

**Karin GLACOVÁ^a, Jan NEVIMA^b,
Kamila TUREČKOVÁ^c**

^aSilesian University in Opava
School of Business Administration in Karviná
e-mail: glacova@opf.slu.cz
ORCID: 0009-0008-4567-3053

^bSilesian University in Opava
School of Business Administration in Karviná
e-mail: nevima@opf.slu.cz
ORCID: 0000-0002-4788-9009

^cSilesian University in Opava
School of Business Administration in Karviná
e-mail: tureckova@opf.slu.cz
ORCID: 0000-0002-7845-6791

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THE ROLE OF SCIENCE AND RESEARCH IN SHAPING THE QUATERNARY SECTOR: A CASE STUDY OF CZECH NUTS3 REGIONS WITHIN THE LEARNING REGIONS CONCEPT

Abstract: The article focuses on the quaternary sector, that is, the part of the economy based on knowledge, expertise, innovation, and information technologies, and its importance for regional development and the formation of the knowledge economy. The aim of the paper is to verify whether the selected key factors underpin the growing significance of the quaternary sector, using the Czech Republic as a case study. Drawing on data from 2009–2022, selected indicators influencing the share of the quaternary sector in the 14 regions (NUTS3) of the Czech Republic were analysed, reflecting the concept of learning regions. To achieve the objective, a regression analysis was conducted and two hypotheses were established. The results show that the most significant predictor of the development of the quaternary sector as a source of the knowledge economy is the number of employees in science and research, whereas the number of research institutions or the level of expenditure on science and research may not directly support its growth. The findings provide a basis for further studies that could better explain the complex processes shaping a knowledge-oriented economy within the framework of the learning regions theory.

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Key words: quaternary sector, science and research, Czech Republic, nonlinear regression model

INTRODUCTION

The current economic development is characterised by the growing importance of the knowledge economy, which has become a key factor in the competitiveness of regions and individual states. Globalisation, technological progress, and digitalisation have fundamentally transformed the structure of the economy, increasing demands for flexibility, innovation, and the ability to generate and effectively utilise knowledge. The traditional sectoral division of the economy into primary, secondary, and tertiary sectors has proven insufficient to capture the dynamics of an economy based on information, innovation, and research and development activities. In this context, the so-called quaternary sector has gradually been defined, encompassing activities with high knowledge intensity, such as research and development, higher education, information and communication technologies, and advanced professional services (Kenessey 1987; Turečková 2014; Burger, Hovančíková 2021).

The quaternary sector can be regarded as one of the main manifestations of the knowledge economy, which forms part of the theory of the learning region. The knowledge economy represents one of the key pillars of economic growth and development, as it enables regions to adapt to changing conditions of global competition and to strengthen their long-term stability (Glacová, Turečková 2024; Hadad 2017; Turečková et al. 2023a). At the same time, it has become evident that individual regions may differ significantly in their capacity to develop this sector, which creates scope for differentiation in their developmental trajectories (Švarc, Dabić 2017). Therefore, the analysis of factors influencing the size and dynamics of the quaternary sector is crucial not only from a theoretical perspective but also due to its potential practical implications for regional policy and strategic planning.

The aim of this study is to contribute to the discussion on the knowledge economy through an empirical analysis of selected factors that may influence the share of the quaternary sector in the regions of the Czech Republic, while simultaneously drawing upon the concept of learning regions. To achieve this objective, a non-linear regression model was applied. The results can help to improve understanding of the mechanisms underlying regional growth and provide a foundation for the development of effective regional development strategies. It is also important to emphasise the novelty of this study, as no similar research of this kind has yet been published. Although the article includes a discussion section, its scope is necessarily limited due to the lack of comparable studies investigating the determinants of the quaternary sector. This absence of relevant literature further underlines the originality and contribution of the present research.

LITERATURE REVIEW

In recent decades, significant transformations have occurred in the economic structure, where, alongside traditional areas such as agriculture, industry, and services, activities related to the creation, processing, and application of knowledge have been gaining increasing prominence. These activities are part of the so-called quaternary sector, which has been growing in importance, particularly in connection with the transition to a knowledge economy and the increasing relevance of innovation, research, and information technologies (Turečková, Martinát 2015).

The basic classification by C. Clark (1940) included the primary, secondary, and tertiary sectors, whose definitions form the fundamental framework for considering the existence and importance of the quaternary sector. The primary sector is essential as it provides the basic raw materials necessary for the functioning of other parts of the economy. It includes activities related to the extraction and production of natural resources, such as agriculture, forestry, fishing, and mining. These are activities indispensable for satisfying the basic needs of society and for the utilisation of natural resources. The secondary sector encompasses manufacturing and industrial activities aimed at processing raw

materials from the primary sector into finished products. A characteristic feature of this sector is the transformation of materials into products intended for further sale. In other words, the secondary sector produces consumer and investment goods by combining raw materials, capital goods, and labour. It therefore includes primarily economic activities associated with manufacturing and construction. The tertiary sector is focused mainly on providing services instead of producing goods. It comprises a wide range of activities such as retail, healthcare, education, transport, and entertainment. In modern economies, the tertiary sector has grown substantially, reflecting the shift from industrial production to service-oriented activities. This sector provides services such as banking and insurance, generated primarily through the application of labour but also through the use of capital goods such as buildings and computers. The quaternary sector, which is the main topic of this article, represents a newer category of economic activities based on knowledge and information technologies, such as research and development, financial services, information technologies, or higher education. This sector emphasises the importance of intellectual and specialised services, is characterised by a high degree of technological advancement, and constitutes a key element of the knowledge economy (Krüger 2008; Kenessey 1987; Turečková et al. 2023b). In theoretical terms, the quaternary sector is understood as an extension of the traditional three-sector model. Employment in the quaternary field includes research, analysis, judgement, and responsibility, as well as governmental, educational, research, or artistic activities (Gottman 1961; Bell 1973).

The quaternary sector is closely associated with the transition to a knowledge economy, which relies on the ability to generate, disseminate, and apply knowledge as a key source of growth, competitiveness, and innovation. As noted by the OECD (1996), within the knowledge economy, human capital, research infrastructure, and effective information flows between institutions gain increasing importance. Knowledge thus becomes a key production factor, analogous to labour or capital in the traditional economy (Drucker 1993; Foray 2004). The quaternary sector should therefore not be understood merely as another sector of the economy but as an indicator of the maturity of the knowledge economy and a driving force of innovation-based regional development (Borseková et al. 2021; Turečková et al. 2023a). Its presence and development also reflect the quality of the institutional environment and a region's ability to participate actively in global knowledge flows.

Scientific research plays a crucial role in enhancing knowledge and addressing societal challenges. It involves a systematic process that expands established scientific domains, driven by various motivations such as technological superiority and societal needs. Science, in conjunction with technology, plays a fundamental role in improving quality of life and responding to societal demands (Coccia 2018).

P. Cooke and J. Yun (2018) note that the quaternary sector also encompasses contemporary digitalisation, including, for example, financial technologies (fintech), software and systems design, cyber technologies, artificial intelligence (digital technologies or digitech), robotics, and biotechnology. However, they also consider digitalisation a potential threat to physical jobs, which may be replaced by modern technologies.

The importance of the quaternary sector is further evident at both regional and political levels. Regions with well-developed knowledge institutions, universities, and research centres typically demonstrate higher economic growth dynamics and a greater capacity to attract investment. This sector also has a key relationship with human capital development and the quality of the institutional environment. Unlike traditional economic sectors, where growth is primarily determined by natural resources or capital volume, here the focus is on the effective use of information, the capacity to innovate, and the creation of new processes. It is therefore clear that the quaternary sector is an inseparable part of the learning regions theory, as it provides the key prerequisites for the generation, dissemination, and application of knowledge, which are essential for such regions.

The theory of learning regions is based on the notion that regional competitiveness and long-term development depend primarily on the ability to generate new knowledge, learn, and innovate. The concept also assumes that regional development relies not only on physical and financial inputs but also

on institutional conditions, social capital, and the ability of actors to co-operate in innovation (Asheim 1996; Morgan 1997). In this context, the quaternary sector – i.e., the sector focused on research, development, education, information technologies, and other knowledge-intensive services – plays a crucial role by creating institutions and environments that enable the flow of knowledge between firms, universities, research organisations, and public administration. Without a well-developed quaternary sector, the principles of a learning region could not be fulfilled – there would be no infrastructure for innovation, knowledge transfer, support for lifelong learning, or human capital development. Thanks to it, a region can actively respond to changes, adapt to new technologies, and become a centre of creativity and innovation. The quaternary sector is therefore not just part of this theory – it is its driving force.

The significance of the quaternary sector is manifested in so-called learning regions, which are capable of continuously generating, absorbing, and utilising new knowledge. Learning regions connect actors from the public, private, and academic sectors, thereby creating space for a cumulative process of innovation, learning, and adaptation. Measurable indicators of a learning region that contribute to innovation and may also influence the quaternary sector include intangible outputs of innovation and creativity, such as the number of patents granted or research infrastructure, which can encompass expenditure on research and development, the number of research facilities, or human resources (Glacová, Turečková 2024).

These relationships are also reflected at the European Union level, which, through its strategic documents and initiatives, emphasises the role of data, digitalisation, and knowledge sharing as means to strengthen both the social and economic dimensions of the economy. For example, the European Commission points out that data sharing and utilisation is one way to support the development of social economy organisations and enable them to contribute to an inclusive, green, and fair society. Data-driven processes have the potential to foster robust collaboration, enhance innovation, open new markets, and increase civic participation. At the same time, obstacles must be addressed, such as insufficient connectivity, particularly in rural regions, limited access to high-quality data, inadequate data infrastructure, and low levels of digital literacy (van der Burg et al. 2024).

In summary, the theoretical foundations emphasise that the knowledge sector is not merely another economic sector but represents an entirely new dimension of economic development, based on the use of knowledge and information. Its study is therefore important both for understanding modern trends in economic development and for the practical implications for economic policy and regional development.

Research and development (R&D), considered part of the knowledge sector, represents a targeted and organised creative activity aimed at expanding existing knowledge – whether in the fields of nature, humanity, culture, or society – and further verifying, supplementing, or applying the acquired knowledge in practice through methods that allow for reproducibility. The sectoral division of research and development activities is based on the main focus, mission, and nature of the activities of the entities involved in R&D. These sectors include the business sector, government institutions, universities, and private non-profit organisations (OECD 2015). Each of these sectors contributes to research and development in a manner corresponding to its specific goals and roles.

The determination of whether a specific activity falls within R&D is based on the assessment of several key characteristics – particularly novelty, a creative approach, a certain degree of uncertainty, a systematic process, and the possibility of reproducibility of results. Within R&D, three main categories are usually distinguished:

- 1) Basic research primarily involves theoretical or experimental investigations aimed at expanding knowledge about the fundamental principles of natural or social phenomena, without prioritising immediate practical application.
- 2) Applied research is devoted to the targeted and planned acquisition of new knowledge that may lead to the creation of new products, technologies, or services, or to substantial improvement of existing ones. Its outputs are typically directed towards practical use in a specific context.

- 3) Experimental development consists of the practical application of existing knowledge and skills to create or significantly improve products, services, or technological solutions. This activity often combines knowledge from different fields with the goal of delivering innovation (OECD 2015).

METHODOLOGY

The aim of the paper is to verify whether the selected key factors underpin the growing significance of the quaternary sector in the Czech Republic. The following key factors were selected: (1) patents, (2) the number of research and development institutions, (3) research and development personnel, and (4) expenditures on research and development. These indicators, which are considered potential determinants of the quaternary sector, are indirectly reflected in studies and publications by X. Yan (2025), T. Selstad (1990), C. Gallouj (2023), P. Cooke et al. (2019), A.T. Goh and J. Olivier (2002), as well as P. Gouta and C.T. Papadas (2024). Their substantive relationship with the quaternary sector is defined in the *Literature Review* section presented earlier.

In line with the research objective and the topic under investigation, two hypotheses were formulated and will subsequently be either confirmed or rejected based on the empirical results. The hypotheses are as follows: • Selected research and development indicators have a statistically significant effect on the share of the quaternary sector in NUTS 3 regions of the Czech Republic. • The number of research and development personnel has a statistically significant positive effect on the share of the quaternary sector in NUTS 3 regions of the Czech Republic.

To determine whether science and research shape the quaternary sector, data from the period 2009–2022 were utilised. Data for some variables from 2023 and 2024 are currently unavailable. Therefore, these years were excluded from the analysis to maintain consistency in the time series. Records of regional activities at the NUTS 3 level were obtained from the Czech Statistical Office (ČSÚ)¹.

The independent variables include the number of patents granted in the Czech Republic, the number of R&D facilities and personnel, R&D expenditures, and subsequently the percentage share of the quaternary sector in regional economies. With regard to patents, it should be noted that only patents granted to domestic applicants were considered, as the analysis focuses on the 14 regions of the Czech Republic without foreign influence. However, the representation of domestic applicants in the total number of patents granted has historically been very low. According to the Czech Statistical Office, for example, in 2022 a total of 5,433 patents were granted or validated, of which approximately 92% were granted to foreign entities and around 8% to Czech entities. Over the observed period, the number of patents granted has fluctuated.

The next variable is the total number of research and development facilities located in the Czech Republic, which has shown a relatively consistent increase over the years. This number comprises four sectors: business, government, higher education, and private non-profit organisations. The variable “number of R&D personnel” indicates how many people are engaged in research and development, expressed in full-time equivalents. Included in this count are research staff, technical personnel, and other R&D workers. During the observed period, the number of R&D personnel has been increasing.

The following variable, R&D expenditures, includes all operational costs (including salaries and other current expenses) and investment costs incurred during the observed year for R&D activities carried out by the entities under study within the country, regardless of their source of funding. The data show that, with few exceptions, R&D expenditures have been increasing (OECD 2015; <https://csu.gov.cz/vyzkum-a-vyvoj>, accessed: 22.05.2026).

The dependent variable in the model is the share of the quaternary sector in the Czech economy, expressed as a percentage. The share of the quaternary sector was evaluated based on the gross value

¹ <https://csu.gov.cz/vyzkum-a-vyvoj> (accessed: 22.05.2026).

added at current prices of selected sectors related to R&D (information and communication activities; finance and insurance; professional, scientific, technical, and administrative activities; public administration and defence; education; and health and social care). In this article, the quaternary sector is not understood in a narrow sectoral sense, but rather in a broader functional sense as the knowledge-oriented and institutional component of the regional economy that is essential for the functioning of learning regions. The aim was to capture the broader knowledge-based component of the regional economy, which, within the logic of learning regions, is founded on the creation, transfer, organization, and utilization of knowledge. Following Z. Kenessey (1987), the boundary between the tertiary and quaternary sectors is not rigid, as many service activities are increasingly characterised by a high intensity of knowledge creation and utilisation. Fig. 1 illustrates the average percentage share of the quaternary sector over the period 2009–2022 for each region of the Czech Republic. The regions are subsequently ranked from the highest to the lowest share.

RESEARCH RESULTS

The initially proposed non-linear regression model included a set of explanatory variables, among them the number of patents. However, analysis in IBM SPSS Statistics 29.0.2.0 showed that the effect of patents on the dependent variable was not statistically significant; therefore, it was removed from the final model. This approach aligns with standard practice, as insignificant variables can reduce model quality and complicate the interpretation of results. Consequently, the final model includes only three independent variables: the number of R&D personnel, the number of R&D facilities, and R&D expenditures.

All variables were transformed using the natural logarithm (LN). The rationale for this transformation was to normalise the data and, to some extent, support the stationarity of the sample. Logarithmic transformation reduces differences between variables and brings them to a comparable level. Another reason was to better satisfy the statistical assumptions of linear regression. Log transformation reduces skewness, stabilises variance, and often brings the data closer to a normal distribution (Benoit 2011). Additionally, the log–log functional form allows regression coefficients to be interpreted as percentage changes, which is more intuitive in an economic context than absolute unit changes.

The resulting model proved highly significant ($F = 45.464$; $p < 0.001$). The R^2 value reaches 0.406, indicating that the model explains approximately 40.6% of the variability in the share of the quaternary sector. The autocorrelation test (Durbin–Watson = 1.935) confirmed that residuals are not mutually dependent, indicating the absence of autocorrelation in the model. Residual statistics further showed that standardised residuals fall within an acceptable range (between -1.65 and $+3.42$), suggesting that the model is not influenced by extreme outliers.

However, it should be noted that the correlation matrix among predictors revealed strong relationships (0.912; 0.975; 0.886). Such high correlations usually indicate the risk of multicollinearity, which can cause instability in estimates. Although the VIF test did not formally confirm this problem (values remained below the threshold of 5), the results should be interpreted with some caution.

Based on the output, the results can be interpreted using the log–log regression equation (Nevima 2014) as follows:

$$\ln \widehat{\text{Quaternary Sector}}_{r,t} = 1.391 + 0.536 \ln \text{Workers R\&D}_{r,t} - 0.251 \ln \text{Facilities R\&D}_{r,t} - 0.198 \ln \text{R\&D Expenditures}_{r,t}$$

All estimated parameters are statistically significant. The most influential variable is the number of R&D personnel. A 1% increase in the number of personnel is associated with an approximately 0.54%

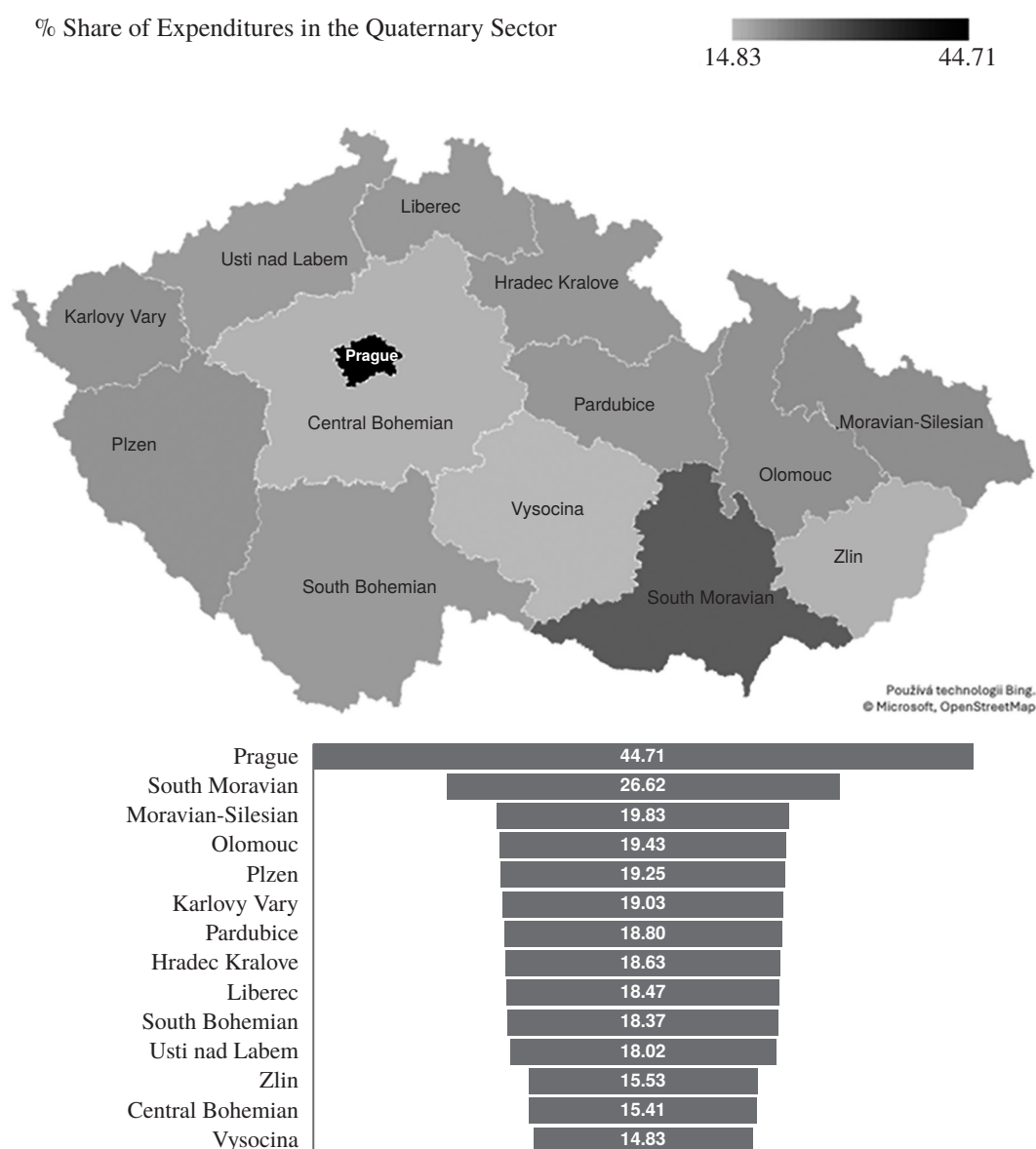


Fig. 1. Per cent share of expenditures in the quaternary sector – NUTS 3 in Czech Republic

Source: own elaboration based on data from the Czechoslovak Statistical Office (ČSÚ).

increase in the share of the quaternary sector, holding other factors constant. This result confirms the importance of human capital for the development of knowledge-intensive industries.

The other two variables have negative estimated effects. A 1% increase in the number of R&D facilities is associated with an approximately 0.25% decrease in the share of the quaternary sector, *ceteris paribus*. This phenomenon may be explained by potential fragmentation of resources and capacities, where the mere number of institutions does not necessarily guarantee higher efficiency. Similarly, R&D expenditures exhibit a negative effect; a 1% increase in expenditures corresponds to an approximately 0.20% decrease in the share of the quaternary sector. Partial outputs of the regression model are presented in the appendix of the article.

Finally, we return to the hypotheses formulated in the introductory part of the Methodology section. The first hypothesis (“Selected research and development indicators have a statistically significant impact on the share of the quaternary sector in the NUTS3 regions of the Czech Republic”) was not confirmed. This is because not all selected R&D indicators demonstrated the expected statistically significant effect on the share of the quaternary sector. In particular, the number of patents proved to be statistically insignificant and was therefore excluded from the final model. At the same time, the number of R&D facilities and R&D expenditures exhibited a negative relationship with the share of the quaternary sector. These findings suggest that the development of the quaternary sector cannot be sufficiently explained solely by traditional research and development indicators. This conclusion is further supported by the fact that the model explained only a portion of the observed variability, indicating the importance of additional factors such as digitalisation, higher education, collaboration between academia and industry, and the degree of regional internationalisation.

The second hypothesis (“The number of research and development personnel has a statistically significant positive impact on the share of the quaternary sector in the NUTS3 regions of the Czech Republic”) was confirmed. The results showed that the number of R&D personnel has a statistically significant positive effect on the share of the quaternary sector. This finding confirms the importance of human capital as a key resource of the knowledge economy. Given that the quaternary sector in this study is understood as a broader knowledge-based and institutional component of the regional economy, founded on the creation, transfer, and utilisation of knowledge, it can be assumed that qualified personnel are the primary drivers of these processes. Unlike financial resources or institutional infrastructure alone, they are capable not only of generating new knowledge but also of transferring it into practice, fostering innovation, and contributing to the development of knowledge-intensive activities within the region.

DISCUSSION

Confronting our findings with similar studies conducted within the Czech Republic is not possible, as no research examining identical or comparable determinants of the quaternary sector has been identified. Likewise, within the international literature, the topic of explanatory determinants shaping the quaternary sector remains relatively sporadic, which provides an opportunity for our study to help fill this research gap. Consequently, this discussion section is relatively brief.

Despite the limited body of literature, it is possible to discuss indicators associated with the quaternary sector more broadly through the lens of the knowledge economy. The general findings from the literature on factors determining the development of the quaternary sector can be grouped into several categories, including human capital, digital infrastructure, urbanisation and agglomeration effects, globalisation, institutional quality, and innovation performance (van Oort et al. 2009; Consoli et al. 2015; Brenner et al. 2018; Hipp et al. 2015). For example, OECD (2006) identifies research and development (R&D), knowledge creation and transfer, workforce education, collaboration between firms and research institutions, innovation capacity, and public support for innovation as key determinants. Our findings are consistent with this literature regarding employment in science and research. A similar conclusion was reached by C. Hipp et al. (2015), who also highlighted the importance of qualified R&D personnel. J. Mallick (2015) links the quaternary sector with science and research, but from the opposite perspective, arguing that the existence of a developed quaternary sector contributes to the advancement of scientific and research activities. In our case, this would imply reversing the dependent and independent variables within the model. A comparable argument is presented by T. Selstad (1990), who suggests that a strong position of the quaternary sector itself creates favourable conditions for the broader development of science and research activities. This perspective may help

explain the negative effects of R&D expenditures and the number of R&D facilities observed in our model when used as explanatory variables of the quaternary sector.

The previous lack of research examining the influence of the selected factors on the quaternary sector represents an important added value of this study. The article not only confirms the strong role of qualified scientific and research personnel in shaping the quaternary sector while simultaneously challenging the direct influence of R&D expenditures and specialised R&D facilities, but also provides a basis for further scientific discussion. Future research may build upon our findings, confront them with alternative evidence, and contribute to a deeper understanding of the mechanisms underlying the development of the quaternary sector.

CONCLUSIONS

The analysis indicates that, among the selected variables, the growth of the quaternary sector is positively influenced primarily by the number of R&D personnel, while the number of R&D facilities and the level of R&D expenditures exert an opposite effect. This result suggests that, for the development of knowledge-intensive activities, human capacity – i.e. qualified personnel capable of generating new knowledge and applying it in practice – is more crucial than mere institutional or financial support, unless such support is accompanied by the effective utilisation of these resources. The model was able to explain a significant proportion of the variability (more than 40%), yet a considerable part remains unexplained. This highlights the complexity and multi-layered nature of the processes associated with the development of the quaternary sector, which cannot be captured solely by a few basic variables.

Therefore, the results should be interpreted as a first step towards a deeper understanding rather than as a comprehensive explanation. Additional variables could be considered which may play a significant role – for example, the degree of regional internationalisation, the level of collaboration between academia and industry, the availability of high-quality digital infrastructure, or the intensity of innovation activities in a broader sense. Since R&D constitutes only one pillar of the knowledge sector, the impact of other components – such as financial services, information technologies, higher education, or the cultural and creative industries – can be expected to be even stronger. Together, these areas create an environment in which knowledge can be effectively disseminated, commercialised, and transformed into economic growth.

The results of the research indicate that the selected research and development indicators alone do not provide a sufficient explanation for the development of the quaternary sector. Consequently, the first hypothesis was not confirmed. In contrast, the second hypothesis was confirmed, highlighting the importance of human capital, which proved to be a key determinant of the development of knowledge-intensive activities within the regions.

In conclusion, the presented model provides important insights into the factors influencing the development of the quaternary sector in a regional context, while also creating space for further empirical research. The findings highlight the necessity of a more comprehensive approach capable of capturing more effectively the interactions between various dimensions of the knowledge economy and their impacts on economic and social development. Comparison with similar studies is not currently possible, as comparable analyses have not yet been published.

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Appendix 1. Partial outputs of the regression model²

Coefficients^a

Model		Unstandardized B	Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	1.391	0.140		9.969	<0.001
	LN_pracovníci	0.536	0.097	2.079	5.509	<0.001
	LN_Pracoviště	−0.251	0.088	−0.668	−2.852	0.005
	LB_Výdaje	−0.198	0.070	−0.839	−2.814	0.005

^aDependent Variable: LN_Kvartérnísektor

² kvartérní sektor (quaternary sector), pracovníci (Workers R&D), pracoviště (facilities R&D), výdaje (R&D expenditures)

Residuals Statistics^a

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.3792	3.3578	2.9707	0.18792	196
Residual	-0.36998	0.76873	0.00000	0.22296	196
Std. Predicted Value	-3.147	2.060	0.000	1.000	196
Std. Residual	-1.647	3.421	0.000	0.992	196

^aDependent Variable: LN_Kvartérnísektor**Model Summary^b**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.644 ^a	0.415	0.406	0.22469	1.935

^aPredictors: (Constant), LN_Výdaje, LN_Pracoviště, LN_Pracovníci^bDependent Variable: LN_Kvartérnísektor**ANOVA^a**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.886	3	2.295	45.464	<0.001 ^b
	Residual	9.693	192	0.050		
	Total	16.579	195			

^aDependent Variable: LN_Kvartérnísektor^aPredictors: (Constant), LN_Výdaje, LN_Pracoviště, LN_Pracovníci**Nonparametric Correlations****Correlations^a**

			LN_Pracovníci	LN_Pracoviště	LN_Výdaje
Spearman's rho	LN_Pracovníci	Correlation Coefficient	1.000	0.912**	0.975**
		Sig. (2-tailed)	.	<0.001	<0.001
		N	196	196	196
	LN_Pracoviště	Correlation Coefficient	0.912**	1.000	0.886**
		Sig. (2-tailed)	<0.001	.	<0.001
		N	196	196	196
	LN_Výdaje	Correlation Coefficient	0.975**	0.886**	1.000
		Sig. (2-tailed)	<0.001	<0.001	.
		N	196	196	196

**Correlation is significant at the 0.01 level (2-tailed).