

MODERN SERVICES: TERMINOLOGICAL CONSIDERATIONS AND THE CHARACTERISTIC FEATURES OF THEIR ROLE IN SOCIO-ECONOMIC DEVELOPMENT

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ABSTRACT: Services, the staple of the modern economy, are subject to constant changes. These changes are contingent on economic processes that are the result of, *inter alia*, technological progress, intensifying globalisation processes and growing competitiveness. Increasingly important are specialised services, where staff with high qualifications are employed. Such services include dynamically developing knowledge-based ones. Their growth has been fostered by the increasing demand for modern services in the era of the development of a knowledge-based economy.

This article focuses on the terminology related to modern services and seeks to answer questions about their role in the development of modern economies. The aim of the article is: (1) to identify modern services in the light of relevant literature; (2) to attempt to construct a model of the impact of those services on economic development; (3) to analyse the level of development of modern services in the EU member states, and (4) to empirically verify the model of the impact of the services on economic development in the EU member states. The empirical analysis was carried out with the application of statistical data from the Eurostat database.

KEY WORDS: EU, factors of socio-economic development, modern services, services.

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Introduction

In traditional terms, the level of service development has a significant impact on the level of overall socio-economic development. The service sector contributes to the socio-economic development of a country and regions through the creation of new jobs, increased income and through meeting the needs of the residents (Illeris 1996). Changes taking place in modern economies necessitate changes in the role of services. These changes are contingent on economic processes

that are the result of, *inter alia*, technological progress, intensifying globalisation processes and growing competitiveness. In line with service sector theories, increasingly important are specialised services, where staff with high qualifications are employed. Such services include dynamically developing knowledge-intensive ones. It is this type of services, also known as modern services, that is of crucial importance in the development process of contemporary economy, particularly in the context of a knowledge-based economy. Modern knowledge-based services,

which include: educational and medical services, research and development, financial, and professional ones, play an important role in shaping the key development factors. These factors include: human capital, social and financial aspects related to the business environment, and innovation. For this reason, it seems vital to answer the question about the actual impact of modern services on socio-economic development, taking into account the most important growth factors.

The aim of the article is:

1. To identify modern services in the light of relevant literature;
2. To attempt to construct a model of the impact of services on economic development;
3. To analyse the level of development of modern services in the EU member states, and
4. To empirically verify the model of the impact of those services on economic development in the EU member states. The empirical analysis was carried out with the application of statistical data from the Eurostat database.

Modern services and their role in development in the light of relevant literature

The starting point of this analysis was the identification of modern services. The literature on the subject uses such terms as: new, innovative and modern services. These concepts, although not synonymous, are often used interchangeably. It is worth noting, however, that the term new services is usually understood as pertaining to the services that have emerged relatively recently. Novelty is something that has just been invented or made, something that has functioned in a given environment for a short time. At this point, it is also necessary to differentiate between novelty at the scale of an enterprise (micro scale) and novelty on the market (macro scale). Something that will be new to one company may have existed for a long time in another. A similar situation applies to the macro scale. It is also worth taking into account the fact that something may or may not be new because of the reference point. In many stores in Poland the possibility of ordering purchases electronically is a new service, although stores in many countries of Western Europe or the United States have offered online sales for some time now. Menor et

al. (2002) define a new service as an offer that has been previously unavailable to the company's customers, resulting from adding it to an earlier portfolio of services or changing the concept of services. Because the relevant literature perceives services as a series of interactions between participants, processes and material elements, changes in any of these elements trigger the "newness" of a service. According to scholars, all changes in the concept of a service which require skills different from earlier ones can be considered a new service. Authors also point out that a "new" service offer (i.e. what is offered) as well as changes in the service concept (how it is offered) should be taken into account. However, this approach requires the division of new services according to the degree of changes taking place. In terms of the degree of novelty, new services, just like innovative services, can be classified as radical and incremental. Radical ones are those new for the market, previously undefined, most often created as a result of ICT development, or new services in the company, which, however, are already provided on the market by other enterprises. Incremental ones concern the enrichment of the existing portfolio of services by adding new items (e.g. on the menu, new routes, courses), changes in the features of services already provided, or small changes that affect their reception by customers (Menor et al. 2002). New services can also be classified according to whether the "new" refers to the input, the process or the effect (output).

Innovation in relation to newness is a broader concept. It covers the entire process of transition from the idea through its implementation to the introduction of a new functionality into an enterprise. Innovation is therefore a commercial application of a new content (novelty). As in the case of novelties, innovations too can be considered at different scales. Depending on the reference point, a service can be innovative for a company or the market (if no company has previously introduced it). As in the case of product innovations, also in the case of services there are two types of innovations. Depending on the scale under consideration, we can divide them into radical and incremental (Garcia, Calantone 2002). Radical innovations are new services on the market, previously unknown, undefined, which are most often created as a result of new technologies (especially in the ICT sector). Incremental innovations

usually consist in extending the existing services portfolio by adding new elements, changing the forms of distribution. Most often (as in the case of products), radical service innovations have the character of supply-driven innovations (and are created thanks to the development of ICT), while incremental innovations are demand-driven, imposed by customers' expectations.

Services are not prone to innovation to the same degree. The diffusion of technological progress in the service sector is characterised by its uneven spread in various types of services. This is due to the heterogeneity and associated principles of development of individual services and the role which work and capital play in them (Szukalski 2001). In the relevant literature, we find many typologies of services classified according to the degree of susceptibility to innovations. These include, e.g. a 'sectoral innovation styles typology' by Soete and Miozzo (1990) or a 'sectoral innovation patterns typology' by Den Hertog and Bilderbeek (1999), and in Polish literature on the subject - Rogoziński (2004). The prevalent view expressed by the authors is that the so-called "supplier-oriented" services, e.g. personal services, hotels, restaurants, and trade are less susceptible to innovation. Knowledge-based services and those related to business operations are definitely more susceptible to innovation. In the context of the susceptibility of services to innovations, one should also mention the category of Knowledge Intensive Services. These are services whose important element is knowledge constituting their source (input). It is also important to be able to use the outcome of the service process / service activity as a contribution to the production process. Hence their high susceptibility to changes and innovations.

The term 'modern service' has a slightly different dimension. Greater importance is attributed here to technological progress (Mishra et al. 2011). Modern is progressive; as the name implies, it is appropriate for modern times. Therefore, in the era of dynamic development of ICT and an increase in the importance of knowledge in the economy, it seems fit and proper to see modern services as services that are knowledge-intensive and, in addition, "appropriate to the new times", i.e. subject to dynamic development. The classification of services into traditional and modern also often involves a criterion of the dynamics

of the increase in the share of services in generating GDP. This approach is exemplified by Eichengreen's typology (2009). He distinguishes as follows:

- **traditional services** (trade, transport and storage, administration) whose share in the creation of GDP is falling,
- **services that are a hybrid of modern and traditional services** (education, health care, hotels and restaurants, communal and personal services) whose share is steadily growing,
- **modern services** (financial advisory, IT, business services, communication) whose share is growing very dynamically.

A review of the literature on the subject leads to the conclusion that, in addition to the susceptibility to technological progress, a dynamic service development is the second criterion that differentiates services. By applying these two criteria, identification of modern services was made, which will be subject to detailed analyses later in the study. Modern services are thus treated as services which meet two criteria. First of all, it was assumed that these are services belonging to the group of so-called knowledge-intensive services (KIS). The advantage of adopting these assumptions is that these services occur in official business classifications (NACE, PKD), thanks to which it is possible to obtain the statistical data necessary for analysis. The second criterion for distinguishing modern services is their dynamic development expressed by an increase in their share in the structure of services according to the employment measure¹. The imposition of these two criteria helps to distinguish seven types of service activities, which will be subject to detailed analysis later in the study. These include: IT services, R&D services, real estate services, professional services, financial and insurance as well as educational and medical services.

The model of impact of modern services on development

Modern services play an important role in socio-economic development in the era of a knowledge-based economy. In the modern economy,

¹ The dynamics index was calculated for the EU countries in the years 2004–2014.

the driving force behind development is the creation and skilful use of knowledge. Knowledge has always been important for development, yet today it is an important tool for increasing the level of innovation and the most important source of competitive advantage. A review of the literature on the subject leads to the conclusion that the most important development factors include the following:

1. Human capital, constituting a source and an important link of knowledge transfer to the economy,
2. Social capital, playing a key role in the process of knowledge transfer and the process of mutual learning,
3. An innovative environment which, through the generation and transfer of innovation, determines innovative activity,
4. Business support, facilitating the operation of modern enterprises on the market, and
5. The availability of financial capital which helps, among others, to finance innovative activities. Comparisons of the above factors of the development of modern economies as well as earlier arrangements related to modern services have allowed constructing an impact model of modern services on the process of socio-economic development in the era of a knowledge-based economy. This model has emerged as a result of a simultaneous application of criteria and factors of modern development: human capital, innovative environment, business service infrastructure, financial capital and economic climate, as well as distinguished modern services, including: research and development services, educational and medical services, professional services (and business services), financial services and administrative services (Fig. 1).

According to this model, the impact of modern services on the knowledge-based economy involves the following relations:

- R&D generates innovation and influences its transfer to the economy (Aydalot, Keeble 1988; Capello, Nijkamp 2009; Uppenberg 2009);
- educational and medical services are responsible for human capital development in the area of qualifications and skills – the teaching of management-level personnel (higher education institutions) and life-long learning (training) (Camagni 1991; Becker, Gary 1993;

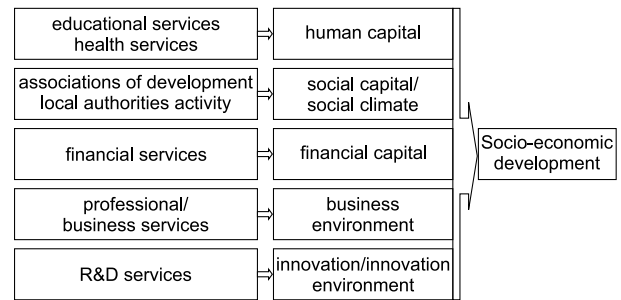


Fig. 1. Model of the impact of modern services on socio-economic development.

Source: own study.

Pakulska 2005; Lundvall 2000; Chojnicki, Czyż 2006; Markowski, Drzazga 2008);

- professional services create an infrastructure that supports the development of the modern economy – business services (real estate, activity of advisory centres, information centres, tax and legal services, etc.) (Werwicki 1998; D. Keeble et al. 1999; Longhi 1999; Kłosiński 2000);
- financial services are of key importance in terms of acquiring financial capital (banking and shadow banking institutions) (e.g. Berger, Udell 2002).
- self-government authorities and their policies, as well as of various types of organisations and associations supporting development plays important role in developing an adequate climate of economic activity (social climate).

In the context of the impact on the development of the modern economy, research and development services will be of basic importance in shaping the adequate innovation environment. Their primary task will be to generate innovation and services of various types of intermediary institutions in the transfer of these innovations to the economy, i.e. their commercialisation. Human capital, which is a key factor in the development of a knowledge-based economy, is considered from the point of view of the role of educational services in shaping qualifications and skills. In addition, the impact of medical services is taken into account. The functioning of the business environment will be mainly influenced by professional services, such as, for example, consulting, marketing or legal and accounting services. Financial capital, on the other hand, is analysed from the perspective of the services of

institutions ensuring its availability, i.e. dealing with granting preferential loans, offering loan guarantees as well as other financial services. Creating an adequate climate of economic activity (social climate) is the domain of self-government authorities and their policies, as well as various types of organisations and associations supporting development.

However, the above diagram, taking into account separate categories of factors (the innovative environment, business services, human capital, the social climate, and financial capital), is greatly simplified, because there is a network of interdependencies between these categories. A case in point is an innovative environment whose operation is largely dependent on financial capital (Churski, Dominiak 2012), as well as on human capital and the social climate. Similarly, the functioning of the innovation environment is also influenced by the level of professional services development (e.g. IT, marketing and advisory services). In the same way, you could analyse the dependencies between the other elements of the diagram. However, of fundamental significance – from the point of view of the objective of this analysis – is the impact of modern services on the formation of a modern knowledge-based economy through affecting the main categories of its development factors. It should also be noted that the highlighted modern services influence not only the formation of one of the factors which is assigned to them in the diagram of factor categories. For example, educational services have an impact not only on the development of human capital, but also on the remaining categories of factors – through the education of adequate labour resources – also for the innovative environment, business services and financial services. Similarly, professional and financial services are indispensable for the adequate operation of the business environment and for shaping a proper business climate. Also, the activity of self-government authorities can be considered in the context of not only shaping the economic climate, but also as helpful for shaping human and social capital, or in the context of the innovation strategy chosen. The diagram, then, is characterised by a large degree of generalisation and in a very simplified way depicts the most important relations between the elements analysed.

All the previously mentioned factors fostering the development of a knowledge-based economy are closely interlinked. These relations cover both the sphere of science responsible for generating innovations, the economy that implements them, and the organisations and self-government authorities supporting both the above processes. These relations are referred to by the triple helix concept (Etzkowitz, Leydesdorff 1995), in which cooperation between science, the economy and public authorities is to lead to the most optimal development conditions.

Empirical verification of the model

The following stage of the study consisted in an empirical verification of the model as operational in selected European Union member states in 2014. To this end, a set of features describing the level of development of previously distinguished modern services (input services) was collected in the first step. Levels of development of these services were used, including the availability of service facilities, their financing and employed staff. Due to a limited access to statistical data, the social capital factor and the services related to its development were not included in the empirical verification of the constructed model. The list of indicators used is included in Table 1.

The analysis of the spatial differences in the level of development of modern services applies the synthetic Perkal indicator² in the following form (Runge 2007: 214):

$$W_s = \frac{\sum_{j=1}^p y_{ij}}{p}$$

where:

W_s – synthetic indicator,

$j = 1, 2, \dots, p$,

p – the number of features considered,

y_{ij} – a standardised value of the j th characteristic for the i th object.

The use of the synthetic index required in the first place the standardisation of values of

² To assess the innovation potential of regions the Perkal indicator has been used, e.g. by Nowakowska, Feltyński (2009: 11–14).

Table 1. Indicators of the level of development of modern services.

Type of services	Indicators - input services	Indicators - output services (development factors)
Education	Educational services	Human capital I
	Percentage of economically active teachers	Indicator of professional activity
	Education expenditure in % of GDP	Percentage of persons with university degree
	Scholarisation index	Percentage of economically active engineers and scientists
	Percentage of students of technical faculties	
	Percentage of people over 25 years of age participating in education (LL)	
	Percentage of employees in the sector: Education	
	Percentage of people using e-learning	
Medicine	Health services	Human capital II
	Medical staff in 100,000 residents	Average life expectancy by f/m
	Health care expenses per capita (Euro)	The number of years lived in health by f/m
	The percentage of employees in the sector: Health care and social welfare	
Research and development	Research and development services	Innovativeness
	GERD - total expenditure on R&D per capita (Euro)	Share of turnover from innovation
	BERD - expenditure of enterprises on R&D per capita (Euro)	Percentage of innovative enterprises
	Percentage of economically active people working in R&D	Patents per 1 million inhabitants
Finance	Financial services	Financial capital
	Percentage of employees in the sector: Financial intermediation	Gross value added per 1 employee in enterprises
	No. of credit institutions per 1,000 businesses	Investments per 1 employee in enterprises
	The percentage of employees in credit institutions	
Business services	Professional services	Business-conducive environment
	Percentage of ICT sector employees	The percentage of newly hired employees in general employment
	Percentage of employees in professional services (section M)	Number of business entities per 1,000 inhabitants

Source: own study.

indicators describing the intensity of individual features. The standardisation for stimulant characteristics was based on the following formula:

$$y_{ij} = \frac{x_{ij} - \bar{x}}{S_j}$$

where:

y_{ij} - a standardised value of the j th characteristic for the i th object,

x_{ij} - the value of the j th characteristic for the i th object,

\bar{x} - mean values of j th features,

S_j - standard deviation value of the j th features.

The standardisation of indicator values helped to create a matrix of standardised variables, which were used in the calculation of

synthetic indicators (WS) for 2014. Based on the spread of values of synthetic indicators, the scale of diversification in the level of development of modern services in selected European countries was determined.

In the analysis of spatial diversification of the level of development of modern services in the selected European countries, a summary index of the level of modern service development (WS) and partial indicators (WC1, WC2, WC3, WC4, WC5) were used, corresponding to the five distinguished types of modern services: educational, medical, research and development, professional services (for business), and financial services. The results of the classification of European countries according to the value of the synthetic level indicator for the development of

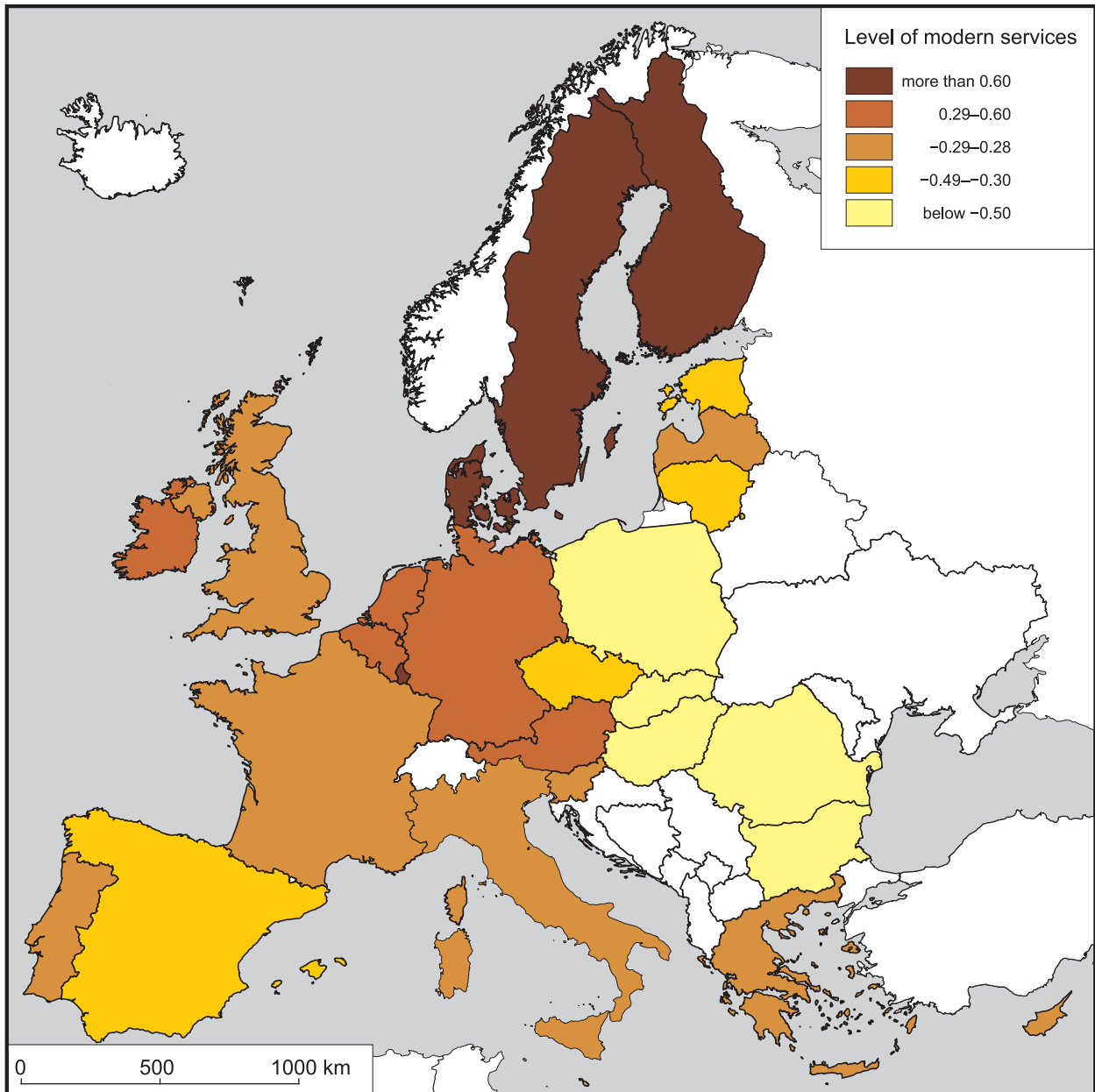


Fig. 2. The level of development of modern services in the EU member states in 2014.

Source: own study based on data from the Eurostat database.

modern services are presented by the cartogram (Fig. 2) and Table 2. The Scandinavian countries: Sweden, Finland and Denmark as well as Luxembourg, are characterised by the highest level of development of modern services. High values of the synthetic index were also recorded in Belgium, the Netherlands, Austria, Germany, and Ireland. In the case of the Scandinavian countries, their high position was determined by the high level of development of R&D, education and business services. Germany and Austria, on the other hand, are characterised by a high level

of development of medical services. Luxembourg is the unquestionable leader in terms of the level of development of financial services. The lowest level of development of modern services is characteristic of the countries of Central and Eastern Europe: Romania, Bulgaria, Poland, Hungary, and Slovakia.

In the second step, a similar procedure was used in relation to the characteristics that describe the growth factors (output) (Table 1). At the final stage of the research procedure, these results were compared against the synthetic indicator of

Table 2. Countries with the highest and lowest levels of development of selected modern services.

	Educational services	Health services	Research and development services	Financial services	Business services
The highest level of development	Sweden Denmark Finland	Sweden Austria Germany	Denmark Sweden Finland Austria	Luxembourg	Sweden Finland United Kingdom
The lowest level of development	Slovakia Romania Bulgaria	Hungary Romania Poland	Poland Cyprus Bulgaria Romania	Slovakia Estonia Lithuania Romania	Slovakia Poland Lithuania Romania

Source: own study based on data from the Eurostat database.

Table 3. The correlation coefficients between the level of development of modern services and development factors and the level of socio-economic development.

Modern services	Correlation coefficient between services and:	Growth factors	Correlation coefficient between factors of GDP per capita	Level of socio-economic development
Educational services	0.80	Human capital	0.64	
Health services	0.46		0.42	
Financial services	0.49	Financial capital	0.75	
Business services	0.62	Business environment	0.48	
R&D Services	0.82	Innovative environment	0.74	

Source: own study based on data from the Eurostat database.

the level of development of the modern economy, calculated using three features: share of HTM (High Technology Manufacturing) employees in total employment (%), share of high-tech exports in total exports (%), Gross Domestic Product per capita³. The value of correlation coefficients between the level of development of individual types of modern services and the highlighted development factors is presented in Table 3. All the correlation indicators calculated were statistically significant (significance level was below 0.05), and their values show a positive relationship between modern services and the development of the modern economy, and between the analysed factors and the level of economic development.

Summary

The analysis conducted leads to the following conclusions:

1. The highest level of the development of modern services can be identified in the Nordic countries, as well as in Germany, Austria, Ireland, and the Low Countries. A similar distribution can be found in the level of development of the modern economy (measured by the synthetic indicator). Sweden, Finland and Denmark have by far the highest level of development of educational and research and development services. In terms of medical services, the countries with the highest level of development, next to the Scandinavian countries, include Germany and Austria, while the highest level of business services can be found in the United Kingdom. Luxembourg is the unquestionable leader in the level of development of financial services.
2. A verification of the model of impact of modern services on economic development allows the conclusion that the major growth factors of the modern economy are: innovation and

³ Taking into account, apart from GDP, the high technology industry indicators was connected with the necessity of consideration of the level of a modern, knowledge-based economy.

material capital. An important role is played also by human capital (especially in the field of education).

- The results of the empirical analysis confirm assumptions about a strong impact of modern services on economic development. A particular role is played here by the R&D services (contributing to innovation) and financial services, which ensure access to financial capital, necessary in the development process. Moreover, correlation analysis confirms the importance of educational services in the development of human capital and by extension – in economic development.

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