Lee, 2014) raises expectations as to more healthy, aesthetic, safe, economically-viable, clean, ecologically-unburdening, human-scale cities. The Bruntland Report (WCED, 1987) included the first commonly accepted definition of sustainable development that "meets the needs of the present without compromising the ability of future generations to meet their own needs". The concept of sustainability also inspired the transformation of the economic and social growth paradigm into the sustainable growth paradigm based on the principles of intergenerational, intra-generational, geographical, procedural, and interspecies equity (Haughton, 1999).

The paper follows the essential assumption of the gravity of the influence of the built environment on sustainable urban development (Braun, Cajias, & Hohenstatt, 2017). Commercial buildings not only shape physical urban structure and impact the natural urban environment (carbon footprint, use of natural resources, building materials, waste), but they also impact urban mobility and urban economy. The office sector reacted to its responsibilities towards the environment by constructing sustainable buildings, whose negative ecological impacts are minimised. However, sustainable office buildings (Kibert, 2013; Shiers, 2000; Zuo & Zhao, 2014) – which became the prevailing type of office in the so-called developed countries – still generate urban problems, namely increased traffic, disorder in urban functions (homogenous urban districts negatively influencing urban sustainability both socially and economically), and environmental disruption in the area (air corridors, burden to natural habitat). Thus, the analysis of impacts of the real estate sector on urban sustainability should be extended to cover the urban perspective, as the single-buildings approach is not sufficient. In this context, we analyse the city–building relations based on the location of a building, whose consequences impact the natural environment, transportation capacity, and land use in cities. The primary focus of the research is on the attributes which make an office building attractive for users and investors. The existing literature reports the high significance of an office's transportation accessibility (Adnan, Daud, & Razali, 2015; Remøy & van der Voodt, 2014), access to urban amenities (Rebelo, 2011), and prestige of location (Harris, 2016; Levy & Peterson, 2013) but cost-related factors have also been noted to impact location decisions (Appel-Meulenbroek, 2008). However, the influence of office location on urban environment has been seriously under-explored.

Despite a large body of research and literature on office location, as well as on urban sustainability, there exists considerable research gap, which this study attempts to fill. Namely, the concept of sustainable office location has not been clearly defined so far, nor has it been investigated. Sustainable location has been analysed in few studies, with reference to facility location and with focus on large-scale, industrial, specialised public or private facilities (An et al., 2015; Fischetti, Ljubic, & Sinnl, 2017). Raising a business's environmental awareness prompted the extension of the criteria for selecting a location with sustainability aspects (Rao et al., 2015). With reference to urban sustainability, the location of facilities should be planned and selected with the consideration of economic, social, and environmental consequences (Hammad, Akbarnezhad, & Rey, 2017; Izadikhah & Saen, 2016). There have been attempts to define sustainable residential location and the analysis focused on mobility patterns and transportation costs as main factors of the impact on environment, economy, and the quality of life (Tischler & Mailer, 2016). In several studies, sustainable location of industrial facilities have been investigated, but the research explicitly dealing with social, economic,

and environmental impact on urban sustainability of office location is extremely rare or non-existent, or else it deals with narrowly-defined issues (e.g. Aarhus, 2000). Even in sustainable buildings certification schemes, location categories are of minor significance, but it could be assumed that responsible investors and users would consciously select locations in a socially- and environmentally-responsible manner. However, the body of research which could confirm this is very limited. Only Smith and Bereitschaft (2016) analysed actual locations of projects rated according to LEED-ND[1] (USGBC, 2016), and concluded that most sustainable locations of LEED-ND projects were within densely urbanised areas, especially central areas of large cities and metropolitan regions, marked by public transportation accessibility, walkability, diversity of uses, and re-use of land (infill and brownfield development).

The aim of the paper is twofold. It seeks to reveal the developers' criteria of selecting new office projects' location. The analysis of urban sustainability principles (with focus on those referring to the location of urban functions and the organisation of transport) makes it possible to assume what the features of sustainable office location should be. The ultimate goal of this article is to set office location criteria against urban sustainability principles in order to conclude on the possible compatibilities between the real estate market's needs and the requirements for sustainable urban development.

The analysis is consists of five sections. Following the introduction, the next section provides the theoretical framework for the analysis. For research purposes, based on literature review, spatial attributes of the sustainable city are identified. To build foundation for empirical research and to strengthen assumptions regarding the existing compatibilities between office market participants' needs and the requirements of sustainable urban development, a thorough literature review on office location has been conducted as well as crucial attributes of an attractive office have been identified and classified. The next section presents the methodology – qualitative research conducted in Cracow's office market, i.e. among office developers' representatives who had developed or were in the process of developing 75% of modern office stock in the city. The subsequent section presents and discusses developers' preferences for new office locations in Cracow, with special attention paid to 'sustainable' location attributes in the subsection on research findings. The study concludes with a number of closing remarks.

Literature review

Sustainable development is a globally acknowledged model for urban development (European Commission, 2010; United Nations, 2016), which includes the principles of the concept of sustainable development as well as complements economic growth with environmental and social aspects (Fu & Zhang, 2017). Based on the principle of equity, sustainable urban development balances economic development, with environmental considerations and social issues taken on board. Urban sustainability – the desired state of urban development – consists of several interweaving and interdependent dimensions: economics, ecology, culture (or social issues), and politics (James et al., 2015). The spatial aspects of urban sustainability, significant for this research, are included into environmental or socio-economic issues of sustainable urban polices (Hassan & Lee, 2014; Turcu, 2013) and they cover matters connected with built environment, transportation networks, public spaces, land use, city structure, urban sprawl, and location of urban functions. Thus, the fundamental attributes of environmentally-sustainable city could be narrowed down to the density of the urban form and the diversity of functions (mixed-use) on the one hand, and to accessibility to public transport and non-motorised

[1] The LEED Neighbourhood Development certification system is not applied to rating developments in Poland, as is also the case with the BREEAM Communities, which evaluates the sustainability of developments, but not of single buildings.

transportation system on the other (Wheeler, 1996). The aspects of density and diversity originate from the concept of compact city (Lim & Kain, 2016), in which walkable, dense, diversified districts are not only economically-, but also socially- and environmentally- sustainable due to their proximity to urban services and jobs, the minimised use of car for transportation, the shortening of commuting time, higher energy and resource efficiency, and improved socialising (Cho & Rodriguez, 2015). Public transportation – the accessibility of well-developed networks – is of crucial significance for a city's ecological footprint.

The physical location of an office, which is a part of an investment and corporate strategy of the real estate market's participants (Telega & Zięba, 2016), also impacts urban development by an increased demand for transportation facilities, urban amenities, ecological footprint, and impact on land-use structure, among other things.

This paper focuses on the criteria of location-related decisions for new office projects rather than on the very decision-making process. The real estate industry considers location as one of the crucial variables in achieving investment profits.

Business location refers to a *general location* within a country, region or city and *site selection (exact location)* determined by specific attributes of parcel of land and its location within an urban area (Rymarzak & Siemińska, 2012). Here, we focus on the exact location within a specific urban area. Site selection criteria for new office projects have been subject to several studies, and the categories of location-related factors that are highly valued by demand-representing end-users are well recognised.

The analysis of hitherto conducted research on offices' locations makes it possible to categorise important locations' attributes. These include: **accessibility** (transportation, infrastructure, services, networks), **proximity** (to central business district and agglomeration economies, business services, to employees, suppliers, and customers), the **availability** of amenities, facilities, and urban services, the **quality of the area** (prestige, status, symbolic meaning of a location), and the influence of **planning and fiscal tools** and public investments (local government interventions) (Rebelo, 2011).

In the light of fast and intensive urbanisation, the **accessibility** of corporate office has become the first and most important feature of contemporary office. Accessibility – understood as connectivity and centrality (Willigers & Van Wee, 2011) provided by public transportation networks, availability of transport options, and commuting distance and time – has been the crucial aspect of an office's market attractiveness, and it is the feature common for all types of offices, places of work and organisations. This has been sufficiently confirmed by research (Adnan, Daud, & Razali, 2015; Appel-Meulenbroek, 2008; Archer & Smith, 2003; Gluszak & Zięba, 2016; Greenhalgh, 2008; Jennen & Brounen, 2009; Leishman et al., 2003; Manzato et al., 2011; Remøy & van der Voodt, 2014; Safian & Nawawi, 2013). The significance of the accessibility of a corporate office is a logical consequence of the organisation of white-collar work, which requires regular commuting to office buildings in routine working time and in fast growing metropolises; this critically strains transportation system.

Users of offices are leaning towards locations that provide direct access to urban **amenities**, inner city facilities, local and urban services, which consist of recreational facilities, healthcare, shopping, childcare, restaurants, urban greenery, local administration, banking and post services (Adnan, Daud, & Razali, 2012, 2015; Adnan & Daud, 2010; Rebelo, 2011; Remøy & van der Voodt, 2014). Despite differences in requirements between large and small organisations, accessibility to amenities is rather universal (Remøy & van der Voodt, 2014).

Business aspects of location accessibility relates to **proximity** to employees, suppliers and customers and business services as well access to **positive externalities** ensuing from concentration of various business activities (Adnan, Daud, & Razali, 2012, 2015; Adnan & Daud, 2010; Dettwiler, 2008; Fagg, 1980; Greenhalgh, 2008; Jennen & Brounen, 2009;

Leone & Struyk, 1976; Mun & Hutchinson, 1995; Rebelo, 2011; Remøy & van der Voodt, 2014). Agglomeration economies in the form of horizontal relations and intra-industrial concentrations play more important role in determination of location patterns in urban areas (He & Romanos, 2016).

Location of an office in a specific urban area for many organisations has been part of their market image and reputation. Consequently, **prestige of location**, symbolic meaning of a location, safety, quality of neighbourhood, visibility have been significant criteria for site selection (Adnan, Daud, & Razali, 2012, 2015; Appel-Meulenbroek, 2008; Greenhalgh, 2008; Harris, 2016; Krätke, 1992; Levy & Peterson, 2013; Rebelo, 2011; Remøy & van der Voodt, 2014; Rymarzak & Siemińska, 2012). The features making a location prestigious have been changing. In most cases, however, it is the central urban location (Central Business Districts) which is considered the prime location that tends to attract large multinational corporations able to pay higher rents, aware and attentive of their market reputation.

Additionally, a location's economic aspects – i.e. its impact on investment efficiency as well as its costs and value – are taken into account when making location-related choices; the decision to choose corporate office and its location is made based on cost factors (Appel-Meulenbroek, 2008; Gluszak & Zięba, 2016; Leishman, Orr, & Pellegrini-Masini, 2012; Rymarzak & Siemińska, 2012; Adnan, Daud, & Razali, 2015). 'Cost factors' or 'total occupancy costs' include rent levels, operational and maintenance costs; fit-out costs are remarkably more important for smaller organisations, more vulnerable to financial burdens (Levy & Peterson, 2013). The cost of energy constitutes the most significant share of maintenance costs, hence the energy performance of a building tops the list of the most desired attributes of an office. Total occupancy costs tend to increase in central business districts with rising rent level in premium locations. Demand for central locations is part of self-reinforcing pattern, i.e. a central location draws companies which highly value prestige and transportation as well as the 'urban comfort' of a site, hence pushing rents up and thus pushing away less affluent tenants (Remøy & van der Voodt, 2014; Adnan, Daud, & Razali, 2015). Cost factors may gain on significance in relation to the phase of business cycle (external economic conditions), whereby the economic recession fosters a selection of suburban, less costly offices, while in times of the economic boom, companies' market position is expanding (in particular, knowledge-intensive firms are inclined to relocate to city cores or business parks) (Dettwiler, 2008).

The needs of the end-users generally determine the criteria of selecting a new office location by investors and developers. And even in the case of sustainable buildings (i.e. offices marked by higher and stricter sustainability standards), these criteria typically focus on transportation accessibility and the proximity to urban amenities and services (Adnan, Daud, & Razali, 2015; Adnan & Daud, 2010) (Adnan, Daud, & Razali, 2012) as well as the overall 'economic aspects of location', such as proximity to clients (Remøy & van der Voodt, 2014).

Research methodology

Investigating developers' criteria for selecting an office location for new projects that would be compatible with urban sustainability is part of broader research on the sustainability of office locations in Cracow.

There has been research on sustainable sites for new office projects in one of Cracow's districts (Telega & Zięba, 2016), with application of spatial research tools, but it did not include the enquiry into decision-making criteria which are important for developers. Thus, the lack of knowledge about office location preferences expressed by office developers motivated the author to conduct qualitative research in order to reveal location-related preferences.

In the Polish office market, dominated by the capital city Warsaw (58% of the total office stock in the country), Cracow, being second largest

city, is also the second biggest office market among the group of 8 'regional cities', with 9,8% of the country's office stock in mid-2016 (Kołodziejczyk, 2016). The growth of the city office stock has been immense, with cumulative supply doubled in the period of 2012–2017 (Knight Frank, 2017). Being a major location of BPO services in Poland, the city's economy benefits from new investments and inflow of people and capital, but the city also struggles with traffic congestions, extreme air pollution, increasing house prices, and real estate market pressures on releasing sites for new construction. With the ecological and social burdens of the city's economic growth, the issue of sustainable urban development becomes critical.

Semi-structured interviews were selected as method for this research. Unstructured interviews would not have provided comparable answers, whereas standardised interviews could have led to biased results if important decision-making criteria had not been included into alternative responses. The application of open-ended questions in interviews allows respondents to freely express their opinions and raise issues relevant to questions. Typically, when more intensive study of motivations and perceptions is conducted, a more flexible approach – less structured interviews – is more appropriate (Selltiz et al., 1967). It is, however, more time-consuming method, which requires specific knowledge on the part of the interviewer. Semi-structured interviews were an appropriate choice, especially since the size of the research sample was small – a limited number of developers operating in office market in Cracow – and the researcher possesses knowledge about the topic. This method had already been applied in research focused on the identification of preferences in the real estate market (tenants, users, etc.) (Safian & Nawawi, 2013).

The semi-structured interviews were conducted with experts who represented (as project managers) commercial developers in Cracow. The interviews were carried out between January and March 2017. The criteria for selecting developers were that they develop modern office space, with office buildings certified with one of green certificates (e.g. BREEAM, LEED). The interviewed developers operate according to the same scheme: they make investment decisions, manage projects development, commercialise office space, and manage operating buildings until a decision on the sale (typically to an investment fund) is made after several years of operation. Only green office developments were under scrutiny here, as sustainable office buildings allow the developers to assume a higher level of the environmental awareness. The one-to-one interviews were conducted with 3 office developers' representatives in Cracow (out of 6 green office developers identified).

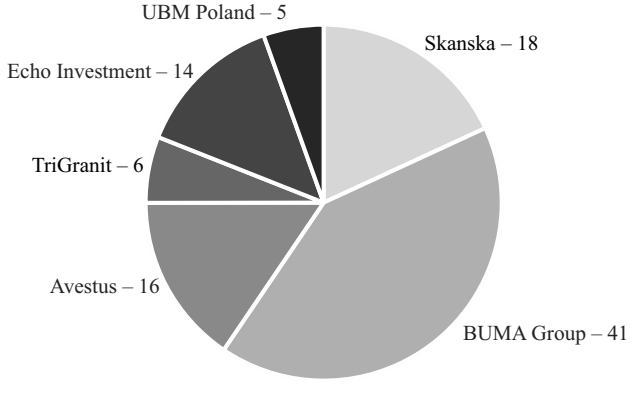

Figure 1. Developers and their share of green office space in Cracow as for March 2017 (in %)

Source: Own calculation by Author based on information published by developers.

The share of 3 developers: Avestus, BUMA Group, and Skanska (Figure 1) in office projects makes the sample representative for office market in the city. There were – existent or under construction – 29 green office building in Cracow; total sustainable net office space in the market equalled 383 298 square metres at the time of research. Total office space in Cracow at the end of 2016 was estimated at 916 000 square metres (Knight Frank, 2017), so green office space under research makes for 31% of total office space in the city.

The three developers (Table 1) have developed or are in the process of developing office projects, which – in terms of their share in total green office space in Cracow – make 75% of available (and under construction or planned) certified office space, and are responsible for 21 new office projects in Cracow.

The first interviewee was an international developer operating in Central and Eastern Europe. The second one was from a major development and construction company operating worldwide. The third developer represented a major local company, i.e. a commercial and residential developer based in Cracow and operating since 1991.

The interviewees were informed about the general purpose of the interviews, i.e. the identification of the criteria for site selection for new green office projects. The questions had not been shared before the interview so that the experts could express their views without being biased. Also, more spontaneous answers revealed crucial locational factors or barriers in project development. On average, the interviews lasted between 40 and 80 minutes.

The interviews started with a general question about the main motive for certification of office buildings, for which we wanted a spontaneous answer and so we did not suggest any answer. This was followed by some more specific questions. Introductory questions (Questions 1 to 3; see Appendix) investigated motivations for certification, as we assumed these would reveal the developers' environmental awareness and the degree to which certification and the selection of location is the consequence of market motivations or/and conscious decisions to certificate buildings and select locations that contribute to sustainable development. The latter, detailed questions (Questions 4 to 6; see Appendix) reflected factors – as revealed by numerous research and analysed in the Literature Review section – typically representing the most attractive location attributes of an office and locations important to office users. The assumption behind these questions was that developers, being conscious of tenants and users' needs, realise new project in a location which is likely to be the most attractive one in a given area.

Table 1. The characteristics of interviewees – developers

Interviewees	Net green office space (in square metres)	Number of buildings	Certification system	Share of Cracow's green office market space
Developer 1	59 388	6 (in 1 location)	BREEAM (very good)	15.5%
Developer 2	69 457	5 (in 3 locations)	LEED (Gold or Platinum)	18.1%
Developer 3	158 551	10 (in 4 locations)	BREEAM (very good or excellent)	41.4%
All 3 developers	287 396	21		75.0%

Source: Own calculation by Author based on information provided by Developers.

Discussion

Criteria of office location in Cracow – findings from the interviews

The answer to the first, general question by two of the respondents proved that the decision to develop green buildings is motivated by *"tenants expectations"* or *'market expectations'*. Only Developer 2, who emphasised strong attachment to CSR policy and environmental consideration as a major cause for green-certification declared *'social and environmental considerations'* to be the main reason for certification, while other motives were tenants' and investors' requirements. For this one developer, sustainable development, the impact on the surrounding area, and the place-making were equally important. Additional spontaneous remarks revealed that, because of competition in the market and rising standards of office buildings, it is not just certificate that is important, but also its high level matters.

The relation between certification and site selection is rather insignificant – Developers 1 and 3 stated that location selection is not influenced by certification requirements. Only Developer 2 confirmed complying with some of the requirements, e.g. area of site that allows for provision of open green space, which may increase certification level. Minimum standards for any level of BREEAM certification do not require the fulfilment of location-related criteria.

The answer to the first of a series of detailed questions, one on project site selection, was unanimous – location must be attractive for tenants' needs and for investors, and this attractiveness is measured above all by **public transportation accessibility**, which is fully in line with research results worldwide (e.g. Adnan, Daud, & Razali, 2015; Remøy & van der Voodt, 2014). In case of downtown (Developer 2) and central location, crucial is access by public transportation, and in Cracow, accessibility of tramlines is most preferred, which means 10–15 minutes walking distance from a tram stop to the project site. A convenient and attractive location means that buildings' end-users commute up to 30 minutes by public transportation. Projects located less centrally (the case of some projects by Developer 3) are easily accessible also by car, as their are situated nearby major transit roads, but also close to a tram network. Access to cycling network has not been stated as crucial, although all developers provide facilities for bikers. Answers to the question on **parking spaces' availability** clearly indicate a relationship between the location and the significance of parking availability: the closer to the city centre (and thus better accessed by public transportation) the location is, the less important the provision for parking spaces. Of lower significance is inter-city and international accessibility (airport, motorway, intercity trains), which was explained by in terms of the type of tenants (mainly BPOs) and the form of modern work (remote, online). In this regard, also access to tenants' clients has not been stated as significant.

In a densely built-up and historic city such as Cracow, appropriate land for new office construction is scarce, and developers admit that the selection of the sites was also governed by the physical and legal availability of a site for new development. Most preferred are sites with the existent **'land-use plan'**, as this makes administrative preparatory procedures simpler and less time-consuming. Without an existing land-use plan, completing administrative procedures can last up to 3 years. For some developers, a site without land-use plan will not even be considered for purchase and development, for others – if it is attractive and without any legal ownership defects, it can be considered for development, especially that some sites with land-use plan tend to be overpriced in the local market. There were some additional remarks from developers concerning infrastructure and planning policy. As a major obstacle, the city's planning policy was mentioned, which tends to be chaotic and lacks a long-term strategic approach. Insufficient activity of city authorities in strategic planning and in the implementation of transportation amenities can pose a major barrier in near future

when it comes to further development of Cracow's office market. The interviewed developers also indicated the inconsistency between the city's planning policy and urban sustainability goals; in local land-use plans that define conditions for new construction, the number of parking spaces is defined as the required minimum, whereas certification systems give more credits to projects with maximum limits of parking spaces. Not only is it inconsistent with sustainable urban development (encouragement to use a car), but it also points to the underestimation of the city's transportation issues.

As the literature review suggests, the attractiveness of a location for office tenants is influenced by its **accessibility to various urban amenities and services** (e.g. Adnan, Daud, & Razali, 2015; Rebelo, 2011. However, local developers do not confirm this location feature as being crucial. Their tenants rarely need access to urban services (administrative, financial, hotels, posts, banks, etc.) and if the required amenities are not provided in the neighbourhood, they provide some services in their projects. The availability of food courts, biking facilities, recreational facilities, kindergartens, medical facilities, ATMs, and groceries is a must; typically, parts of office projects (ground floors) are leased out to providers of such services.

The broadly defined **'quality of area' –** i.e. the prestige, safety, cleanness, quality, and standard of the surrounding architecture – is not a crucial selection criterium, apart from basic issues such as cleanness and safety (neglected areas or areas with bad reputation are not considered for new office projects). This partly reflects preferences revealed in previous research worldwide (Adnan, Daud, & Razali, 2015; Appel-Meulenbroek, 2008; Levy & Peterson, 2013). However, the fact that the prestige of location is more significant only for projects located centrally – in the most appreciated locations in Cracow (close to the historic downtown) – is in line with global trends, where prime locations are selected by high-end and image-aware tenants. Buildings provided by developers there are marked by the highest standards and targeted at corporations' headquarters rather than BPOs. Most office projects are evaluated based on their functionality and efficiency of space, not on the visual or aesthetic aspects of architecture. For marketing purposes, it is important that location should make tenants' logos visible ('*first-row buildings*'). Only one of the interviewed developers mentioned the significance of careful landscaping and site planning, as well as the creation of public space with greenery open to the whole local community. The respondents emphasise place-making as the inevitable part of project similarly to engagement in local community activities. All the interviewed representatives were aware of the necessity to communicate and, in case of conflicting issues, negotiate with stakeholders; they are also open to 'green and sustainability' innovations if these emerge and are demanded by tenants (e.g. bee hives on roofs, sports facilities for end-users, cultural and ecological activities). However, only one of the developers is initiating such activities.

Location preferences of developers' office projects

The criteria of making a decision about the location for a new office project in Cracow is similar to common office preferences in developed office markets. As reflected in the literature review, office developers who answer the needs of end users, locate their projects in areas with good transportation accessibility, with preference for public transportation network and access to urban amenities and business services are considered in terms of locational prestige. The preferences in Cracow's office market (summarised in Table 2) reflect some specific features of the city, i.e. the unavailability of historic centre for new office construction and the lack of a typical Central Business District, resulting in offices being more dispersed across the city, though the most prestigious locations surround the city centre. The latter is the consequence of highly-developed public

transportation network around the city centre. The non-existence of underground in Cracow makes tram the most desired transportation means. Due to the scarcity of land available for new developments, even sites not covered by local zoning plans might be considered as appropriate for new construction. Access to urban amenities and services is not crucial in Cracow, which can be attributed to a relative density of the urban structure and the diversification of urban functions. Hence their proximity in most locations and the developers' eagerness to provide services on-site.

Some of the findings undermine the assumption that developers of green office buildings are also more environmentally-conscious market participants; their decisions to develop green buildings is the result of their recognition of tenants' requirements and does not involve their willingness to contribute to more sustainable urban development. However, based on their opinions, the real estate market's participants can make a positive contribution to urban sustainability in an indirect way. Office developers highly value sites covered by local zoning plans; they appreciate consistent, long-term transportation infrastructure investment policies of the local government; they search for locations accessible by public transportation and provide biking facilities; they pay attention to access to diversified urban functions; and they value safety and aesthetics. All these attributes of a good office location represent also the attributes of sustainable cities: the prevailing use of clean modes of transport (public transportation), walkability (proximity), and the diversity of uses and functions. Furthermore, developers are aware of end-users' requirements and are open to innovations (ecological, social, or referring to new ways of working). This leads us to two crucial findings. First, if the pressure from tenants/end-users is on the buildings' locational features that are likewise important from the urban sustainability perspective, the developers are eager to provide them. Second, the results of the conducted interviews emphasise the local government's huge responsibility for sustainable urban development. By careful spatial planning and developing a public transportation network, the local government could attract office developments to locations which are compatible with the rules of sustainable urban development.

Table 2. Summarised preferences of office developers in Cracow, referring to most attractive locations for new projects

Attributes of an attractive location for new office projects	Developers' preferences
Public transportation accessibility	Crucial. Most preferred: tram access, tram stops close to the site, numerous tram lines
Sites covered by local zoning maps	Most preferred. Legal status as a additional decisive factor
Availability of parking	Important only in city-fringe, suburban locations
Access to urban amenities and services	Important, not crucial. Many facilities and services provided 'on site' by developers
Quality of area and prestige	Of relative significance, dependent on target tenants
Access to a cycling network	Of relative significance
Access to customers	Important only in central locations and most prestigious projects
Costs and rents	Acceptable relations between costs of land-site and local rents

Source: Author's own elaboration based on the interviews' results.

Concluding remarks

This paper explored the locational attributes of new office projects, as they are significant for the market attractiveness of office buildings from the developers' perspective. Assuming that the location of new office buildings impacts the functioning of a city, it is substantial to know whether the needs and preferences of the real estate market's participants are in line with the principles of sustainable urban development, or if they contradict them. Studying decisions from the real estate market in the perspective of their impact on sustainable urban development contributes substantially to studies on urban development and the real estate market's responsibilities for it.

This research focused on Cracow's office market – the second largest real estate market in Poland, with significant modern office stock, to which newest additions consist mostly of certified sustainable buildings. Being a rapidly growing metropolis, Cracow is also facing the universal challenges of accelerated urban growth: traffic congestion, air pollution, or insufficient amount of green and recreational sites. Thus, it has to respond to these pressures in order to balance economic growth with environmental and social development.

The research sample included representatives (project managers responsible for investments in site selection) of three major office developers, which have developed and operate 75% of sustainable office stock in the city. The research included only developers of sustainable office stock, as this made it possible to reach the goal of exploring the attributes of attractive office location as well as examining whether developers' decision on green certification resulted from their awareness of sustainable development, or not. Semi-structured interviews was the method selected for in-depth analysis of the location criteria and rationale for certification, and it allowed the interviewees to express additional spontaneous opinions on urban and office market developments. The interview included preliminary questions on rationale for certification and on the relation between location choice and certification requirements. A common rationale for certification has been market pressure from tenants, with only one developer additionally emphasising his environmental and social commitments. The Location and Transport categories of certification were not of critical significance, but they do not belong to mandatory criteria during the certification process and are of minor weigh in the final evaluation of the level of green certificate. This finding, though not unanticipated, raises an issue whether the certification systems should not be modified to adjust better to the requirements of sustainable urban development as well as to pressure for more social and environmental awareness when making office investments. These preliminary issues were followed by detailed questions on location attributes which are the most important for new investments' site selection.

Results of previous research made it possible to identify criteria of attractive location for a contemporary office, and the preferences in Cracow's market are consistent with those findings – the most important seems to be such a location of an office that has good public transportation accessibility. Good access to diversified urban amenities and services has been seen as important but not crucial, which, according to the respondents, is the consequence of the diversification of functions in many of their projects, where buildings include ground-floor retail and services. Many tenants also value prestige and the visibility of location, and, accordingly, the developers respond with appropriate supply. The specific urban structure of Cracow – with its densely built-up historic centre – results in the lack of a typical Central Business District, and new office developments are concentrated in locations surrounding the centre. Non-central locations are concentrated in proximity to major intra-city transportation routes, to public transportation network, and in areas with well-developed urban amenities and services.

The selected method also produced freely expressed opinions about office locations in

Cracow, and an additional valuable result emerged – the significance of planning policies and local transportation policies as well as that of infrastructural investments of the local government for office investment decisions has been confirmed. Thus, the role of policy, strategy, and local development instruments has been established. Concluding – the local development strategy focused on sustainable goals and the consecutive development instruments of local governments not only contributed to urban sustainability but are also welcomed by developers, providing them with precise information on transportation network development, potential for urban amenities development, as well as, most importantly, information on land use.

The density of urban form, the diversity of urban functions, and public transportation connectivity are among crucial spatial requirements of sustainable urban development, but, as the results of this research prove, this aspects are also among the most significant criteria of an attractive office location: access to public transportation and access to amenities and services. However, in most cases, the selection of a sustainable location is not the result of the developers' environmental awareness but, rather, it is a consequence of market pressure.

Study results which show how commercial goals of real estate developers do not contradict the principles of sustainable urban development are of major significance for the creation of urban development strategies and solutions, and also for the real estate market's participants. This is probably the most important contribution of the study for practitioners, especially local governments. The research method also led to additional conclusions, significant for the practitioners and researchers of sustainability and building certification systems – if included in mandatory categories, locational categories would enhance positive contribution to sustainable urban development.

The research fills the knowledge gap on sustainable location and its market attractiveness for real estate developers and office-users. The outcomes of previous pilot research focused on the spatial analysis of most sustainable locations for new offices (Telega & Zięba, 2016), and results of this study confirm the validity of the assumption that with proper planning policies, adjusted certification systems, and the pressure from tenants, developers deliver office buildings which do not contradict the spatial principles of sustainable urban development. The study is unique in that it relates the real estate market's participants' needs to the requirements of urban sustainability as well as it contributes to studies on sustainable urban development and its spatial aspects. It is also applicable to studies on real estate market developments and it introduces the concept of sustainable location to research on office markets in urban areas.

By confirming the initial assumption that the real estate market's needs are consistent with sustainable urban development, the research lays foundation for a further, broader investigation of sustainable office locations, which are not only attractive for office-users, but also compatible with urban sustainability goals.

However, there are some limitations to this study, mainly the limited sample of interviewees and a relatively narrow spatial coverage of their office investments. Furthermore, the application of a single qualitative research method does not make it possible to model the most sustainable office location (and yet market-attractive) in the city subject to research. Further research, conducted after the global COVID-19 pandemic, should verify whether the profoundly impactful pandemic consequences influenced office location and the quality of office space. Especially interesting would be an inquiry into whether the pandemic urged companies to be more socially- and environmentally-responsible in their investments and operational activities. Some preliminary research suggests socio-economic and spatial structures in cities, which is why the location of various functions bears some responsibility for the spread of the virus (Hamidi, Sabouri, & Ewing, 2020; Tricarico & De Vidovich, 2021).

It is worthwhile to continue this research by extending research sample to more developers in Cracow, and to other Polish cities. Particular attention should be paid to the spatial consequences of office market location choices, as well as on the impact on sustainable urban development. Thus, further research should include the application of geospatial and quantitative tools in order to investigate relations between office buildings in a specific location and the flow of passengers, cars, ecological burdens (e.g. heat islands), or land-use mix. It should also lead to the modeling of sustainable office locations. Additionally, further research directions should focus more on the environmental awareness of developers and office users. Pursuing this field of research has huge practical significance and could really enhance the quality of urban development and planning policies as well as contribute to sustainable urban development.

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Appendix: Structure of the interview

1. Why was the building's green certification decided? For what reasons?
   a) market pressure (marketing aspects)
   b) environmental considerations
   c) customers' expectations
   d) economic and financial considerations (lower costs, higher value, lower risk)
   e) company's policy (CSR, sustainable development, image, prestige)
2. Did the building certification requirements influence the selection of locations, and to what extent?
   a) have any criteria from the Transport or Land Use and Ecology category been met?

3. What criteria of the certification system were the most difficult to meet? Did they relate to the choice of location?
4. Why have specific locations been selected? Which features of the locations under consideration were the most important?
   a) local zoning plan (the ease and time of obtaining a building permit)
   b) availability of the plot (supply of space for development)
   c) price of the plot and rents in this area
   d) transport accessibility (public transportation and green modes of transport)
      i. public transport
      ii. train / agglomeration railway
      iii. biking
   e) walking
   f) possibility of parking and private car access
   g) mix use (of space) in the area
   h) proximity to other similar objects
   i) the proximity of the centre (amenities, services in the centre, administration, retail, gastronomy, hotels, etc.)
   j) the proximity of clients and contractors
   k) the proximity of the station/airport/highway
   l) prestige of the location (architecture, public space, visual and aesthetic quality)
   m) visibility of the building
   n) quality of the area (cleanliness, no nuisance)
   o) security
   p) other?
5. What non-economic factors were taken into account when selecting the location (stakeholders' needs):
   a) proximity to residential areas – YES / NO
   b) commuting time of employees – YES / NO
   c) car access / parking options – YES / NO
   d) availability of facilities for employees
      • bar, restaurant
      • shops
      • health care facilities
      • gym
      • park
      • kindergarten, school
      • other?
   e) impact on the neighbourhood (greenery, noise, shading, public space, historical surroundings) – environmental decisions and voluntary involvement of the investor in social investment
6. Other location criteria?

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Why Poland's Yacht Builders Are Among World Leaders

Abstract

Objective: The aim of this paper is to demonstrate how a high-skilled competitively-priced Polish labour force, thriving amid manufacturing policies which are far from a coalition of coincidences, has created a specialist yacht-building sector – and a superyacht one with exceptional potential.

Research Design & Methods: After the superyacht sector is defined and described, this theoretical and empirical study sets out to apply basic correlation and regression in order to isolate demand and production factors most likely to explain and ensure continued success. Limited data and previous research produces a clear result nonetheless. Compared with boatyards in nascent or mature boatbuilding nations, manufacturing nations with a strong labour market – a highly-skilled, cost-competitive workforce – are delivering persistent prosperity with promise of further growth. This, for the first time, weighs the comparative importance of supply-side factors driving production, as well as it points to the way for further work to understand its success.

Findings: A positive relationship between overall global fleet size and the numbers of millionaires in producer countries is confirmed by correlation and regression analyses, which proves three hypotheses. First, the dominant influence of competitive labour resources; second, the much lesser role of tax policy among other factors, such as industry path dependency and education levels, which are also key economic drivers of growth. The third, subsidiary hypothesis also holds: that a sector with special advantages – in this case luxury products in a resilient marketplace – can to some extent avoid the disadvantages of an economy's small size while outperforming other manufacturing segments. The findings confirm that the global superyacht market presents significant opportunities for expansion and enterprise for producers such as Poland.

Implications/Recommendations: The EU recognises the importance of marine industries to trade and enterprise. However, to take advantage of assured superyacht market growth, policymakers need to continue to nurture a skilled labour pool with funding and training support. They could also cut corporation tax to specifically support boatbuilders, perhaps introducing a lower tier for innovating and expanding industries under Industrial Revolution 0.4 strategies.

Contribution/Value Added: The values of this article include the following: an in-depth examination of a specific sector with appeal to work and wealth creators worldwide; identifying a special labour market premium in Poland as well as low-cost producer nations and unrecognised upside opportunities for all market participants.

Keywords: yachts, superyachts, boatbuilding, manufacturing, labour policy, corporate tax

Article classification: research article, theoretical article

JEL classification: 02, 04

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Introduction

The objective of this article is to show how an abundance of competitively priced specialist labour has put Poland among countries best placed to benefit from steadily rising demand for superyachts in the years ahead. As the global fleet swells in size, this research highlights Poland's progress and further opportunities as a big boat manufacturer, the result of factory economy advantages, but also its path dependency (i.e. a political science concept describing the process by which an industry becomes self-perpetuating) with a solid tradition of boat construction from the smallest craft to superyachts which are sailing or motor boats of over 25m in length. On the supply side, it proves labour costs playing the key role in producers' competitiveness, just as wealth does for a growing cohort of buyers. On that demand side, the global market is directly dependent on numbers of wealthy individuals capable of buying boats, and together they form the global order book. Since 95% of yachts built in Poland are exported, the market is determined by global forces rather than a domestic pool of wealthy individuals, which is an opportunity for any expanding manufacturing nation. This work sets out the origins of this industry in Poland and its potential, still being unlocked in several manufacturing nations, and builds a model to explain the main determinants of such a 'factory economy' performance. It is an attempt to explain Poland's attractiveness for yacht-building in general and future superyacht production in particular. Three research questions arose:

1. Are wage rates the major determinant among the factors of production for boatbuilders?
2. How important is tax among other factors influencing the production of superyachts?
3. A relatively small economy can be sidestepped as an essential condition for manufacturing strength by a specialist sector which can use its overriding advantages to compete for resources.

I argue that the market for yacht-making in factory economies operates to some extent independently from worldwide and domestic forces, creating products with particular characteristics for purchasers with enhanced financial resilience. The following review shows that the growth of this industry can be attributed to a set of factors of varying importance; the evaluation of these variables exposes the dominance of wage costs as the main explanatory factor. However, before a set of determinants are tested, an explanation of the global demand backdrop sets the scene. The boatbuilding market is put in the global context, Poland's strong contribution is defined, and the influences bearing on comparative manufacturing strength – especially tax and labour regimes – are explored. Then, an empirical analysis follows with the purpose of confirming the dominant relationship between production output and wages, forming the core of an economic model to explain the sector's enduring robustness.

Literature review

Background to this study of superyacht production involves a fast-growing market for highly-specialised luxury goods, with a regenerating pool of buyers. Market buoyancy has returned at a time when the worldwide pool of 520,000 individuals with a net worth of over $30m is expected to grow, according to Knight Frank's studies (2021). Essentially, the location of these millionaires does not bear on production possibilities, because the market is export-led. Furthermore, superyacht owners are known to be tax-sensitive despite their wealth shield, and will simply sail to lower charging jurisdictions, while workforces are mostly tied to boatyard clusters. An important subset of target buyers involves millennial billionaires (now aged 23–38). The Forbes Real-World Billionaires (2021) identifies 78 of them, with the following breakdown: the USA – 33.3%, China – 20.5%, Germany – 10.3%, Russia – 5.1%, Brazil – 5.1%, and Hong Kong – 5.1%. This is a pool of wealth being topped up by the newly wealthy. Shorrocks et al. (2021) suggest that another wave of millionaires created during the pandemic will release pent-up

demand in coming years. Their research for Credit Suisse suggests that in the past year the global number of millionaires expanded by 5.2m to reach 56m millionaires, and estimates this will exceed 84m by 2025, up 28m from 2020 (Shorrocks et al., 2021). The number of yachts moves in step with the number of millionaires, as the correlation in Table 1 shows.

In this context, there is a wealth of opportunity for enterprising boatbuilders. Dempsey (2021) reports a surge of orders, with many owners seeking seclusion from the pandemic (see Figure 1). The author estimates the global fleet at 5,700 while the record number of 208 superyachts was also brought onto the sales and chartering market in the first half of 2021, worth some $1bn, compared with 131 superyachts the previous year. This orders surge builds on the 2019 global fleet of 5,600 superyachts. The Superyacht Builders' Association says that an average of 80 new superyachts are being delivered annually, with the industry growing at 7.8% a year (Petts, 2019). Individual prices start at around £15m and rise to over £200m, with this global fleet expected to reach at least $10bn in market value by 2025, according to Madara (2020). The author agrees that this marine subset particularly depends on the steady supply of millionaire and billionaire buyers, as billionaires typically own just over two superyachts each. In general, products such as yachts, fine art, private jets, collectable cars, and fine wines are expected to benefit from the lifting of COVID-19 restrictions in what some have described as a 'Roaring Twenties' bounce-back for experiential luxury providers, with many of them recovering since 2008 faster than personal goods-makers are.

Table 1. Pool of purchasers – correlation between number of millionaires and total superyachts built

Year	No. of millionaires in millions*	Total yacht production**
2013	13.7	692
2014	14.7	735
2015	15.4	734
2016	16.5	754
2017	18.1	760
2018	18	773
2019	19.6	830
2020	20.8	807
Correlation	Column 1	Column 2
Column 1	1	
Column 2	0.934761125	1

Sources: * Capgemini 2/7/2021, ** Boat International Global Order Book 2021, Excel analysis.

In my unpublished research (Greaves, 2020), total future fleet growth is forecast using the 2018 Superyacht Report as a data series and extrapolating upward linear growth and discounting unforeseen exogenous factors to give a continuing average yearly rise of around 11.9% (four percentage points higher than Petts), as is shown in Figure 2, which also shows the doubling in 2021 and possible tripling by 2026. The method was to average previous years' growth and calculate the exponential growth this would produce if continued. Thus, in the nine years from 2013, the total of 4,637 superyachts will advance to 9,748 in 2022 – the 10,000 mark is in sight.

The total global market will at least quadruple 50 years on from the 2008 crisis, recovering in the medium term from the market contraction of 2008–2012. This industry will develop on the back of solid demand as the global economic order reshuffles away from the G7 countries' dominance to that of the E7, or emerging seven nations: China, Brazil, India, Indonesia, Mexico, Russia, and Turkey. They will come to dominate the world's top economies by 2050 (Greaves, 2019) with India slipping to the second place, behind China and ahead of the USA.

Poland, meanwhile, has an important share of global production, its superyacht output being the tip of a well-established broader yacht production iceberg. The supply factors it employs – its labour and materials – are the result of years of concentrated

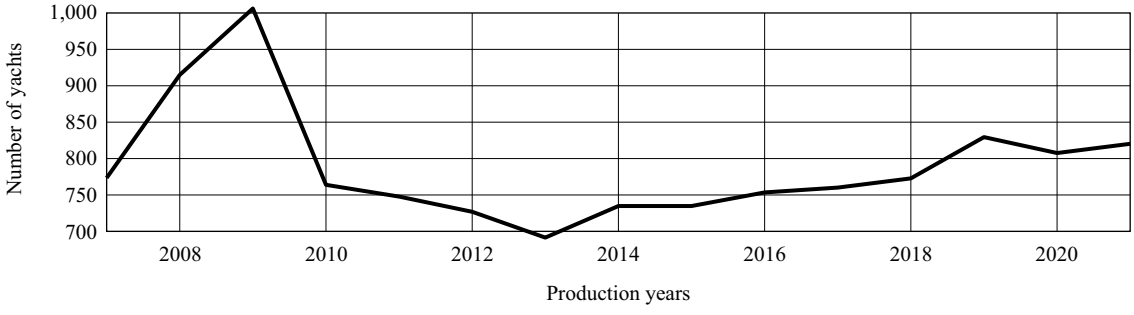


Figure 1. Strong recovery – superyachts on order or in build in the period 2007–2021

Source: Boat International (2021)* redrawn by author.

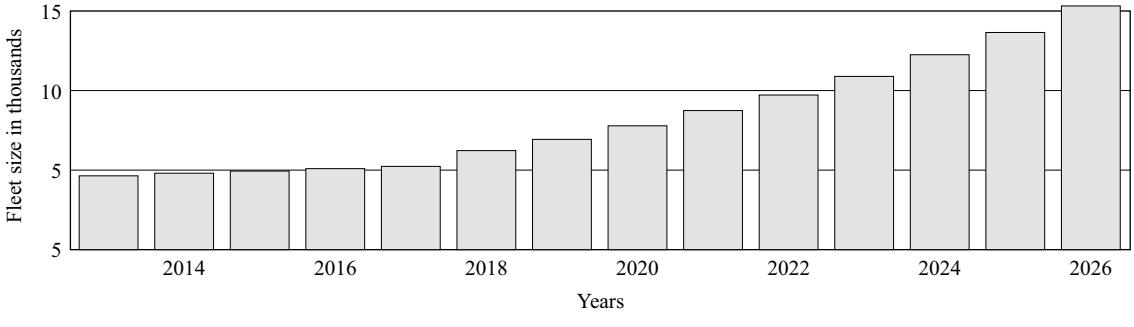
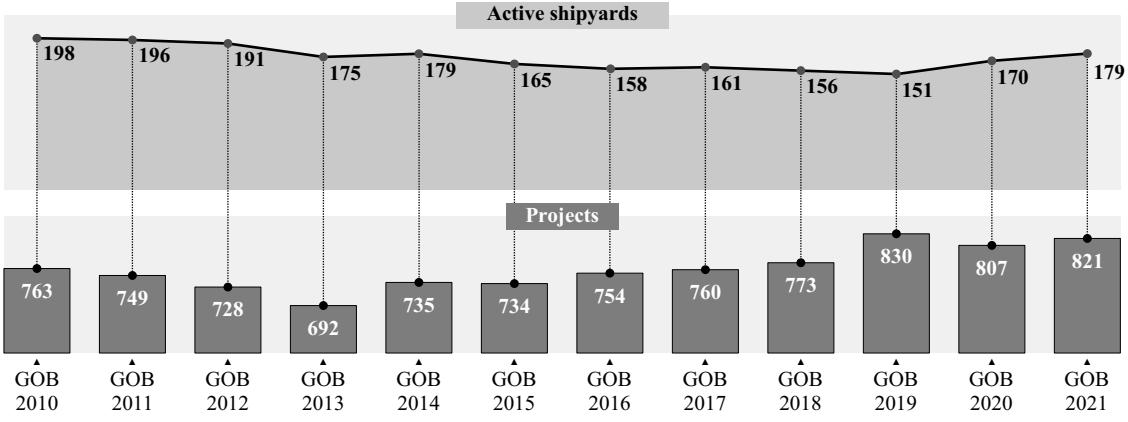


Figure 2. A steadily rising tide – predicted market growth in the years ahead

Source: Boat International Global Order Book* author's calculation.

expertise, clustered in centres of excellence with the workforce having a specialised skill-set and managers' ready access to supply chain factories. With centuries of boatbuilding along the Baltic, Poland's yacht-building tradition was consolidated when the former Soviet leadership chose it to build yachts for all the Eastern Bloc countries. Then, exports began in the 1980s – initially to the northern and western parts of Europe, followed by North America. Bankruptcies followed the collapse of communism, and privately owned boatbuilders appeared to replace them. Poland's ports then went on to host many foreign brands' production facilities, including factories for France's Beneteau and the USA's Brunswick. One home-grown business is catamaran builder Sunreef Yachts in Gdańsk, which started from 10 to 14 boats a year in the founding year of 2002, but then launched a record 24 in 2019. In 2018, amidst a wave of consolidation among yards, Poland's largest producer Delphia was bought by Beneteau. Delphia, the maker of some 25,000 boats since its establishment in 1990, has annual sales worth around 30m euros. Sunreef Yachts stands out as the second generation of Polish yacht-builders; in 2020, it sold more than 130 catamarans between 40ft and 110ft. High-quality domestic brands have also gained a following, among them Parker, Delphia, Sunreef's catamarans, Galeon (the largest Polish brand, partnered with the USA's MarineMax), and Conrad, Poland's custom yacht leader. Overall, the Polish Chamber of Marine Industry and Water



A recovery from falling yard numbers after the 2008 crisis stalled rather than halted a long-term progress.

Figure 3. A Decade of Growth – active shipyards and project totals

Source: Boat International Global Order Book (GOB) 2021* rescaled by author.

Sports (Polboat, the industry trade body, (Day 2018)) estimates that total leisure boat production in Poland has increased by about 10% a year since 2009, with shipyards in 2017 making up to 22,000 yachts of all sizes and classes. Day (2018) disclosed that in 2017, Norwegians bought the biggest amount of Polish-made boats, spending 70m euros on them, with France being next at 46m euros.

Salandre (2020a, p. 1) also charts this steady rise from the end of communism, crediting entrepreneurs with early impetus, taking advantage of a "qualified and inexpensive workforce, structures in place and a willingness to open up to the west and to the market economy". Poland today remains mainly a subcontractor for other countries' brands, boosting the country's trade balance, since Polish production is exported for around 480m euros ($540m) a year, a total that has almost doubled in five years. In short, as Salandre asserts (2020b), the production quality has risen, whereas the costs have fallen, leaving Poland the largest-volume leisure boatbuilder in Europe, just as Italy remains well ahead by overall value of production. Factories in Poland manufacture boats for French, Scandinavian, and American brands, making the country the second largest recreational boatbuilder in units (with the exception of the USA) and Europe's largest exporter of them to the USA. Polboat (Day 2018) concurs that the leading export markets include Norway at $77m, France at $61m, and the USA at $57m a year. Poland's boatyards are mainly in Gdańsk, Ostróda, and Augustów, as more than 1,000 companies employ over 40,000 people in clusters of manufacturing expertise, according to Polboat (2018). From this solid yacht-making base, Poland has increased its annual tally of superyachts to six. Moreover, its general success in manufacturing has placed Poland among the 140 countries ranked in the 2018 Global Competitiveness Report (published by the World Bank's Economic Forum) as the 37th most competitive nation. In the US Department of Commerce's guide to trading with Poland, Bereza (2020) identifies Industry 4.0 (the Fourth Industrial Revolution) as the backdrop for Poland's growing manufacturing power on the continent. As it is the sixth largest manufacturer within the EU, manufacturing contributes 22.4% of total GDP, nearly a quarter. In addition, Su and Yao (2017) stress the importance of any manufacturing sector when an economy is reviving or in a middle-income

stage development, pulling all other sectors and optimised underlying mechanisms in which a larger share of manufacturing in an economy promotes private savings and accelerates technological accumulation. Given a strong base, catching up with high-income economies is then a process of eliminating the productivity gap.

Returning to a review of demand and supply side forces, this market displays factors of demand common to other manufacturing sectors, to luxury goods in general, and then displays some peculiar attributes of its own. The whole luxury goods sector appeals to a global consumer with 20–30% of industry revenues from consumers making purchases outside their home countries, according to Achille and Zipser (2020). Demand is shaped by price, buyers' income, consumer taste, and competition. Luxury goods embody demand which is highly price-flexible due to many strong substitutes, with high income flexibility of demand. Kapferer (1997) suggests that the special characteristics of demand include: an excellent quality and craftsmanship, a very high price, exception (rarity, individuality), the aesthetic quality or beauty, inheritance and tradition appeal, brand history, and a (disputable) general lack of practical utility. There is considerable debate beyond the assumption that higher income may lead to increased demand for luxury goods, since among factors of demand for luxuries are the products' special characteristics in the target marketplace, among which being objects of conspicuous consumption is only one. Veblen (1899), who lived in the era of vast J-class wooden superyachts, viewed such purchases as economic behaviour driven by psychological factors such as fear and status-seeking, but also by rational self-interest. The author argued that "unproductive consumption of goods is honourable, primarily a mark of prowess and a prerequisite to human dignity" (Veblen, 1899, pp.33-34). In a collusion of connoisseurs, demand increases, pushing up prices to advertise wealth, which is a dominant signal in a stable of luxury goods that also contains art, classic cars, champagne, watches and, clothing brands. Price theory states that the rich spend more on luxury goods, since they have more wealth (Ikeda, 2006). Another factor is luxuries' determinants. Dubois, Laurent and Czellar (2001) also settled on perceived excellent quality, very high price, scarcity and uniqueness, aesthetics and poly sensuality, ancestral heritage and personal history, and 'super flushness'. Stathopoulou and Balabanis (2019) identify customers' higher motives of conservation, openness to change, self-transcendence, and self-enhancement. Leibenstein's (1950) 'snob-effect' focuses more on owners' desire to differentiate themselves from a society that can make accessible luxuries less appealing. Accepting Veblen's goods effect, the above-mentioned author also added a bandwagon quality to luxuries. Then, there is a push towards a revised paradigm for luxury goods, which Kapferer and Valente-Florence (2019) suggest should reflect that most of the growth comes from emerging countries. Catry (2003) picks up on this, asserting that with increasing incomes, middle classes in underdeveloped countries were spending more on 'out-of-reach' brands, which is a trend in products ranging from sneakers to superyachts. The classic price-pull effect has big ticket prices stimulating demand, with some buyers always ready to pay more for perceived prestige goods. Such goods can signal wealth, power, and social status, and, as Wiedmann and Hennigs (2019) claim, they can also induce value-added perception in terms of price, visibility, uniqueness, self-identity, and hedonic and materialistic conspicuousness.

These special considerations are being made in the context of increased trade in high-quality goods between countries of higher income per capita, while economists say that we should expect demand to be higher in societies with larger income disparities, where the impact of social status is stronger. Inequality, it appears, is the luxury goods-maker's friend. The share of wealth held by the world's top 10% rose in 2020, as did the share of the top 1% and the Gini coefficient. Martin and Mayneris (2013) say that these goods are more sensitive to income distribution, while their export markets are more diversified and

thus less sensitive to distance. In this light, Poland as an overwhelmingly big exporter is a beneficiary. The factors of demand for luxury goods, both price- and income-flexible, are therefore special, subtle, and shifting. These influences are reflected in a clear correlation (Table 1) between the number of millionaires and yachts built by year, demonstrating positive income flexibility of demand amid upward linear growth. Another demand factor supports the growth thesis – a relatively recent eco-luxury trend for voyages that contribute to the science and technology of environmental protection. Some 64 explorer yachts for cruisers conducting scientific experiments were built in 2020 compared with 58 the previous year. Despite this trend, industry executives have always had to be prepared to resist critics who assign a stigma to the ownership of 'playthings of the rich', seen as widening inequality and disproportionately contributing to climate change (Dempsey, 2021). A counterargument is that this sector will always have a big pool of buyers as well as rising growth with an embedded resilience to economic slowdowns and recessions (Greaves, 2019), and it will always play a highly visible part in pulling the wider shipbuilding sector back to full activity after the relative doldrums of those downturns.

This review also reveals that the sector's progress has largely been in the form of organic growth. Development of all production evolves in a series of stages, according to Baldwin (2018). First, individuals consume what they produce, and as transport develops and society evolves, they optimised, leading to overproduction. Production and consumption become unbundled as living standards rise. Then, over time, size becomes optimised. International competition had encouraged productivity and curbed prices until the 1990s, when advanced information and technology communications stepped up the unbundling of ideas and production processes. This second unbundling was propelled by ICTs-related advances, with international differences in wage rates making it profitable. Supply chains developed, which led to geographical optimal size (industrial clusters), while optimised size enabled trade at all levels, with the power of foreign investment to transfer production ideas and processes. With the latest unbundling, in just two decades the world has seen the G7's shares of world GDP and trade tumble 50% and 32% respectively, with middle-order countries such as Poland being best-placed to gain. What is more, for policy-making institutions in rich countries, new-paradigm optimized size is, as Baldwin says, "individual, sudden and unpredictable" (2018, p. 2). Add to this far-reaching and brutal in impact, since it leads to a reordering of industry at the local level, adjustment directly influenced by global forces. It means that economies in which outsourcing business for multinationals is an increasing part of output might be eventually overtaken by specialist rivals relying on domestic supply chains, cutting out overseas parent companies or middlemen. Production in low-wage 'factory economies' is thus the future for manufacturing, especially for developing economies. Furthermore, as Baldwin and Lopez-Gonzalez (2013) argue, supply chain trade has optimally-sized global economic relations. They point out that Poland, Korea, India, Indonesia, Thailand, and Turkey are nations that have seen their share of global manufacturing output rise by more than 1 percentage point of the global total. This revolution's winners, they say, are grouped in clusters; there is a strong geographical dimension to the manufacturing revolution. Identifying the Czech Republic and Poland as typical factory economies, the authors point to a dependence on the nearest advanced technology manufacturing economy, namely Germany. Costs of production are further controlled by path-dependent factors of investment planning, government support, and favourable trade (tax and tariff) terms. As Krugman (1991) noticed, boatbuilding fits in with economic geography as a path-dependent process, with agglomeration economies tending to lock in urban or manufacturing locations, and externalities that they face together may further embed path dependence, a feature then reinforced by corporate

history and industrial culture. David's (1985, 1987) work on path dependence identified three conditions: technical interrelatedness of system components, increasing returns to scale using common techniques, and "quasi-irreversibility of investment". Boatbuilding is locked into all these conditions, with countries built on trade already having these cornerstones of shipbuilding tradition, which had formed around ports and their hinterlands.

Turning to review another supply-side factor, Poland's low 19% corporate tax rate appears to give a distinct competitive advantage over boatbuilders in other countries. The optimised corporate tax rate – on capital gains and investment income – forms part of a broadly favourable tax regime outlined by the OECD's annual Revenue Statistics report (2020), which explains that the tax-to-GDP ratio in Poland rose by 0.2 percentage points, i.e. from 35.2% in 2018 to 35.4% in 2019, set against the OECD's average decrease from 33.9% to 33.8%, well in the middle order rankings. However, tax policymakers should not stifle enterprise or consumer spending. Pigou (1947, pp. 40–45) stressed the importance in a finite economy of "the part to be played… by the amount of the aggregate sacrifice and the manner in which this aggregate is distributed among the taxpayers," arguing that the least aggregate sacrifice was the ultimate principle of taxation, with the maximum aggregate welfare being the correct goal of government. However, set against OECD countries' 36 regimes, Poland ranked only 34th in 2020. The index by Bunn and Asen (2020) measures the degree to which the 36 countries' tax systems promote competitiveness through low tax burdens on business and neutrality through a well-structured tax code, with consideration of more than 40 variables. However, any advantage may disappear. Countries' relative corporate tax positions will be levelled by the universal corporate tax deal agreed in June 2021 by the leading advanced nations (Giles and Strauss, 2021. Vital questions concern the rate that any minimum is set at, whether countries can step outside the OECD to undercut it, and whether nations can levy it on revenue earned in countries that chose not to adopt a base limit. This race to the bottom rate will most benefit emerging market producers, Poland being among them. On a personal tax note, Poland is starting to increase its burden for high-earners, as it seeks to use tax as a tool to address a shrinking and ageing workforce, and attract more professionals from abroad, i.e. those earning over 1m PLN and required to pay a solidarity tax. The KPMG partner Tomasz Wiśniewski (2019, p. 7) put this down to a "strong economy and dynamically rising salaries"), with 14m Poles earning over 7.1 thousand PLN a month and with the fastest growth among taxpayers earning more than 1m PLN a year. A useful response to the loss of key skilled workers by migration was the July 2019 abolition of income tax for the majority of those under 26 – a cohort of around 2m workers.

However, tax aside, this quantitative analysis proves emphatically that among business inputs, a deep pool of skilled and competitively-priced labour in Poland is the country's star attraction to investors and producers, which is by far the dominant factor in manufacturing success. Broadly, incentives to invest in 14 Special Economic Zones since Poland's accession to the EU in 2004 have seen the highest unemployment rate in the EU cut to remain below the EU average since 2012. Boatbuilding is among favoured industrial sub-sectors, because since 2019, 44% of the 674,800 newly-created jobs were among the smallest enterprises, employing up to nine people. The highest number of vacancies was in manufacturing. The growing labour market resilience, with wage growth chasing fast productivity gains, is set against a backdrop of robust GDP growth. Moreover, labour productivity has grown faster than on average in the OECD, with a reallocation of labour to higher productivity market services and industrial sectors. In the run-up to Poland's accession to the EU, Piotrowski and Sztanderska (1999) showed how in the period of 1995–1997 average wages in industrial activities were the highest

of all sectors. Their study highlighted how at the point of joining the EU, Poland had a higher rate of natural unemployment than most EU states, which the authors attributed to the then low level of economic activity, its low employment rate, and considerable growth in its labour pool – a substantial reserve of underemployment. Lewandowski and Magda (2018) chart this swing from unemployment of 20% in 2000 to around 5% today, with real wages rising 54% until 2016; as growth has accelerated, inequality has declined and the minimum wage has risen. The cost-competitive workforce behind this revival remains a store of value for investors and entrepreneurs alike.

The research questions resulting from this review led to a test of three consequent hypotheses: (1) that wage rates are the major determinant among the factors of production for boatbuilders; (2) that tax is a smaller determinant among other factors influencing the production of superyachts; and (3) that a relatively small-sized economy can be sidestepped to some extent as an essential condition of manufacturing strength by the enterprising specialist sector. These are properly formulated below.

Research methodology… and a model to float all boats

Four economic variables or proxies were used to test factors bearing on manufacturing success. Other variables were considered when testing the first two hypotheses stating that predominantly wages and tax rates could prove key indicators of either positive or negative influence. The totals of millionaires were quickly discounted, since, although being a vital market incentive, they represent a fluid international pool of demand, making national factors hard to separate. Intuitively, a successful boatbuilding country will have a good competitiveness rating by most measures, including a low tax burden, plentiful low-cost skilled labour, and – consequently – a large annual total of superyachts built. The dataset (see Table 2) presents all superyacht-producing nations. It needs to be remembered, however, that since Poland is among leaders by volume of all yachts produced, it has the industrial structure capable of becoming a superyacht challenger producer, and the placings of competitor nations are by no means assured for the future. As the world economic order will be shifting towards emerging nations as the leaders are struggling for raw materials and operating margins, this is where manufacturing opportunities will arise, and one result will be a trading arena in which Poland's yacht-building industry can overthrow considerations of sheer economy size or maturity as a determinant of manufacturing prowess.

Furthermore, opportunity is reflected in output totals for each country, which includes a hidden subset described as speculative production – superyachts not built to order. This is on top of the steady growth that underlines the industry's internal momentum or path dependency. Speculative builds are an indicator of market sentiment. Yards' appetite for risk has been fading, since 2020 saw a decline of 6.6% in the number of speculative projects being built, reflecting uncertainty before the first full year of the COVID-19 pandemic. However, they still account for over 39% of the global order book; with 59% of its orders being speculative, Turkey is leading countries, hoping to lure casual buyers. Furthermore, the production data from active shipyards shows a general revival of the industry, since their total jumped from 151 in 2019 to 170 in 2020. Half of the projects at these nine newly active yards were speculative – a vote of long-term confidence. The number of active yards reached a peak in 2008–2009, with 199 of them before the crisis, while the analysis involving two years' totals of builds and orders – carried out based on limited time series data – reveals a clear path dependency in the industry, upholding output levels year by year. Thus, the concepts and observations in the literature led me to formulate the following three hypotheses: (1) wage rates constitute a dominant factor of production in the boatbuilding sector; (2) tax levels, while at first an alluring advantage, are, in fact, related to output levels, but in an extremely weak way; and

(3) a specialist sector can outperform in a smaller economy.

Results of the quantitative investigation and the findings coming from them

The analysis to determine the influence of factors of production started with a smoothing log scaling of two comparable years of output from the countries in the limited set (only 22 nations produce superyachts – a sample which is smaller than ideal, but acceptable), compared by regression to a small selection of independent variables. The aim was to use these two years to establish a dependent relationship with past production, and then to regress against known wage rates and tax levels in order to test dependency.

In the input Table 2, y and y-1 represent the two years of output compared from the datasets 2018–2019 and 2020–2021 from the Global Order Book produced by trade magazine Boat International (2020). The next two columns include their log10 equivalents that are set against the corporate tax and wage data from CIT Tax Foundation and Trading Economics (2021), the latter being wage costs for Q3 2020.

A previous regression confirmed annual total output's coefficient, with tax levels alone being extremely weak: a coefficient of 0.0019, R^2 of 3.72E-06, and adjusted R^2 of -0.0588. Having set aside millionaires' data as unhelpful, another variable (L) was added to build a simple industry model in order to explain output. This choice represents another proxy for cost or supply factors – average labour costs in $US – which turns out to be decisive. Including a third variable was considered, roughly described as education E, as a proxy for skill-sets and training levels, industry expertise, or know-how. Without that, however, a simple equation has been created:

$$Yy_t = Yy_{t-1} + T_t + L_t \quad (1)$$

Here, Yy_t is total output or production, Yy_{t-1} is the previous year's output, T_t is corporate tax rate, L_t is average labour costs in a country in $US (E, for know-how, is omitted due to the lack of data). The R^2 result explains 87% of the variance in the dependent variable (output), while the significance of F indicates an exceptionally low probability of mistake when acknowledging that, combined together, the independent variables influence total output. This simple model works well when the p-value of wages (0.02) shows its significance in a strong negative (downward sloping) relationship. Had all the wage figures been divided by 1,000, it would have seen a labour coefficient of -0.007. The p-value (significance of F) is extremely low (3.92^{-7}), confirming a strong regression equation.

The results of this analysis verify the first hypothesis (1), namely that in the case of Poland and all manufacturers of superyachts, wage rates in the labour market are the leading determinant among the factors of production. The result also proves (2) the relative unimportance of tax levels, as an extremely weak relationship is revealed. Last but not least, what emerges is (3) the positive possibility of outperformance by a small economy having a specialist sector with a specific market. In this respect, Poland is accompanied by Brazil, India, Indonesia, Malaysia, Mexico, and Turkey. All the data can be aggregated to produce an annual global index series, which could then be a guide to the industry's health – any substantial change would cause concern, and other variables can be included after further research.

Discussion

This limited statistical inquiry, with its necessarily small sample size of 22 observations, produces a clear result that labour – or average wage earnings as applied here – shares a clear relationship with superyacht output. This is the first time this has been specified and it constitutes a possible basis for further research. This central finding also supports the position on path dependency advanced by Krugman (1991) and David (1985), the factory economy theses of Baldwin and Lopez-

Table 2. Regression data for all superyacht producing nations

Countries producing superyachts are listed alphabetically, comparing two full years' output, via log scale, to tax and wage rates. It shows path-dependency of the present on past production as well as a strong relationship to wage rates (negative, downward slope). The number of millionaires is given for information only.

Country and its total superyacht output Y_t*	Output in previous year Y_{t-1} *	Log of output in base year 2020–2021 Y_t* log	Log of output in previous year 2018–2019 Y_{t-1}* log	Corporate tax rate T %**	Average wage rates L US$***	Mill-ionaires ****
Australia	2	3	0.30103	0.477121	30	55,207	1,180
Brazil	12	13	1.079181	1.113943	34	9,130	259
Canada	1	21	0.5	1.322219	26.5	97,500	1,682
China	5	6	0.69897	0.778151	25	49,116	4,447
Finland	5	3	0.69897	0.477121	20	46,230	103
France	6	18	0.778151	1.255273	20.5	45,581	20,71
Germany	2	0	0.30103	0.5	30	53,745	81
Italy	379	407	2.578639	2.609594	24	27,207	72
Malaysia	75	74	1.875061	1.869232	0	37,769	1,496
Netherlands	3	4	0.477121	0.60206	1.5	20,007	16
New Zealand	3	2	0.477121	0.30103	25	58,828	832
Norway	2	12	0.30103	1.079181	28	59,723	185
Poland	6	3	0.778151	0.477121	19	55,780	176
South Africa	4	5	0.60206	0.69897	19	17,270	116
Spain	3	0	0.477121	0.5	28	37,922	36
Taiwan	67	64	1.826075	1.80618	25	57,018	528
Turkey	66	76	1.819544	1.880814	20	66,170	94
UAE	8	8	0.90309	0.90309	2	14,331	124
US	109	61	2.037426	1.78533	25	3,074	256
UK	39	29	1.591065	1.462398	25	43,470	18,614
Others	0	3	0.1	0.477121	19	47,147	0
Base year Y_t		Year Y_{t-1}	log10 $_t$ base	log10 Y_{t-1}	T Tax	L average wage	In 1000s

Sources: * Boat International Global Order Book, 2018–19, 2020–21 Boatinternational.com https://www.boatinternational.com/yacht-market-intelligence/luxury-yachts-on-order; ** CIT Tax Foundation (2021) taxfoundation.org. https://taxfoundation.org/publications/corporate-tax-rates-around-the-world/ See Table 6; *** Average earnings in US$ from Trading Economics (2021) https://tradingeconomics.com/country-list/labour-costs; **** Number of millionaires in thousands, CIT Tax Foundation (2021). Excel.

Variables used in data set
Y_t – base year's output 2020–2021
Y_{t-1} – previous year's output 2018–2019
Y_t – log10 of output 2020–2021
Y_{t-1} – log10 of output 2018–2019
T – corporate tax rate in 2021
L – average wage in 2021
M – number of millionaires in thousands (unused)
E – know-how (unused)

Table 3. Regression results and analysis

SUMMARY of the RESULTS for the dependent variable Y_y or Y_t, or output/production in any year Regression Statistics					
Multiple R	**0.931877**				
R Square	**0.868395**				
Adj R Square	**0.846461**				
Standard Error	**0.277282**				
Observations	**22**				
ANOVA					
	Df	***SS***	***MS***	***F***	***Significance F***
Regression	3	9.131899	3.043966	39.59096	3.92E-08
Residual	18	1.383937	0.076885		
Total	21	10.51584			
	Coefficients	**Standard Error**	**t Stat**	**P-value**	**Lower 95%**
Intercept	0.15907	0.198674	0.800655	0.433773	-0.25833
Variable 1 Yt-1	0.978945	0.09667	10.12663	7.36E-09	0.775848
Variable 2 Tax	0.002665	0.006122	0.435376	0.668466	-0.0102
Variable 3 Labour	-7E-06	2.82E-06	-2.47191	0.023647	-1.3E-05

Source: data from Table 2, Excel analysis.

Gonzalez (2013), as well as the dominance of wage rates and labour market conditions suggested by Lewandowski and Magda's work (2018). It shows that any country with this labour force resource is well-placed to benefit from higher future orders and that the labour market itself has resilience. Card et al. (1994) have demonstrated the indifference to rising wages (not necessarily resulting in falling jobs) which may support the factory economy model. In 1992, New Jersey raised its hourly minimum wage from $4.25 to $5.05, after which they asked if that might make some fast-food workers too expensive. Card and Krueger (1994) spotted a natural experiment: eastern Pennsylvania was next to New Jersey, with a similar economy, but Pennsylvania had not changed its minimum wage rate. The authors compared employment in New Jersey and eastern Pennsylvania and found no sign that fast-food jobs had been lost when the minimum wage went up in New Jersey. This distinct labour market advantage will become even more important when Poland loses its corporate tax edge as rates are levelled up within the OECD.

In order to reinforce the explanatory power of the model, adding a measure of technical expertise would further explain the dependencies and improve the significance of results. Such a measure can come from collecting the numbers of trained boatbuilding apprentices or degree-level nautical engineering students. Further research might obtain a set of comparative values by sending questionnaires to producers (aimed at exploring qualification levels and spending on training).

The main result of the analysis is that though path dependency as shown by just one previous year's output is a lead determinate (and earlier years can be expected to have the same compounding relationship), wage levels alone constitute a massive driving force behind the manufacturing output, tax levels are far less significant, while other factors

such as skill-set indicators need closer definition, separation, and testing. In addition to these two outcomes, the data also supports the third hypothesis (3), namely that a country such as Poland, i.e. one with a rich history of manufacturing, can remain at the heart of this flourishing business, because its advantages in taxation and labour supply (with both costs being markedly lower than that of competitors) – coupled with its dominant export market – can overcome the smaller-scale GDP that the country delivers and punch well above its weight in international trade. This begs the question about what other factory-made goods or production satellites of multinational companies can take advantage of these conditions, recalling that overseas groups already see countries such as Poland as a haven for outsourcing to a cadre of managers, leading a highly-skilled workforce in multinational companies.

There is, therefore, no doubt that Poland's ongoing strength as a producer of both yachts and superyachts depends on its labour pool and competitive manufacturing policies which have created conditions for this sector to flourish, to some extent regardless of other macroeconomic forces. The government should mark this progress and, in turn, recognise by future incentives the benefits that the sector has brought in terms of domestic prosperity as well as overseas earnings. This paper highlights how Poland's manufacturers, specifically boatbuilders, embody path dependency, a characteristic also shown in its links to the German industry. In Central and Eastern Europe, only the Czech Republic enjoys such a relationship with a near neighbour, which is an indication of the importance of regional trade alliances among the V4 Group and beyond. From a position of strength, Poland's producers can anticipate strong orders in years ahead and a continuing trading relationship with leading boatbuilders domiciled abroad together with cross-fertilisation of ideas and skills with domestic rivals in the clusters. Meanwhile, weak relationships between some traditional performance indicators such as population size or GDP suggest that manufacturers can use their advantages to work 'outside the box' of established manufacturing norms when output is export-led, and that there is a good reason to help emerging producers gain on the lead boatyards. Poland's position at the crossroads of Europe in terms of transport and communication makes it a natural export hub and gives the country the potential to advance up the manufacturing leader board.

The results underline that Poland is a growing manufacturing power in Europe amid increased demand for innovative manufacturing technologies at a time when the government is promoting development and investment in new technologies, such as additive manufacturing, that will push the economy to the next level with grants to support R&D with the aim of driving the Fourth Industrial Revolution. The task for the government is to retain the stimulus from beneficial labour and tax regimes while embracing technology advances that keep the country's competitive edge. It is time for further heterodox thinking to explain the success of emerging and fledgling companies building boats and other luxury products, since the old order has clearly been challenged. The competitive edge is shown to be down to the high quality and low cost of the workforce, and is likely to also be down to the availability of technical training opportunities and the tradition of apprenticeship learning. Future research could prove helpful in adding to the model a measure of the skill-set in each country, based on training and education, provided that data is collected from boatbuilders themselves; a survey could make it possible to assess the qualifications and overall spending on training. This feeds into the path dependency argument, namely that a consolidated known-how or expertise is linked to tradition and sustained by training boatbuilders in the specialist skills required. In recent years, the European Skills Council for the Maritime Technology Sector has highlighted (2020) that the importance of employment and skills is one pillar of the industry's strategic vision. It wishes to see a Europe-wide degree standard across the continent. Europe has 500,000 direct

jobs in the sector, which makes an annual turnover of 91bn euros spread among 300 shipyards of all types.

Concluding remarks

The strong positive relationship coming from the results of testing the first hypothesis verifies that Poland's particularly competitive wage conditions have played the major role in creating a 'golden pool' of resources, especially labour. These favourable conditions have been capitalised on by manufacturing operations such as boatbuilders, and can be further nurtured and supported so that the challenge of burgeoning demand can be met, particularly for superyachts. The testing of the second hypothesis – the one regarding the very secondary importance of tax levels – confirmed a very weak influence, and one to be eliminated by international corporate tax levelling. But in the context of the third hypothesis – the one about a small economy outperforming the traditional measures of manufacturing prowess – the opportunities are clearly demonstrated. While rewards are there for the taking, this paper also indicates that the link to traditional measures of industrial strength – i.e. GDP growth, income per capita, population growth, or balance of payments – can to some extent be set aside by a progressive sector with its own attractiveness to investors and consumers. These findings beg the question about which other sectors – be it luxury or otherwise – have already carved out a successful production niche or can do so in the future.

The review demonstrated how a shuffling global economic order is set to further play into the hands of all competitive manufacturers, who have everything to gain by meeting the growing needs of luxury purchasers. However, this model and analysis alone cannot fully explain why some boatbuilding nations are way ahead of others. The world-leading Italy's outstanding output in boatbuilding is, in terms of value, more due to historical, technological (especially design), and geographical (exceptionally large and attractive coastline) influences. Boatbuilding tends to cluster around coastal cents of skill and design excellence, such as on England's south-western coast and around Poland's Baltic shipyards. Many industries group themselves together geographically similarly to how it was in the First Industrial Revolution despite today's enhanced communications causing the unbundling described by Baldwin (2018). This polarisation of expertise represents a core of unmeasured value to longer-term prosperity – a store of expertise that can be further investigated to capture another important variable, namely know-how – which may further improve the model's explanatory quality. Indeed, the determinants of previous output can themselves be shown to embody know-how elements that enhance the explanation and reflect an embedded resilience. These first steps in deconstructing the economic forces at work in boatbuilding rely on secondary data from many sources, which is nevertheless authoritative to provide insights into an industry in which there is limited primary data. The necessarily small sample size of selected data can inhibit interpretation, but is still indicative of the forces mostly at work. Further research, including questioning producers about skill-set and training resources, could close in on another key determinant in the sector. If Poland's producers of big boats are to keep catching future waves of demand in the global market, they need to understand more fully what makes them so enduringly successful.

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The Prospects of Ukraine's Integration into Global Value Chains Within the Framework of European Integration

Abstract

Objectives: The article aims at studying Ukraine's current foreign economic activity factors within the framework of European integration.

Research Design & Methods: The research methods used in the study are as follows: analysis and study of literature, scientific description, Internet-based research, statistical and structural survey, data sheet presentation.

Findings: The research proved that the economic relations between Ukraine and the EU tended to increase significantly. Statistical trends demonstrated a considerable increase in the foreign trade within global value chains (GVCs). A gradual intensification of economic relations between Ukraine and the EU seems evident, providing integration of Ukrainian companies into global value chains. Based on a recent analytical survey, most agricultural and industrial products exported from Ukraine accounted for 42.1% of the total international sales in 2020. Furthermore, over 70% of Ukrainian IT software development exports are estimated to be outsourced to third parties.

Implications/Recommendations: Recommendations for Ukraine's integration into global business services (GBSs) can include developing services in the context of GVCs, developing international cooperation between enterprises on global business platforms. The basis for successful integration into GVCs must be the development of innovative ecosystems of industrial high technologies. It is important to develop innovative industrial high-tech ecosystems for successful integration into GVCs.

Contribution/Value Added: The author tries to formulate modern directions of development for further integration of the Ukrainian economy into global value chains in the context of cooperation with the EU's member states.

Keywords: global value chains, Association Agreement between Ukraine and the EU, regional value chains, foreign trade, fragmentation of production, innovation development

Article classification: research article

JEL classification: F620, H4, O520

List of abbreviations: GVCs (global value chains), EU (European Union), GDP (gross domestic product), GBSs (Global Business Services) IT (Information Technology), ICT (information and communication technology), PCI (product complexity index)

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Introduction

The changing world economy demands perspective innovation development and reconsidering the governmental control over the economy. This research is aimed at considering the current comparative features of innovation in the high-value-added industries as well as at integrating the emerging sectors of the Ukrainian economy into global technological chains.

The upcoming participation of Ukraine in global value chains requires further research. The economic efficiency for all the countries involved in international trade remains a challenge. Therefore, it is important to study the impact of global production networks on the development of economic regions.

This research studies the Ukrainian foreign economic activity. I also consider factors that affect the emergence of global chains. The research confirms positive dynamics in foreign trade within the economic cooperation between Ukraine and the EU. The Ukrainian economy mainly exports low-value-added goods and imports high-value-added goods. The trade quotas of the EU's member states still hinder an increase of trade. The disclosure of Ukraine's economic potential requires successful integration into the European and global production and distribution networks, with a gradual reduction in the processing of raw materials with insignificant added value.

Literature review

The category of "global production networks" was introduced by Henderson and Dicken (2002). The main principles of the functioning of a GVC are considered in the scientific papers of Stöllinger et al. (2018), Drăgulănescu and Androniceanu (2017), Drăgulănescu and Androniceanu (2017), and others. Many sources point out that integration into GVCs is a necessary tool for the economic development of emerging economies. Researchers such as Agtmael (2007), Geodecki (2021), and Hartog, Lopez-Cordova and Neffke (2020) considered the development of regional business services' value chains and the perspectives of emerging economies. Heuser and Mattoo (2017), Koval et al. (2019), and Workman (2021) investigated the problems of development of the services trade and global value chains. The European economic activity is organised within global value chains (GVCs). At different stages of the production process, these chains are geographically located across different countries. Globalisation-driven economy motivates companies to outsource and offshore activities.

Outsourcing is an important component of global value chains. For the Ukrainian economy, one of the most common spheres of outsourcing is IT. Zawicki (2020, p. 142) notes that the business process outsourcing sector includes service activities provided by business process outsourcing centres, shared services centres, global business services, IT outsourcing centres, research and development centres, and hybrid centres.

Such an integration significantly accelerates the centres' development and level of competitiveness. GVC accelerate the economic development of countries. GVC are drivers of labor productivity growth and improving the standard of living. Ukraine can achieve an economic growth by shifting to higher value-added goods and services. This requires the introduction of new technologies in agriculture, production and services. By land, Ukraine has borders with Belarus, Hungary, Moldova, Poland, Romania, Russia, and Slovakia; by sea, Ukraine border Georgia and Turkey. The European integration of Ukraine is now institutionalised in the form of the Association Agreement. This agreement between the EU and Ukraine helps to provide Ukraine with economic support and access to EU markets. Today, Ukraine is not a major participant in GVC, although it has stable economic potential to integrate into global production networks. Economic integration is not a linear process with only a positive result. Regional and global value chains are important to global trade. The world economy is gradually becoming interdependent.

In modern economic conditions, the major part of business activity can be outsourced. Thus, developing economies can be a serious threat to advanced economies. In countries with developed economies, the majority of global value chains (GVC) has already been outsourced. The development of value chains has an impact on the international division of labour and on trade in intermediate goods and services. The final product may include several added values created and added in different countries by different companies. Services can also be provided by different companies within the value chain. Global chains created by manufacturers are represented in the fields of the electronic automotive industry, the pharmaceutical industry, and other industries. In these chains, the manufacturer invests in Research and Development. The manufacturer manages the process of research and design, and controls the part of production where the greatest value is created. Global chains created by brand owners are characterised by the creation of value in the field of marketing, and production is outsourced. This is typical of light industries. Participation in global and regional value chains for the state means increasing the number of jobs and providing economic growth (see: *Global Value Chains*, 2021).

The GVCs trade can accelerate economic growth. It can be presented as the gradual rising of productivity and incomes. The value chain includes components such as design, raw materials, sales of products or services, and customer support. A GVC emerges when these activities are undertaken by entities based in different countries.

Structural changes in the global economy precipitated by the Information and Communication Technologies (ICTs) revolution have – for the first time – made it possible for the emerging nations to contribute significantly to the world's services industry (Gereffi & Fernandez-Stark, 2010, p. 335).

It is important to take into account issues that are considered by the government in the management of operations. A group of scientists researched the parameters for managing by the state in the interaction with the international business in managing the processes of GVCs' functioning. These parameters include ensuring employment, the security of local investors, national security, foreign trade, fiscal policy, priority directions of development, political stability, and other benefits (Koval et al., 2019, pp. 1929–1930).

Several studies into international trade in services inputs and into foreign direct investment in business services are potentially relevant to an examination of GVCs as seen by the researchers Heuser and Mattoo (2017). It is important for Ukraine's economy to determine the factors of interaction between authorities and companies.

Results and discussion

The key parameters for Ukraine are as follows: economic security, international trade, and stimulating fiscal policy.

The Ukrainian economy has certain advantages over countries from the EU. Such advantages include low labour costs, the quantity of labour resources, and logistics. In 2019, Ukraine ranked as the 56th economy in the world in terms of GDP (current USD), 51st in total exports, 48th in total imports, 122nd in terms of GDP per capita (current US$), and 43rd in terms of the most complex economy, according to the Economic Complexity Index (ECI) (see: Ukraine Profile, 2019). The economic relations between Ukraine and the EU can be characterised as gradually developing. Let us take a closer look at this relationship. Table 1 shows the share of the EU's countries in Ukraine's trade relations with.

The results of the analysis show that exports of goods and services to the EU decreased slightly over the period 2018–2020. At the same time, imports of goods and services from the countries of the EU are slowly increasing.

In turn, Table 2 shows Ukraine's structure of exports of goods and services.

Analytical information contained in Table 2 shows that the export of services to the EU's countries in absolute terms has not changed. The top services exported by Ukraine include air transport

Table 1. The share of the EU's member states in Ukraine's trade relations

Indicator	2018	2019	2020	$\Delta_{19/18}$	$\Delta_{20/19}$
The share of the EU's countries in Ukraine's export of goods and services (in %)	40.3	37.7	37.1	–2.6	–0.6
Export of goods and services from Ukraine to the EU (in billion USD)	23.0	24.2	22.1	–1.2	–2.1
The share of the EU's countries in the import of goods and services to Ukraine (in %)	41.8	42.4	44.3	0.6	1.9
Import of goods and services from Ukraine to the EU (billion USD)	26.6	28.7	26.8	2.1	–1.9

Source: Author's elaboration based on Ukraine's Ministry of Economic Development and Trade (see: *Infographics of Export*, 2020).

Table 2. The structure of exports of goods and services from Ukraine to the EU for the period 2018–2020

Indicator	2018	2019	2020	$\Delta_{19/18}$	$\Delta_{20/19}$
Goods (in billion USD)	20.1	20.8	18.6	0.7	–2.2
Goods, specific weight (in %)	87.5	85.9	84.2	- 1.6	–1.7
Services (in billion USD)	3.9	4.5	4.5	0.6	0
Services, specific weight (in %)	12.5	14.1	15.8	1.6	1.7

Source: Author's elaboration based on Ukraine's Ministry of Economic Development and Trade (see: *Infographics of Export*, 2020).

and sea transport, business services, professional services, technical services, IT services, and travel.

The State Statistics Service of Ukraine presented the report on foreign trade in services for 2019. In accordance with this document, in 2019, Ukraine exported $2.43 billion-worth of IT services (see: *Ukraine Profile*, 2019).

Table 3 shows Ukraine's export of goods for the period 2018–2020.

The structure of the exports of goods shows that the largest share (on average 40%) is occupied by agricultural products. This economic status can be described as a raw material export with a relatively low degree of added value. The most recent exports are dominated by corn, seed oils, iron ore, wheat, and semi-finished iron. In order to increase added value in the agricultural sector, I would considers it relevant to develop areas such as agrotechnology, biofuel, and value-added food processing. Table 4 demonstrates the main exporting countries of the Ukrainian goods.

There is a gradual diversification of Ukrainian exports due to a gradual decrease in Ukraine's focus on the markets of post-Soviet countries. Table 4 provides information on the largest share of partner countries to which Ukraine supplied goods for the period 2019–2020. China accounts for the largest share of exports from Ukraine. The rate of exports to this country from Ukraine doubled during the analysed period.

The basis of exports from Ukraine to China includes ores, grain, fats, oil, machinery, and agriculture food wastes. In terms of prospects for the development of global value chains for exports to China, it can be recommended that Ukraine develop knowledge-intensive and innovative products of the light industry, aerospace and the aviation industry, mechanical engineering, the food industry, and the food processing industry. The Polish economy ranks 2nd among exporters, with an average of more than 6%.

Table 3. The structure of export of goods from Ukraine for the period 2018–2020

Indicator (in millions USD)	2018 (in millions USD)	2019 (in millions USD)	2020 (in millions USD)	2018 specific weight (in %)	2019 specific weight (in %)	2020 specific weight (in %)
agricultural products and the food industry	18,612.8	22,144.2	22,199.1	39.3	44.2	45.1
products of the metallurgical complex	11,633.1	10,255.7	9,030.3	24.5	20.5	18.3
products of mechanical engineering	5,475.1	5,528.1	5,406.3	11.5	11.0	11.1
mineral products	4,340	4,866.5	5,331.9	9.1	9.7	10.8
products of the chemical industry	2,565.8	2,652.3	2,702.9	5.4	5.3	5.5
wood and paper pulp	2,043.6	1,838.1	1,814.6	4.3	3.7	3.7
various industrial goods	1,449.4	1,585.1	1,649.3	3.4	3.2	3.3
the light industry	1,220.3	1,184.7	1,078.4	2.5	2.4	2.2
Total	47,340.1	50,054.7	49,212.8	100	100	100

Source: Author's elaboration based on Ukraine's Ministry of Economic Development and Trade (see: *Infographics of Export*, 2020).

Table 4. The share of the main countries-exporters of goods from Ukraine in 2019–2020 (in %)

Year	China	Poland	Russia	Turkey	Germany	India	Italy
2019	7,2	6,6	6,5	5,2	4,8	4,0	4,8
2020	14,4	6,7	5,5	5,0	4,2	4,0	3,9
$\Delta_{20/19}$	7,2	0,1	–1,0	–0,2	–0,6	0	–0,9

Source: Author's elaboration based on the State Statistics Service of Ukraine (see: *Foreign Economic Activity*, 2020).

The IT industry is turning into one of the flagships of the Ukrainian economy. This also affects the country's international reputation. The coronavirus crisis did not impede the powerful and dynamic development of the Ukrainian IT sphere.

Ukraine increased the export of IT services by 15 percent. Today, it equals nearly 16% of the export of all services, which brought $15.23 billion to the country. Ukraine's export of IT services comprises the export of computer services, information services, and telecommunications services. During the study period, imports amounted to 495.8 million dollars. In imports, the share of computer services prevails ($275.3 million) (see: *Foreign Economic Activity*, 2020).

The data sheet shows that transport services, IT, and raw material refinery are all estimated to occupy the largest export share in global value chains. For example, according to the Ambassador of the Netherlands to Ukraine J. Mol, as of 2021, more than 400 Dutch companies have actually been served by the IT cluster of Ukraine (see: *Espreso.tv*, 2021).

The analytical information in Table 5 proves that Ukraine's export of IT services tends to increase. Table 6 analyses the structure of Ukraine's imports of goods and services.

Table 6 shows the ratio of imported goods to services as about 90 to 10%. The main components in the import of goods are cars, equipment and

Table 5. The structure of Ukraine's export of services for the period 2018–2020

	Indicator	2018 (million USD)	2019 (million USD)	2020 (million USD)	2018 specific weight (in %)	2019 specific weight (in %)	2020 specific weight (in %)
1	transport services	5,823.8	9,109.9	4,880.3	49.74	58.80	44.11
2	material resources processing services	2,084.3	1,640.2	1,346.1	17.80	10.59	12.17
3	IT services	2,044.2	2,575.9	2,910.5	17.46	16.62	26.31
4	business services	1,012.2	1,278.2	1,192.7	8.65	8.25	10.78
5	travel services	286.6	335.0	260.2	2.45	2.16	2.35
6	repair and maintenance services	241.5	270.1	233.9	2.06	1.74	2.11
7	other services	215.7	285.0	239.8	1.84	1.84	2.17
8	Total	11,708.3	15,494.3	11,063.5	100	100	100

Source: Author's elaboration based on *Infographics of Export* (2020).

Table 6. The structure of Ukraine's import of goods and services for the period 2018–2020 (in %)

Indicator (in %)	2018	2019	2020	$\Delta_{19/18}$	$\Delta_{20/19}$
Goods	90.8	89.8	91.2	–1.0	1.4
Services	9.2	10.2	8.8	1.0	–1.4

Source: Author's elaboration based on the Ministry of Economic Development and Trade of Ukraine (see: *Infographics of Export*, 2020).

machinery, fuel, fertilizers, petroleum products, and chemical products.

There exists a world-famous scheme of the global chain for the manufacture and sale of famous brands. Small business companies in Ukraine produce garments under foreign brands. Parts for car assembly (electrical equipment, sensors, seats, covers) are also produced. Supply-dependent production puts the system of value chain business at risk. This applies to the dependence of the final manufacturer on suppliers. Supply-dependent private vendors become a small outlet within a large corporation. This can be identified as a problem monopoly client. Table 7 demonstrates the share of the main countries-importers of goods to Ukraine for the period 2019–2020.

The leading position of imports to Ukraine is occupied by the Chinese economy. Among the EU member states, the largest volumes of imports were recorded during the analysed period by Germany and Poland. Regarding trends that can be extrapolated to the future, one can single out the increase in the share of China, Germany, Poland, and Turkey, as well as the decrease in the share of Russia and Belarus.

Important to note are the problematic issues in Ukraine's economic relations with the EU's countries. For example, in 2020, Ukrainian agricultural exporters used 31 out of the 40 tariff quotas under the FTA agreement with the EU. Ukraine in 2020 has fully used quotas for honey, barley, groats, corn, malt, sugar, eggs and other products.

Ukraine's most valuable exported products include sunflower oil, corn, wheat, iron ores, semi-finished products made from iron and other.

The Ukrainian IT industry in the service sector relies on outsourcing and freelance. This approach

Table 7. The share of the main countries-importers of goods to Ukraine in 2019–2020 (in %)

Year	China	Germany	Russia	Poland	the United States	Belarus	Turkey
2019	15,1	9,8	11,5	6,8	5,4	6,2	3,9
2020	15,3	9,8	8,4	7,6	5,6	5,3	4,5
$\Delta_{20/19}$	+0.2	0	+3,1	+ 0,8	+ 0,2	–0,9	+0,6

Source: Author's elaboration based on the Ministry of Economic Development and Trade of Ukraine (see: *Infographics of Export*, 2020).

Table 8. Ukraine's structure of import of goods for the period 2018–2020

N	Indicator (million USD)	2018	2019	2020	2018 specific weight (in %)	2019 specific weight (in %)	2020 specific weight (in %)
1	products of mechanical engineering	17,445.3	20,555.1	18,560.1	30.53	33.80	34.31
2	mineral products	14,169.3	12,984.6	8,402.7	24.79	21.35	15.53
3	products of the chemical industry	10,603.0	11,048.0	10,740.5	18.55	18.17	19.85
4	agricultural products and the food industry	5,051.7	5,736.0	6,495.4	8.84	9.43	12.0
5	products of the metallurgical complex	3,575.1	3,650.7	3,127.7	6.25	6.0	5.78
6	the light industry	2,660.9	3,132.5	2,967.6	4.65	5.15	5.48
7	various industrial goods	2,246.9	2,382.8	2,382.7	3.93	3.91	4.40
8	wood and paper pulp	1,388.8	1,310.4	1,414.5	2.43	2.15	2.61
9	Total	57,141	60,800.1	54,091.2	100	100	100

Source: Author's elaboration based on the Ministry of Economic Development and Trade of Ukraine (see: *Infographics of Export*, 2020).

provides employment for an IT specialist for a competitive salary.

Table 8 shows Ukraine's structure of imports of goods in the period 2018–2020. The largest share in the structure of imports is composed of products of mechanical engineering, mineral products, and products of the chemical industry. The analysis shows that the volume of imports of mineral products is constantly declining. Ukraine imports mainly oil products ($4.3 billion), cars ($2.64 billion), drugs ($1.84 billion), coal briquettes ($1.76 billion). The main import partners of Ukraine are such countries as China, Germany, Poland, Russia and Belarus (see: *Ukraine Profile*, 2019).

Outsourcing is the transfer or delegation of business processes or functions to external companies. Outsourcing is common for many industries. Outsourcing of IT can be local or offshore (placing orders outside the country). It can be divided into the following areas:

– the outsourcing of information processes (hosting, cloud technologies);
– the outsourcing of internal services (call centres);
– software development.

Ukraine in the world ranking by number IT professionals competes with USA, India and Russia.

The top services imported by Ukraine involve transport services, business services, travel, and financial services (Table 9).

More than 70% of Ukrainian IT exports include software development services. Ukrainian developers are integrated into more developed ecosystems and chains of other countries. Large companies such as Luxoft, Softserve, Eleks, Global Logic, Infopulse, and others create software products for major global brands.

The basis for the successful integration of an industry into global value chains lies is innovation ecosystems. Developed sectoral and regional clusters can be based on such ecosystems.

The volume of economic relations is slowly increasing. There is potential for increasing participation in global value chains, but it still needs to be realised. The research shows a tendency for the growth rate of imports of goods to exceed the growth rate of exports in Ukraine.

The analysis of the dynamics shows that the largest volumes of export transactions from Ukraine to the EU's countries in 2018–2019 included Poland, Italy, and Germany. Countries such as Hungary, the Netherlands, Romania, the Czech Republic, and Slovakia are in the lead in terms of exports. Luxembourg demonstrated the highest rates of imports from Ukraine (276%) in 2018–2019. Germany, Poland, and Italy were the main exporters of goods to Ukraine in 2018–2019. Bulgaria showed positive rate of export growth (177,1%) within the estimated period.

Table 11 considers the structure of Ukraine's foreign trade with the country's geographical neighbours.

The share of the EU's member states in exports is 46.44%. Poland was recognised as the largest export partner of Ukraine in 2019 in the context of neighbouring states. The share of export deliveries from Ukraine to non-EU countries was 53.56%. The Ukraine's trade balance remains passive. It proves the dependence of Ukrainian economy on high-tech supplies from abroad.

Statistical information on Ukraine's trade balance shows that the volume of export–import transactions between Ukraine and the EU as a whole increased during the period 2018–2020. This is a positive trend. However, the research revealed

Table 9. Ukraine's structure of import of services for the period 2018–2020

	Indicator (inmillion USD)	2018	2019	2020	2018 specific weight (in %)	2019 specific weight (in %)	2020 specific weight (in %)
1.	transport services	13 80.1	1 559.1	1 013.6	23.77	22.46	19.46
2.	royalties and services using intellectual value	472.8	559.7	527.1	8.14	8.06	10.12
3.	IT services	462.6	531.3	553.0	7.97	7.65	10.62
4.	business services	1 227.1	1 359.1	973.0	21.13	19.58	18.68
5.	travel services	979.4	1 299.3	697.4	16.88	18.71	13.38
6.	government services	589.9	912.0	737.5	10.16	13.14	14.16
7.	other services	227.9	226.1	237.0	3.92	3.26	4.55
8.	services related to financial activities	466.4	495.4	470.6	8.03	7.14	9.03
9.	Total	5 806.2	6 942	5 209.2	100	100	100

Source: Author's elaboration based on *Infographics of Export* (2020).

Table 10. The dynamics of foreign trade in goods between Ukraine and the EU's countries (thousands USD)

	Export			Import		
	2018	**2019**	***in % to 2018***	**2018**	**2019**	***in % to 2018***
Austria	553,191.6	598,319.5	108.2	607,884.1	657,000.3	108.1
Belgium	603,521.1	680,704.4	112.8	553,841.2	549,463.0	99.2
Bulgaria	513,862.3	482,168.2	93.8	259,422.0	459,341.9	177.1
Croatia	35,010.5	37,197.4	106.2	46,453.3	52,505.4	113.0
Cyprus	40,363.9	43,043.5	106.6	22,806.1	23,165.0	101.6
the Czech Republic	878,035.7	920,901.6	104.9	1,034,786.6	1,165,526.6	112.6
Denmark	249,974.8	254,684.7	101.9	275,633.4	274,188.2	99.5
Estonia	152,061.5	139,859.9	92.0	95,790.9	144,388.1	150.7
Finland	80,642.8	4,6178.7	57.3	326,187.7	275,264.6	84.4
France	537,647.1	596,505.8	110.9	1,480,571.5	1,652,665.3	111.6
Germany	2,208,355.5	2,383,003.1	107.9	5,983,348.8	5,986,873.6	100.1
Greece	279,900.7	274,211.5	98.0	270,459.0	311,635.1	115.2
Hungary	1,646,045.9	1,562,809.4	94.9	1,260,239.9	1,251,100.5	99.3
Ireland	77,508.5	153,235.2	197.7	143,826.1	169,564.7	117.9
Italy	2,628,763.8	2,418,875.4	92.0	2,033,022.5	2,074,753.7	102.1
Latvia	294,422.5	300,080.9	101.9	152,139.3	166,467.0	109.4
Lithuania	342,714.8	410,796.4	119.9	879,136.2	1,144,499.2	130.2
Luxembourg	7,289.8	20,179.0	276.8	82,408.3	53,130.7	64.5
Malta	65,682.5	41,427.2	63.1	6,642.8	5,220.0	78.6
the Netherlands	1,603,531.1	1,848,424.7	115.3	776,491.0	765,085.6	98.5
Poland	3,257,248.5	3,295,846.6	101.2	3,641,921.5	4,109,083.2	112.8
Portugal	247,046.4	282,174.2	114.2	61,580.7	74,806.3	121.5
Romania	932,648.6	1,005,591.3	107.8	511,105.4	645,529.3	126.3
Slovakia	863,926.4	709,620.1	82.1	525,879.4	651,805.4	123.9
Slovenia	33,306.2	38,945.3	116.9	190,509.9	245,038.8	128.6
Spain	1,369,890.1	1,500,801.3	109.6	636,756.2	844,213.8	132.6
the UK	584,229.9	628,087.7	107.5	892,120.1	769,910.5	86.3
Sweden	70,190.2	77,068.7	109.8	465,479.2	489,042.0	105.1
The total of the EU's countries	20,157,013.0	20,750,742.0	102.9	23,216,443.0	25,011,268.0	107.7

Source: Author's elaboration based on Ukraine's State Statistics Service (see: *Foreign Economic Activity*, 2020).

Table 11. Geographical structure of Ukraine's foreign trade in goods in 2019 with the neighbouring countries (in thousands USD)

Country	Export		Import		Balance
	thousands USD	specific weight (in %)	thousands USD	specific weight (in %)	
Belarus	1,549,840.8	10.20	3,751,922.9	18.48	–2,202,082.1
Bulgaria	482,168.2	3.17	459,341.9	2.26	22,826.3
Hungary	1,562,809.4	10.29	1,251,100.5	6.16	311,708.9
Moldova	726,568.7	4.78	91,250.6	0.46	635,318.1
Poland	3,295,846.6	21.69	4,109,083.2	20.24	–813,236.7
Romania	1,005,591.3	6.62	645,529.3	3.19	360,062.0
Russia	3,242,815.8	21.34	6,985,013.5	34.40	–3,742,197.7
Slovakia	709,620.1	4.67	651,805.4	3.21	57,814.7
Turkey	2,619,024.9	17.24	2,355,446.7	11.60	263,578.2
Total of the neighbouring countries belonging to the UE	7,056,036	46.44	7,116,860	35.06	–60,824
Total of the neighbouring countries non belonging to the UE	8,138,250	53.56	13,183,634	64.94	–5,045,384
Total	15,194286	100	20,300,494	100	–5,106,208.3

Source: Author's elaboration based on Ukraine's State Statistics Service (see: *Foreign Economic Activity*, 2020).

that the indicators of export–import transactions between Ukrainian and the EU's enterprises decreased during the period 2019–2020. Reasons for this negative trend include economic problems with sales and logistics caused by COVID-19. The overall value of Ukraine's trade balance is passive. However, the trade balance of services is positive, including with the EU's member states.

Ukraine is one of the emerging markets in Europe. This market provides a wide range of economic opportunities. Location, low costs and the availability of free trade with global markets can ensure stable economical growth.

The integration of Ukrainian companies into value chains is fundamentally important for the development of Ukrainian industry. Participation in such chains allows the participants to join forces to improve competitiveness. There are international value chains based on Ukrainian companies. Thus, Metinvest uses the full cycle of production of metallurgical products and assets abroad. Metinvest is part of global value chains. Table 12 presents Ukrainian companies participating in GVCs, including with the EU's countries.

A significant part of Nibulon's foreign trade contracts is concluded within the framework of the modernisation of trans-shipment terminals and the development of its own fleet. High-quality equipment from well-known world manufacturers was imported under direct contracts: NEUERO Industrietechnik fur Forderanlagen GmbH (Germany), MORILLON SAS (France), SCAFCO (the USA), Cimbria Unigrain A/S (Denmark), and others. Upgrading the material and technical base improves the process of grain circulation and increases the productivity of acceptance and shipment of agricultural products for export. The construction of ships with equipment and materials is organised within the cooperation with well-known world manufacturers of ship equipment: ZF Marine Krimpen b.v. (the Netherlands), Danfoss Fire Safety A/S (Denmark), Wiska Hoppmann GmbH (Germany), Fak-armaturen Gmbh (Germany), Midif S.A.R.L. (France), DMT Marine Equipment

Table 12. Examples of integrating Ukrainian companies into international cooperation

Company	Sphere of activity	Partnerships with companies in the EU	Partnerships with companies beyond the EU
Metinvest	mining, metals, sales, logistics, service	Bulgaria, Italy	Belarus, Switzerland, the UK, Russia, the United States
Aeromeh	engineering	Bulgaria, Germany, Greece, Italy, Latvia, Lithuania, Poland, Romania, the Czech Republic, Finland, Estonia	Australia, Armenia, Belarus, Bolivia, Brazil, China, Great Britain, Georgia, India, Israel, Kazakhstan, Kyrgyzstan, Mongolia, Tajikistan, Turkmenia, Turkey, Switzerland
Motor Sich	aircraft and engine building	Poland, Czechia, Slovakia	Bangladesh, Belarus, Canada, Ethiopia, Myanmar, Pakistan, Singapore, South Korea, Sri Lanka, the UAE, the UK
Ukrainian Automobile Corporation	automobile maker	Poland	Egypt, Uzbekistan
Konecranes Ukraine	cranes, lifting equipment and crane services	Austria, Belgium, the Czech Republic, Denmark, Germany, Greece, Finland, France, Hungary, Italy, Latvia, the Netherlands, Poland, Portugal, Romania, Spain, Slovakia, Slovenia, Sweden	Australia, Bangladesh, Brazil, Canada, Chile, China, Colombia, India, Indonesia, Hong Kong, Mexico, Morocco, New Zealand, Norway, Peru, the Philippines, Russia, Singapore, South Africa, South Korea, Thailand, Turkey, Switzerland, the UAE, the UK, the USA, Venezuela, Vietnam, Japan
Kernel	food processing	Germany, Israel, Latvia, Lithuania, Estonia, Sweden	Bangladesh, Canada, South Korea, Norway, the USA
EKTA	LED displays, imaging equipment/software	France, Estonia, Sweden	Norway, the UAE, the UK
Luxoft	software development	Bulgaria, Germany, Italy, the Netherlands, Poland, Romania, Sweden	Australia, Canada, China, India, Malaysia, Mexico, Russia, Singapore, South Korea, Switzerland, the UK, the USA, Vietnam
Nibulon	grain and oilseeds, shipbuilding, logistics	Bulgaria, Croatia, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Italy, Latvia, Lithuania, the Netherlands, Poland, Romania, Sweden	China, Norway, Turkey, the UK
Kernel	oilseed processing, infrastructure and trading, farming, logistics	the Netherlands, Spain	China, Egypt, Indonesia, India, Kenya, the Philippines, Turkey
MHP	crop production, poultry, meat processing	Germany, the Netherlands, Slovakia, Slovenia, Romania	Armenia, Azerbaijan, China, Iraq, Hong Kong, Kuwait, Moldova, Morocco, the Philippines, Saudi Arabia, Singapore, South Korea, Tunisia, Vietnam, the UAE, Japan

Source: Author's own elaboration.

S.A. (Romania), Famor S.A. (Poland), Lanex a.s. (the Czech Republic), Kartallar Boya ve Kimya Sanayi Tic. Ltd. Sti (Turkey), and others. There is a contract with Zeppelin Power Systems GmbH & Co. KG (Germany) for the supply of components. Also, Nibulon has contracts to purchase fuel from Orlen (Lithuania).

Kernel is a famous producer and exporter of sunflower oil. The company exports agricultural products to international markets (about 80 countries). Since November 2007, the Company's shares have been traded on the Warsaw Stock Exchange (WSE) (see: *About Kernel*, 2021).

Ukrainian company Luxoft develops car-control technologies, including unmanned ones, for German car manufacturers. Potentially, Ukraine has a full cycle and numerous advantages in the production of aircraft (Antonov). However, this circuit does not work effectively due to system problems. Ukraine has great opportunities for integration into global value chains of sectors such as machinery for the agro-industrial complex, railway cars, sea vessels, and river vessels. The country would also be capable of supplying products to the EU from metal to complex components of construction and finished machines, units, vehicles. Ukrainian manufacturers of specialised software and hardware also have the economic potential. It is important to consider the favourable factors for the entry of Ukrainian industrial enterprises into GVCs. These factors include the proximity to European markets, developed transport, energy infrastructure and a high potential for developing information and communication technologies. The cluster 'Zakarpattya' is represented by the associations of international chains of brands, such as "Eurocar", "Jabil", "Yazaki", "Fischer", and others. This cluster was one of the first to move to a system model of global integration. Progrestech-Ukraine cooperates with Boeing. The company specialises in design, engineering consulting, and software development in the field of aircraft construction. C-Engineering (Odessa) is a Ukrainian engineering company represented on the world market by the SE Group International brand. Another feature of integration into global chain networks includes the partnership with Siemens. "MDEM" (Nikolaev city) is a partner of the Dutch concern "DAMEN", which specialises in ship design. Infocom Ltd (the city of Zaporizhzhya) offers market products and solutions in the field of specialised software development, alternative energy, electric vehicles, robotics, computer vision, drones, etc. For this company, it is exports and integration into global value chains that are the source of its innovative development.

The National University 'Zaporizhzhya Polytechnic' is a member of the Zaporizhzhia Cluster 'Engineering – Automation – Machinery' (EAM). This organisation is based on a collaboration of a wide variety of players in engineering as well as automation and machinery. Members of the cluster include the Zaporizhzhya Chamber of Commerce and Industry, industrial enterprises (Triada Ltd Co., Blysk metal service pro), IT companies (Infocom Ltd), industrial parks (Konecranes), and other organisations. Members of the Zaporizhzhya Cluster took part in the International Machine-Building Exhibition MSV. The event took place between November 8th, 2021, and November 12th, 2021, in Brno, the Czech Republic. The result was the signing of the Memorandum of Cooperation between the IAM cluster and the INDUSTRY CLUSTER 4.0, an important Czech association of engineering and IT companies. Such measures are relevant in terms of developing global and regional value chains in the context of Ukraine's cooperation with the EU's countries.

It is necessary to highlight such an important feature as "technological multiservice". The basis of the strategy of integrating Ukrainian engineering enterprises into global value chains should include the following components:

1. introducing fiscal preferences for Ukrainian manufacturers, reasonable conditions for project fundraising, the setting up of technology parks and a free zone;
2. promoting the conclusion of Ukraine's agreement with the EU on Conformity Assessment and Acceptance of Industrial Goods (ACAA –

Agreement on Conformity Assessment and Acceptance of Industrial Products);
3. motivating investors to buy products manufactured by Ukraine-based companies (in accordance with the Association of Industrial Automation Enterprises of Ukraine (see: *Integration into Global Value Chains: A Review of Developments and Best Practices*, 2021);
4. developing innovative ecosystems of industrial hi-tech (the author argues that developed sectoral and regional clusters can be based on this). Deeper specialisation can take place in these clusters. Clusters should operate on the principles of integration and smart specialisation;
5. integration into regional value chains;
6. integration into the EU's Digital Single Market;
7. cooperating on the European Green Deal (developing the circular economy, the prospect of hydrogen production for the EU's countries).

In order to expand the cooperation between Ukraine and the EU in the framework of global and regional value chains, it is recommended to deepen cooperation such projects such as the ACAA (Assessment and Acceptance of Industrial Products), "customs visa-free", integration into the Digital Single Market, and cooperation under the European Green Agreement. The implementation of the above-mentioned agreements can develop the potential of Ukraine's production and trade relations with the EU's member states.

Ukraine is a world leading exporter of iron products, grain and seed oils. A large part of these products are exported to EU. Ukraine has a high level of processing in the fields of crops (seed oils, other vegetable residues, rapeseed, corn) and metallurgy (pig iron). According to the product complexity index (PCI), Ukraine's highest-complexity exports include metal pickling preps, solder, brazing flux, weld cores (1.7), flat-rolled alloy steel nes (1.49), metal-rolling mills (1.38), wire of alloy steel except stainless steel (1.36), and stainless steel, angles, shapes/ sections (1.26). Product Complexity Index (PCI) measures the intensity of an economy or a product (see: *Ukraine Profile*, 2019).

The Ukrainian share of the-EU-oriented export products accounts for more than 40%. The buyers of Ukrainian products are mainly China, Poland, Russia, Germany and other countries. European countries buy 48% and Asian countries 39.8% of Ukrainian export sales (see: *Integration into Global Value Chains: A Review of Developments and Best Practices*, 2021).

In order to profit from participation in the value chain, countries need to organize trade and investment policy. COVID-19 pandemic revealed the interdependence of many countries on suppliers across the world. GVCs can play a major role for emergency economics such as Ukraine in terms of delivering growth, increasing regional and global integration, and managing external situations.

Small companies in Ukraine manufacture garments under a foreign brand. Components for car assembly (electrical equipment, sensors, seats, covers) are also produced. However, there is one danger to Ukrainian enterprises in value chains. This concerns the dependence of the final manufacturer on suppliers. Vendors can lose their independent enterprises and instead become a shop of a large corporation. This can be identified as a problem of a monopolistic client.

The finished product is essentially the result of production and assembly processes carried out in many countries. Every step in the production process enhances the value of the final product. Importing goods and services matters as much as its export to successful GVCs. GVC helps integrate the know-how of global and regional companies by the key components in the stages of production.

Rational strategies can help Ukraine optimise and maximise its participation in GVCs. Trade-transparent borders and the presence of investment can help rapid integration into GVCs. The country can benefit by harnessing the potential of the domestic economy and strengthening links with GVCs. Economic policy affects trade policy, logistics, business services, investment, taxation, and

industrial development. Ukraine has difficulties with some of these factors. Regional and global value chains are significant for the world trade. The play a role in stimulating economic growth, employment, and development, as well as addressing the need to increase the participation of developing countries in such value chains. Technological backwardness of developing countries affects the sphere of GVCs. The Ukrainian strategy of participation in the GVC can become the basis for the economic growth of the state. The functioning of industries with a high degree of integration into regional and global value chains allows for a synergistic effect. In this area, the most developed countries are the United States, UK, Germany, France, Japan and China. The Ukrainian economy concentrates mostly on getting adequate shares in European GVCs. For Ukraine, priorities are to be set in terms of new directions in technological leadership in GVCs and in security, health, ecology, energy dependence. In recent years, there has been a geographical reorientation of Ukrainian industry to global production networks. This was the result of the almost twofold reduction in cooperation with Russia and an increase in exports of intermediate industrial products to European countries. As the author of this article sees it, Ukrainian exporters are gradually becoming part of European production chains. Strategic cooperation between the government and the private sector is needed for further development. It is also important for the Ukrainian economy to use trade policy instruments in order to maximise value added at the national and global levels.

Concluding remarks

The phrase 'global value chains' does not really always fully reveal the economic essence of the concept. In this context, most chains are regional, not global. Integration into regional value chains, in particular with the EU's member states, can be seen as important to Ukraine. Integration into the GVCs is a necessary tool for Ukraine's economic development. Such an integration accelerates the development and level of competitiveness of the country. The current level of Ukrainian tools, programmes, and policies for integration into GVCs can be assessed as initial. The commodity structure of Ukraine's foreign trade is dominated by exports of intermediate goods and imports of consumer goods. The structure of the Ukrainian export is dominated by metallurgical and agricultural products. Its feature is the high proportion of intermediate goods used as a source material for the production of other final consumer goods.

The analysis of research data reveals that the leading position of Ukraine's imports is occupied by the Chinese economy. Among the EU's member states, the largest volumes of imports during the analysed period involved Germany and Poland. With regard to trends that can be extrapolated to the future, one can single out the increase in the share of China, Germany, Poland, and Turkey, as well as the decrease in the share of Russia and Belarus.

Under the current conditions, trade in finished goods and services is growing at almost the same rate as trade in intermediate products. Therefore, the structure of the world economy is gaining the features of multi-levelness and interdependence. Recommendations for Ukraine's integration into global business services can include developing services in the context of GVCs and developing international cooperation between enterprises on global business platforms. The basis of a successful integration into GVCs involves the developed innovative ecosystems of industrial high-tech. These products include sunflower-seed or safflower oil, corn, iron ores or concentrates, wheat, and semi-finished products made from iron or non-alloy steel. More than 70% of the Ukrainian IT exports include software development services.

The Ukrainian economy is about to be incorporated into regional and global business service centres. The essence and characteristics of the phenomenon of global value chains is a practical embodiment of the activities of transnational companies in the principle of "made in the world". The study herein contains a review of the global turnover of goods and services through value chains.

It also uncovers aspects of Ukraine's position in the global value chains. The work of GVCs starts with economic agreements of the business entities. Ukraine has a number of benefits in terms of developing participation in global economic processes. It delivers examples of the Ukrainian companies' global value chains integration. The economic relations between Ukraine and the EU tend to grow significantly. Cooperation between Ukraine and the EU will provide the development of trade. Diversifying services within the framework of GVCs and the development of cooperation between companies on global business platforms will result in the integration of Ukraine into the global business. The article provided examples of the involvement of Ukrainian enterprises in international cooperation within GVCs.

The ways to integrate Ukrainian companies into GVCs are as follows: flexible fiscal policy for Ukrainian manufacturers; the adjustment of Ukrainian technical norms and standards to the European ones; working out incentives for investors to buy at Ukraine-based companies; providing innovative ecosystems for high-technology industries; integration into regional chains. The National University 'Zaporizhzhya Polytechnic' is a member of the Zaporizhzhia Cluster 'Engineering – Automation – Machinery' (EAM) and takes an active part in the development of the cluster towards participating in GVCs.

Successful integration into GVCs is based upon elaborate innovative ecosystems of the industrial high-tech. Advanced sectoral and regional clusters can be based upon these ecosystems. Profound and smart specialisation should result in the emergence of these clusters.

International R&D centres should contribute to the development of GVCs in Ukraine. These research centres carry out both research and the production of test samples of goods. It can be applied to brand owners that build their own marketing strategy. This can also add to the value of product. The development of this segment requires investment and the setting up of venture business. For Ukraine, successful integration into European and global value chains means abandoning raw materials. This is necessary to achieve a higher degree of processing. The introduction of the latest digital technologies in industry requires the creation of a holistic innovation ecosystem. Deep specialisation, a higher degree of processing, and, in general, the rapid growth of the processing industry and its digitalisation are key factors for Ukraine's better integration into the EU. Ukraine has the potential to create the EU's modern production-and-technology hub.

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Public Governance / Zarządzanie Publiczne

Aims and scope

Public Governance / *Zarządzanie Publiczne* is a quarterly published since 2007. It is intended for experts and researchers who specialise in public issues, including political decision-makers and students. It offers a forum for debates between academics and practitioners interested not only in the theoretical foundations of public governance but also in the opportunities for its practical application. The quarterly is international in scope, which is reflected in the nature of research issues (they involve matters of interest to academic circles worldwide), the contributing authors (a significant proportion of them comes from different countries), and the composition of its Programme Board as well as the make-up of the team of reviewers (it includes international research and academic centres).

The mission of *Public Governance* / *Zarządzanie Publiczne* is to publish advanced theoretical and empirical research in public management, governance, public policy analysis and evaluation, public sector economy as well as strategic management, which reflects new developments in the methodology of social sciences. The editors select papers with an original theoretical background and those that discuss the results of pioneering empirical research. We are also eager to promote the interdisciplinary and comparative approaches based on qualitative, quantitative, and experimental studies that provide new insights into the construction of theoretical models along with the methodological concepts in the field of public management.

In our journal, we adopt a unique approach to specific issues inherent in the sphere of public governance. The originality of our approach consists in the selection of both research areas and research methodologies.

A significant proportion of texts published by our journal is devoted to the analysis of the mechanisms of public governance at national and regional government levels (respectively), relevant to the administrative culture predominant in Central and Eastern European countries with a particular focus on the programming, implementation, and evaluation of public policies. The texts:

a. focus on problems occurring in post-transition countries which build their own public governance institutions and mechanisms, including the sphere of good governance;
b. represent attempts at a creative transposition and adaptation of international achievements in developing original solutions in the field of public governance in post-transformation countries.

The distinguishing features of the research methodologies preferred by our journal include:

a. a strongly established interdisciplinary approach to the study of public governance, combining research and analyses in the areas of economics, political science, management, public policy, sociology, and psychology;
b. the published texts are firmly rooted in social science theory.

Author Guidelines

Basic rules

Before submitting your article, please read and apply the following rules:

- EASE Guidelines for Authors of Scientific Articles to be Published in English (version of November 2018) explaining in detail how to compose a scientific article according to international standards:
  – in English (https://www.ease.org.uk/wp-content/uploads/2018/11/doi.10.20316.ESE_.2018.44.e1.pdf)
  – in Polish (https://www.ease.org.uk/wp-content/uploads/2018/11/doi.10.20316.ESE_.2018.44.e1.pl_.pdf)
- APA Style Manual (7th edition, 2020) explaining in detail how to use and cite references and how to apply linguistic rules while writing in English.
- Technical Guidelines for Authors explaining in detail how to prepare articles in accordance with our requirements – see our website (www.publicgovernance.pl).
- During the submission process you must provide us with your ORCID number; otherwise we will not proceed your submission.
- Provide us with the Subject classification – JEL classification in the OJS.

Ensuring Blind Review

To ensure the integrity of the blind peer review for submission to our journal, every effort should be made to prevent the identification of the authors and reviewers. This involves the authors, editors, and reviewers (who upload documents as part of their review) checking to see if the following steps have been taken with regard to the text and the file properties:

- The authors of the document have deleted their names from the text, with "Author" and year used in the references and footnotes, instead of the authors' name, article title, etc.
- With Microsoft Office documents, author identification should also be removed from the properties for the file (see under File in Word), by clicking on the following, beginning with File on the main menu of the Microsoft application: File > Save As > Tools (or Options with a Mac) > Security > Remove personal information from file properties on save > Save.
- With PDFs, the authors' names should also be removed from Document Properties found under File on Adobe Acrobat's main menu.

Article length and format

All submitted manuscripts should not exceed the recommended size in accordance with established rules: 30 000 – 40 000 characters, including abstract, keywords, tables, figures, references, etc.

No article submission or article processing fees are charged. Nevertheless, the fee for each additional 1 800 characters (exceeding 40 000 characters) is 20€. The payment will be transferred to the Publisher's bank account after the article's approval for publication.

Only editable formats of text can be sent (doc or docx). We do not accept uneditable formats (e.g. pdf).

Language

1. Papers should be presented in clear, concise English. Articles written in poor English will be rejected immediately (and will not be accepted even for the review process).

2. We prefer British English (e.g. ‘behaviour’, not ‘behavior’), this is why we strongly ask authors to use British English.

OJS system

We use the OJS system for submissions. After having finished your article, when your files are ready, visit the online submission website.

You will need to log into the system:

- If you know your login details, use your user ID and password to log in.
- If you do not know your login details, check to see if you are already registered by clicking on the ‘Forgot your password?’ button and following the on-screen instructions.
- If you are not registered yet, you can register by clicking on the ‘Register’ link on the login screen and following the on-screen instructions.

Please remember that you should register as ‘Author’, although we advise you to register also as ‘Reviewer’. If you do not mark ‘Author’ status, you will not be able to submit your article.

Submission Preparation Checklist

As part of the submission process, authors are required to check their submission’s compliance with all of the following items, and submissions may be returned to authors that do not adhere to these guidelines.

- The submission has not been previously published, nor is it under consideration in another journal (or an explanation has been provided in Comments to the Editor).
- The submission file is in OpenOffice, Microsoft Word, or RTF document file format.
- Where available, DOI numbers or URLs for the references have been provided.
- The text is single-spaced; uses a 12-point font; employs italics rather than underlining (except for URL addresses); and all illustrations, figures, and tables are placed within the text at the appropriate points rather than at the end.
- The text adheres to the stylistic and bibliographic requirements outlined in the Technical Guidelines for Authors.
- ORCID number was provided on the first page of the article and was provided in the OJS system.
- Subject classification according to EconLit Subject Descriptors-JEL codes was provided in the OJS during the submission process.
- The instructions in Ensuring Blind Review have been followed.
- The article will be checked for antyplagiarism by CrossCheck.

The Editorial Board approves only original papers, previously unpublished in any other periodicals or books, and not being subject of evaluation in other journals. The articles must be prepared in accordance with our technical requirements and taking our academic ethics code into account. We will reject submissions not prepared according to our requirements.

Reviewing Policy and Procedures

The Editorial Board will make a preliminary decision to either accept the paper for further review or reject the paper (desk rejection) if the submitted article does not meet our editorial requirements or

is beyond our aim and scope. The author will be notified of the decision no later than 10 days from the date of submission. In certain situations, this decision will be made following consultation with a member of the Editorial Board specialising in a given area of research.

1. The reviews are prepared by at least 2 independent reviewers indicated by the Editorial Board. Reviewers are not associated with the author's parent institution (reviewers external to the author).
2. Reviews are prepared to use a double-blind peer review. This process is based on the rule that the reviewer does not know the identity of the author and vice versa.
3. Each review is issued in written form (later revealed to the Author) and ends with a recommendation for or against publication.
4. Evaluation criteria: clarity of the stated objective, originality of research issues, theoretical background, quality of empirical research, originality of conclusions, significance for the research area aligned with the scientific profile of the quarterly, quality of language, comprehensibility, punctuation, and appropriate source selection. Each review ends with an unambiguous recommendation:
   - the paper can be published as submitted,
   - the paper can be published pending minor modifications and inclusion of additional relevant information,
   - the paper can be published pending substantial revision and re-review,
   - the paper is unsuitable for publication.
5. In addition to the recommendations made by reviewers, the Author may receive additional editorial suggestions from:
   - **the Editorial Board**, only in urgent cases,
   - **a layout editor** for technical and editorial comments,
   - **a statistical editor** if the paper contains statistics.
6. The Author must reply to all comments and suggestions (a special form is required to be filled in and to be sent back).
7. The Author should be familiar with the following forms and evaluation criteria:
   - **Internal Review Form – Checklist of the Article** (*.docx),
   - **External Review Form** (*.docx),
   - **Author's Statement after the Reviews** (must be attached to the revised article),
   - **Statement by Author** (must be signed before publishing).
8. Before publishing each article is proofread by a linguistic editor (a native speaker or a bilingual speaker). Authors are obliged to apply all necessary changes, however they can negotiate special terminology use.
9. Prior to publishing, the Corresponding Author must sign and submit the Statement by Author, otherwise we will not be able to publish the given article.
10. Each Author must follow the principles of transparency and best practices in scholarly publishing (see our website for details). Editors and the Publisher will be documenting all forms of scientific misconduct and malpractice, particularly violations of ethics and science principles. Any such cases will be reported to the employer of the Author and to the relevant public and state institutions.

Submissions from Programme Board and Editorial Board members are handled in the same way as those from other authors.

Publication Ethics and Malpractice Statement

The author's statement including the copyright notice as well as the statement on ethics and good practice in science (including financial disclosure, ghost-writing firewall, guest authorship firewall) must be submitted alongside the manuscript according to the form provided (see our website) as well as to be mentioned on the article title page.

The detailed information on Ethics and Malpractice is available in the guidelines established by the Ministry of Science and Higher Education of the Republic of Poland: Scientific Research and Articles Solidity and Intellectual Rights Respect.

We use the following guidelines (extract from Scientific Research and Articles Solidity and Intellectual Rights Respect):

1. Articles must be original and cannot include borrowings from other works, which could result in liability of the publisher. Papers cannot infringe any third-party rights.
2. Articles must reveal the contribution of all individual authors in the creation of publications (with their affiliations and contributions, such as information about who is the author of concepts, principles, methods, protocol, etc. used in the preparation of publications).
3. Articles cannot display any signs of 'ghost-writing', that is not to disclose the names of authors who have made a significant contribution to the publication of, or otherwise contributed to its creation.
4. Articles cannot display any signs of 'guest authorship', i.e. assign a person who did not contribute to the creation of publications.
5. Articles must include complete information concerning sources of funding, the contribution of research institutions, associations, and other entities ('financial disclosure').
6. Editors and the Publisher will be documenting all forms of scientific misconduct and malpractice, particularly violations of ethics and violations in science. Any such cases will be reported to the employer of the author and to the relevant public and state institutions.

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