

**BUSINESS AND NON-PROFIT  
ORGANIZATIONS FACING INCREASED  
COMPETITION AND GROWING  
CUSTOMERS' DEMANDS**

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# KNOWLEDGE – INTENSIVE BUSINESS SERVICES – CHARACTERISTICS, SCOPE, AND SECTORAL APPROACH

Joanna Bohatkiewicz<sup>1</sup>, Marta Gancarczyk<sup>2</sup>, and Ivano Dileo<sup>3</sup>

## Abstract

*This article is focused on knowledge-intensive business services (KIBS). The article aims to present specificity of knowledge-intensive business services, their industry characteristics and to assess the compliance of the industry classifications with the definition proposed, taking into account performing a scientific research. The available definitions of these services were reviewed, classification of these definitions was made, and a definition of KIBS was proposed as a synthesis of the approaches previously analyzed. The proposed understanding of KIBS aims at delimiting this economic phenomenon against other services and emphasizes its specific features. The article also presents the classification of KIBS companies in the sectoral approach (NACE Rev 2, Polish Classification of Activities – PKD), defining their compliance with the proposed definition and specificity of the research focus. The study is conceptual, based on scientific literature review. As a result of the analysis, a proposal for a comprehensive definition of the discussed issue was developed, systematization of the scope KIBS and comparison of previous sectoral approaches were performed.*

**Keywords:** *knowledge-intensive services, knowledge-intensive business services, KIBS, KIS, high technology, sectoral classification, innovation, R&D, GVC, global value chains.*

## 1. Introduction

Knowledge-intensive business services take an important role as a research issue due to the growing role of knowledge-based economies, technological competitiveness, increasing specialization, use of such organizational forms

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1 Joanna Bohatkiewicz, M.A., Institute of Economics, Finance and Management, Faculty of Management and Social Communication, Jagiellonian University, ul. Prof. Stanislaw Lojasiewicz 4, 30-415 Kraków, Poland, e-mail: joanna.bohatkiewicz@gmail.com.

2 Marta Gancarczyk, Associate Professor, Department of Institutional Economics and Economic Policy, Institute of Economics, Finance and Management, Faculty of Management and Social Communication, Jagiellonian University, ul. Prof. Stanislaw Lojasiewicz 4, 30-415 Kraków, Poland, e-mail: marta.gancarczyk@uj.edu.pl.

3 Ivano Dileo, M.Sc, Ph.D., Department of Political Science, University of Bari "Aldo Moro", Piazza C. Battisti 1, 70121 Bari, Italy, e-mail: ivano.dileo@uniba.it.

as outsourcing or modular approach in the manufacturing process<sup>4</sup>, as well as the pursuit to reach high added value, which requires advanced knowledge often acquired through cooperation.

The condition for the development of the knowledge-intensive services sector, in particular the knowledge-intensive business services sector, is the specialization of production in particular industries, driven by increasing technological competition, also on the world markets. The development of information and communication technologies as well as progress in transport infrastructure can be presented as factors favoring specialization, which enable to cooperate with specialized suppliers. These factors serve the international mobility of highly qualified human resources – Saxenian (2007) calls it *brain circulation*. As Muller & Zenker (2001) point out, not only does the business environment support the development of KIBS but also the knowledge-intensive services sector itself influences its surroundings, contributing to the development of a knowledge-based economy dependent on competence, creative capabilities, and intangible resources.

Research on knowledge-intensive services and the conceptualization of this phenomenon are still in the development phase, resulting in a variety of applied definitions and related concepts. Therefore, one can distinguish the so-called Knowledge-Intensive Services (KIS). Literature also uses the term knowledge-intensive business services (KIBS), and, less frequently, Technology-Based Knowledge-Intensive Business Services (TB-KIBS) or Technology Knowledge-Intensive Business Services (T-KIBS). Studies on knowledge-intensive services often refer to the concept of high technology. The cited references to knowledge-intensive services are closely related to each other, and thus treated synonymously and used interchangeably in the literature. However, there are differences in their content and scope. In the literature, no systematization of these concepts has been made so far, which results in unclear definitions and methodological clarifications. There is also no discussion that would imply this systematization with the sectoral classification of knowledge-intensive business services, thus leading to the establishment of the boundaries and significance of the phenomenon.

Such an integrated approach should be considered as justified by the current state of research, and at the same time indispensable for proposing a definition for further theoretical and empirical research.

The purpose of this article is to present the essence and specificity of knowledge-intensive business services and their industry characteristics as well as to define the coherence between the essence and the classifications of KIBS taking into account requirements of scientific research. The study is

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<sup>4</sup> Commercialization is a term used rather to refer to the transformation of inventions and ideas into market products or services.

conceptual and based on a literature review of this subject. As a result of the analysis, a new definition of KIBS was proposed, terminology related to this phenomenon was organized, and its sectoral classifications were compared.

The second section of the paper reviews the available definitions of the knowledge-intensive business services, classifies those definitions and systematizes the terms related to KIBS. Next, the definition of knowledge-intensive business services was proposed as a synthesis of the approaches previously analyzed. The third part presents economic indicators that help to define KIBS. The fourth section describes the sectoral classification of KIBS (NACE, PKD), determining their compatibility with the proposed definition and specificity of the scope of research. The paper presents, in summary, the contribution of the article to the current research on KIBS and outlines the directions for further analysis.

## 2. Definitions and characteristics of KIBS

As pointed out, while considering the problem of defining knowledge-intensive business services (KIBS), one shall note that this phenomenon is presented in the literature by a broad spectrum of terms of similar importance. There has not been any synthetic and unambiguous distinction between them. They are used in the literature in a convertible manner.

The concept of knowledge-intensive services (KIS) should be considered as the most meaningful and referring to all knowledge-based services (or all knowledge-intensive services). In this category are not only profit-oriented organizations but also non-government organizations (NGOs) or sole proprietorships aimed at corporate clients, as well as other entities that do not operate commercially.

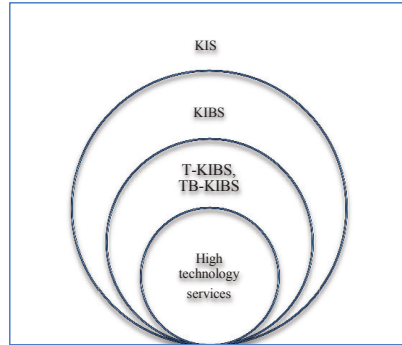
However, the scope of KIBS is limited to businesses and profit-oriented businesses whose focus group is other market participants operating commercially (*business-to-business model*, - /B2B/). On the other hand, technology-intensive business services (T-KIBS or TB-KIBS) have the characteristics of KIBS but focus on technical knowledge concerning parameters of product, service, and processes characteristic in specific industries.

The narrowest term is the concept of high technology services, which refers to business of the so-called *high intensity R&D*<sup>5</sup>. The semantics of the terms is shown in Figure 1.

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<sup>5</sup> Eurostat and The Joint Research Center, - /JRC/) defines high technology as an activity whose R&D intensity is greater than 7% (GUS, 2015).





**Figure 1.** Scheme of semantics of terms KIS, KIBS, T-KIBS and TB-KIBS

Determining the meaning of terms of knowledge-intensive services favors the clear definition as well as research methodology. If, for example, research is carried out on knowledge-intensive services, exclusively for commercial entities, focusing solely on KIS as a research trial may lead to a problem of generalizing the results. Knowledge-intensive services are a broader concept and refer to a more numerous and diverse group than KIBS. It is possible that the conclusions of the study, mechanisms or phenomena accompanying KIBS, will not apply to all KISs. A similar problem could be observed when using any term with a broader range of meaning to the research trial which gathers a group of narrower range. At the same time, the use of the term KIS, which has a broad meaning, while analyzing only high technology, KIBS or T-KIBS/TB-KIBS may result in carrying out research which does not take into account the characteristics of its research trial.

The alternative usage of knowledge-intensive services concept is not the only observation of literature review. Literature provides definitions referring almost exclusively to knowledge-intensive services, meaning KIS. There is no definite definition of KIBS, T-KIBS/T-B-KIBS, which would point to the specific characteristics of these activities and which would distinguish them from KIS. In order to define KIBS, an overview of the available definitions in the literature was made. Selected definitions of KIS are presented in Table 1.

**Table 1.** Different definitions of KIS by various authors

No.	Definition of KIS	Author of the definition
1	One of the service activities, which is often innovative and supports the innovation processes in other sectors of the economy, both service, and manufacturing sectors.	(Ciriaci, Montesor & Palma, 2015; Den Hertog, 2000)

No.	Definition of KIS	Author of the definition
2	Services carried out through business activities, the purpose of which is to create, accumulate and disseminate knowledge.	(Miles, Kastrinos, Flanagan, Bilderbeek & Den Hertog, 1995)
3	Expert firms that provide services to other businesses and organizations.	(Matja, 2006)
4	Companies whose core business value creation is gathering, creation, and dissemination of knowledge in order to develop tailor-made services to satisfy their individual needs.	(Bettencourt, Ostrom, Brown & Roundtree, 2002)

**Source:** own study based on (Ciriaci, Montresor & Palma, 2015; Muller & Doloreux, 2009).

As Ciriaci, Montresor & Palma (2015) point out that definitions can be grouped into several categories according to the KIS characteristics they emphasize. The key issues that are present in the analyzed definitions are presented in Table 2.

**Table 2.** Key issues in KIS definitions

Reference points, key aspects	Example of definition (the number corresponds to the ordinal number in Table 1)	Other authors of the definitions
KIS provides their stakeholders with specialized, knowledge-based business services.	2, 3	(Amara et al., 2009; Rodriguez, & Ballesta, 2010; Miles et al., 1995; Bettencourt et al., 2002)
KIS is treated as a specific type of economic sector that plays a major role in promoting innovation and development	1	(Baumol, 2002; Oulton, 2001; Muller & Zenker, 2001; Tether, 2005)
KIS serves not only innovation through the creation of new services, products, or technologies but also serves to spread knowledge to other sectors, particularly those related to manufacturing, and stimulates innovation throughout the whole value chain.	1, 2	(Castellaci, 2008)
KIS providers are organizations based on knowledge in their core business (know what, know why, know how, know who)	2, 4	(Asheim & Coenen, 2005; Asheim, Coenen, Moodysson & Vanjg, 2007)

**Source:** own study based on (Ciriaci, Montresor & Palma, 2015; Pina & Tether, 2015).

As a result of the analysis of different definitions, one can point the main features of KIS specification and distinguish them from other sectors of the economy. These include:

- based on expertise, professional knowledge;
- high entry barriers in these industries, due to limited access to information and highly qualified staff;
- the risk of asymmetry of information - uneven access to information between stakeholders in the same industry;
- high proportion of employees with higher education in the total number of employees;
- innovation in services, process, organization, and marketing innovations.

Miles et al. (1995), in the course of deliberation on knowledge-intensive services, identified three key features:

- are based on professional knowledge;
- are either a source of primary data ready for use by companies and transform into knowledge, or they already use knowledge acquired in the course of their activity to produce intermediate services for their customers<sup>6</sup>;
- are of competitive importance, i.e., they operate in a competitive environment and are themselves competitive with others and moreover, direct their offer to other companies in the first instance.

Among the motivations for acquiring knowledge-intensive services, one should mention the greatest benefit which is access to advanced, professional knowledge. Stakeholders who use such services can count on the highest quality in a given area, as the specialization strategy requires service providers to strive for technological niche domination. This dominance is a way of controlling the risk, which in this case cannot be limited by classical diversification. High-quality knowledge of service providers adds value to the buyer's offerings while reducing the imitation risk from the competition. Moreover, an important aspect motivating recipients of using KIBS is a possibility to learn and use hidden knowledge of such service providers as law firms, accountants, or insurance companies.

Furthermore, the KIBS sector plays a significant role in developing innovative capacity and building a knowledge-based economy at various levels, from the level of a single organization, through the local and regional levels up to the national level (Mako, Polonyi, Szanyi & Ujhelyi, 2013). However, modern business realities pointed out that knowledge-based economy has many subtypes, such as economy based on technical knowledge. Among the typical service providers companies that perform such activities, also other can

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<sup>6</sup> Taking into account the claims presented in Chapters 1 and 2 on the interchangeability of terms of knowledge-intensive services, it is likely that Miles et al. (1995) present here T-KIBS.

be listed: ICT services, research and development, automation and electronics services, technology development consultancy (Zięba, 2013). More generally speaking, engineering offices of all kinds, consulting firms, companies that employ researchers and perform R&D projects can also be involved in this classification. It is difficult to discuss and analyze the typology of service recipients, as this group will be defined as one distinguishing characteristic, i.e., conducting business activity. The service provider - service recipient relationship is, therefore, B2B, with buyers being very often large enterprises or corporations, and service providers being small specialized companies. At the same time, the development of a knowledge-based economy may be related to the upgrading process, i.e., change in the scope of business activity of a company, region or entire economy towards higher added value. It is particularly important for developing economies and peripheral regions whose potential has not yet been fully utilized.

KIBS also influence the development of such organizational forms as outsourcing, networking and virtual organization (Gancarczyk & Gancarczyk, 2011). At the same time, the development of this industry is closely connected with the creation of global value chains. Division of labor and specialization within the classical value chain have led to the development of modular value chains. KIBS are then focused on businesses responsible for individual modules (complex components of a product that perform a specific function), providing specific knowledge.

Due to the lack of clear definition of KIBS as well as the existence of literature concerning definitions of KIS, it is possible to define KIBS. The most important feature distinguishing KIBS from KIS is the commercial nature of the interaction between the stakeholders involved in the process. These relationships are business in nature which means that profitability is one of the key goals for which these organizations have been established and operated. KIBS are characterized by expecting measurable economic effects. They are exposed to high risk of specialization as well as risk related to conducting an innovative activity (e.g., the risk of leaving highly qualified personnel or commercialization of the service itself). The emphasis is laid on the practicality and high utility of the services as well as profitability of the business.

This means that KIBS has to continually analyze its environment, perform continuous organizational learning due to its highly knowledgeable nature, and to conduct so-called “flexible specialization.” Due to the above, KIBS can be defined as follows:

***KIBS is a specialized business, commercial service that creates added value through creation, accumulation, and dissemination of professional***

*knowledge, supports the development of the knowledge-based economy by creating and promoting innovation, as well as stimulates upgrading processes in global value chains.*

This definition contains key elements that define the specificities of KIBS, such as professional knowledge, specialization of business activity, the creation of added value, creation, accumulation and dissemination of knowledge, support for knowledge-based economy development, creation and promotion of innovation, support for the development of upgrading processes in global value chains.

### **3. Economic indicators in the process of defining KIBS**

While defining the concept of KIBS, it is helpful to prove that the term also has measurable attributes. The subject of the analysis is not only the activity described by the appropriate code from the selected sectoral classification but also by appropriately selected indicators. Indicators for the measurement of R&D activity<sup>7</sup> prove to be useful.

It is worth noting that different indicators for manufacturing activity may be used, and others for service activities. As Gancarczyk (2012) points out, for manufacturing activities the technology intensity index, also known as knowledge intensity or R&D intensity, expressed as the share of R&D spending in sales revenue is used. This indicator, though becoming one of the key measures, it has also been criticized. It has been claimed that spending on R&D alone does not determine the companies' achievement of business results and will not necessarily transfer and result in innovation. An aspect of technology spread, including equipment and machinery is a factor that is not considered in the calculation of this indicator. The indicator that was designed to resist this criticism is the expenditure on applied technology. It is also used in the latest classifications (Hatzichronoglou, 1997; Gancarczyk, (2012); Eurostat, 2009; GUS, 2015).

In the case of service activities, the key group of indicators includes size and structure of employment. In some EU funding programs, such as the Eurostars program, it is also useful to determine the average number of R&D projects per year, as well as some posts attributed exclusively to this type of activity. The indicators used are average employment in the year / *headcount*/), full-time equivalents employed - /*FTEs*/) and some full-time equivalents dedicated to R&D. Likewise, Central Statistical Office in Poland (GUS) uses R&D intensity for service activities, taking as a reference point,

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<sup>7</sup> GUS defines R&D as "creative work performed systematically, undertaken to increase knowledge, including knowledge of a human being, culture and society, as well as to find new usage for this knowledge" (GUS, 2015).

total expenditure on R&D personnel as well as full-time equivalents (FTEs) (GUS, 2015)<sup>8</sup>.

In practice, the same economic indicators are usually used to define service activities and production activities. Hybrid solutions, the most demanding from the perspective of labor intensity, are adopted, but at the same time, give the most approximate analysis of R&D potential, and hence the level of knowledge-intensity in business activities. This has been reflected in the GUS's approach, which considers current expenditures on R&D (e.g., costs of materials, nondurable goods and energy, some costs of external services, taxes other than VAT and other R&D expenditures which influence financial result of an organization and insurance costs as well as equivalents to employees in the R&D part), personal expenses (total employment costs, i.e., costs to be incurred by the employer for R&D personnel) and R&D investment expenditures (purchase of fixed assets, based on the Generic Classification of Fixed Assets (GUS, 2015)). The primary limitation of this indicator analysis is that it concentrates only on research and development service providers. If such activity is not taking place (this is not an indispensable factor), then these indicators would indicate a lack of knowledge-based character of an organization. For this reason, it will be crucial to identify universal indicators that will help identify this sector.

#### **4. Sectoral approach: KIBS in national and international business activity classifications**

KIBS are also analyzed by the primacy of the type of business activity, or rather, business activity classified in formal documentation. There are numerous classifications, both at national and international level. Statistical classifications of economic activity can be divided into those that systematize the scope of business activity (e.g., NACE, ISIC, PKD), specificity of manufactured products or services (e.g., CPC, CPA, PKWiU) as well as those which combine these criteria. An illustrative presentation of key classifications is given in Table 3.

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<sup>8</sup> GUS understands R&D personnel as those who spend at least 10% of their working time on R&D activities.

**Table 3.** Applied classifications and nomenclatures in Poland and the world, a system of links between statistical classifications of activities

Range of classification	Classifications of activities	Product Classifications (products + services)	Nomenclatures of products	Classifications of foreign trade
International (UN)	ISIC - International Standard Industrial Classification of All Economic Activities	CPC - Central Product Classification	–	HS - Harmonized System or Harmonized Commodity Description and Coding System
EU	NACE - The Statistical Classification of Economic Activities in the European Community	CPA - The Classification of Products by Activity	PRODCOM List	CN - The Combined Nomenclature
National	PKD - Polish Classification of Activities	PKWiU – Polish Classification of Goods and Services	PRODPOL List	CN - The Combined Nomenclature

**Source:** Retrieved from <http://stat.gov.pl/Klasyfikacje/>, 25.02.2017.

At the international level (in particular the European Union), the classification of activities in which KIBS activity is present the most commonly used is Statistical Classification of Economic Activities in the European Community, NACE Rev. 2, 2008. This classification is an essential element of an *integrated international system of economic classifications*. Objectives of NACE Rev. 2 were a reflection of technological development and other changes taking place in the economy, comparability of statistical data of different economies and, consequently, facilitation of management at European Union level and national level. This classification is based on the UN Statistical Commission (UNSTAT), made by Eurostat and national classifications, for international comparative analyses. Table 4 presents KIBS identified in NACE Rev. 2.

**Table 4. KIBS in NACE Rev. 2**

<b>NACE Rev. 2</b>	<b>Description</b>
72	Computer and related activities
721	Hardware consultancy
722	Software consultancy and supply
723	Data processing
724	Database activities
725	Maintenance and repair of office, accounting, and computing machinery
726	Other computer-related activities
73	Research and development
7310	Research and experimental development in natural sciences and engineering
7320	Research and experimental development in social sciences and humanities
74	Other business activities
741	Legal, accounting, book-keeping, and auditing activities; tax consultancy; market research and public opinion polling; business and management consultancy; holdings
7411	Legal activities
7412	Accounting, book-keeping, and auditing activities; tax consultancy
7413	Market research and public opinion polling
7414	Business and management consultancy activities
742	Architectural and engineering activities and related technical consultancy
743	Technical testing and analysis
744	Advertising
7484	Other business activities n.e.c.

**Source:** Muller & Doloreux (2009).

The most important in Polish economic practice is the Polish Classification of Activities (PKD). It is applied by the Regulation of the Council of Ministers of 24.12.2007 on the Polish Classification of Activities (PKD) (Dz. U. of 2007 No. 251, pos. 1885 and 2009 no 59, pos. 489). In accordance with paragraph 1, this classification is used “(...) in statistics, records, documentation, and accounting, as well as in official records and information systems of the public administration ...”<sup>9</sup>. PKD consists of 21 sections (defined by the letters A-U),

<sup>9</sup> Regulation of the Council of Ministers of 24.12.2007 on the Polish Classification of Activities (PKD) (Dz. U. of 2007 No. 251, pos. 1885 and 2009 no 59, pos. 489).



99 chapters (numbers 1-99), many classes (defined by the compilation of a number of chapter and additional number, e.g., 41.20), and several hundred subclasses (defined by the additional letter after number of a class, e.g., 41.10.Z). In the course of deliberations, an analysis was made, which of the PKD activities can be classified as KIBS activities. The reference points were KIBS definition (Chapter 2) and KIBS classification according to NACE Rev. 2. After analyzing the structure of the Polish Classification of Activities (PKD), it should be stated that the following groups of KIBS activities can be present in PKD classification (Table 6).

**Table 5.** KIBS in the Polish Classification of Activities 2007

<b>Name of the chapter</b>	<b>No. of the chapter</b>	<b>Heading</b>
J - Information and communication	61	Telecommunication
	62	Computer programming activities, computer consultancy activities and related activities
	63	Information service activities
Financial and insurance activities	64	Financial service activities, except insurance and pension funding
	66	Activities auxiliary to financial services and insurance activities
M - Professional, scientific and technical activities	69	Legal, accounting, bookkeeping, and auditing activities; tax consultancy
	70	Activities of head offices; management consultancy activities
	71	Architectural and engineering activities; technical testing and analysis
	72	Scientific research and development
	74	Other professional, scientific, and technical activities
	75	Veterinary activities
P - Education	85	Education

Excluding official classifications, scientific literature presents as KIBS also sectors such as information technology, telecommunications, data processing, as well as business environment sectors such as insurance, financial and economic advisory services (Muller E., Doloreux D., 2009). From the point of view of the KIBS's definitions proposed in this article, it can be observed that both Nace Rev. 2 classification and PKD classification are the right starting point for further analyses of this sector. At the same time, there is consistency between these classifications. Both refer to high-technology industries and have a strong potential for specialization.

It should be mentioned that the scope of KIBS's business activity includes a broad spectrum of activities. Categorization can be made through the indicators mentioned above and sectoral classifications. Examples of such activities are, e.g., development of mobile applications or software, database management, preparation of financial engineering investment programs, development of scientific and technical expertise focused on a specific aspect such as linear infrastructure, marketing research, and preparation of marketing strategies, professional, economic, legal and financial consulting.

It is worth emphasizing, however, that adopting a qualitative approach to describing KIBS, i.e., approach based on a specific sectoral classification, carries certain limitations at the same time. According to Pina K. and Tether B. S. (2015), research carried out on 591 companies showed that only 66% of companies, initially classified as KIBS on the base of the UK industry classification, met the criteria of performing a specific business activity. Other enterprises, although formally classified as belonging to the knowledge-intensive business sector, based on a particular classification, carried out other tasks which did not belong to KIBS specifics. It must, therefore, be stated that KIBS identification based solely on industry classification carries a significant risk of error or inaccuracy. Following this, analyses of KIBS based on such classifications may lead to misleading conclusions. It is, therefore, necessary to isolate and examine KIBS using additional variables that would reflect their specificity (e.g., by applying the criteria contained in the definition of KIBS proposed in Chapter 2), using universal indicators and not only based on R&D.

## **5. Concluding remarks**

The purpose of this article was to present the essence and specificity of knowledge-intensive business services and their industry characteristics. As well as, to define the coherence between the essence and the classifications of KIBS considering requirements of scientific research.

A review of the available definitions of knowledge-intensive services was conducted, the classification of these definitions and the systematization of terms related to KIBS were made. Economic indicators were presented to help to define KIBS. As a result of the analysis, a new definition of KIBS was proposed, a range of terms related to this phenomenon was described, classification of business activities of KIBS companies from the sectoral perspective (NACE, PKD) was also presented. Moreover, their compliance with the proposed definition and specificity of the subject of research was discussed. The contribution of the article to the current research on KIBS and directions for further analyses were presented.

KIBS in the literature is analyzed by a large group of researchers. As it is emphasized by Pina & Tether (2015), we can talk about an influence of economic geographers (Gillsepie & Green, 1987; Daniels & Moulaert, 1991; Wood, 2002; 2009; Doloreaux et al., 2010), innovation and management studies researchers (Bessant & Ruch, 1995; Miles et al. 1995; Howells, 2006; Tether & Tajar, 2008; Muller & Doloreux, 2009; Love et al., 2011), and international institutions (European Commission, 2009; United Nations, 2011; BIS, 2012; OECD, 2012; Schricke et al. 2012). There is considerable interest in organizational innovations in the literature on knowledge-based services, which may be the result of technological development, as well as the combination of technology and so-called soft skills (Sirilli & Evangelista, 1998; Larsen, 2001).

The issue of KIBS is also considered by the aspect of economic policy. Defining, identifying KIBS as well as analyzing the spatial distribution of this highly knowledge-intensive business activity is discussed in the creation of regional policies, including regional development, building local or regional development guidance documents. It can also serve to compensate for differences between specific geographical areas with different levels of development. In this context, KIBS may also be present in the concept of intelligent specializations. This concept, as pointed out by Pander, Rauzer, Stawicki, Sycz and Wojnicka-Sycz (2014) and Okon-Horodyńska (2012), is based on the statement that regions with a high scientific level should base on sustainable support of core technologies (i.e., specialized ones), and regions with lower levels of development should strive for specialization so that they can use these technologies. Accordingly, program documents may indicate the means and tools of KIBS' support in order to implement the concept of intelligent specialization.

The further study may also include a comparative analysis of the applied classifications of KIBS activities in Poland and the world, identification of their strengths and weaknesses.

As well as the possible proposal of a new classification, which quantitatively and qualitatively will be a good reference point for identifying a specific activity as KIBS. It is also important to identify universal indicators that will help identify activities within the business sector of knowledge-intensive business services, regardless of being an R&D company or not.

The KIBS issue is also analyzed in the context of global value chains (GVC). Organizations with lower added-value activities in less developed countries may evolve in the long run to the organizations with higher added value in the global value chains, leading to the so-called upgrading. There is a systematic need for professional services (e.g., KIBS) to find highly qualified human resources with simultaneous cost preferences. This also means that

high-value businesses are also located in developed or developing countries (Gancarczyk 2015, Lam, 2007, Saxenian, 2007; Lee and Saxenian, 2008; Mudambi, 2008; Malecki, 2010; MacKinnon, 2012.).

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## Biographical notes

**Joanna Bohatkiewicz**, Ph.D. student of economics at Jagiellonian University, Financial Director, EKKOM Sp. z o.o. Her research interests include Knowledge-Intensive Business Services, clusters, modularization, global value chains, crisis management, controlling and liquidity management.

**Marta Gancarczyk**, dr hab., Associate Professor at the Institute of Economics, Finance and Management, Jagiellonian University in Krakow, Poland. Her research, publication and consulting activities focus on entrepreneurship, firm growth, technology management and commercialization, industrial clusters, and public policy for small and medium-sized enterprises. She is an Associate Editor of the international scientific journal ‘Journal of Entrepreneurship, Management and Innovation.’

**Ivano Dileo**, M.Sc., Ph.D., Assistant Professor of Applied Economics at the Department of Political Science of the University of Bari Aldo Moro (Italy). He is a Professor of Regional Economics and Applied Economics at the University of Bari. He received his MA in E-Government and Management of Public Administration and Ph.D. in Economics and Demography of Large Geographical Areas. He was visiting Ph.D. student at the University of Sheffield (UK) and Visiting Researcher at the University of Santiago de Compostela (SP). His main research interests are regional economics, entrepreneurship, innovation and knowledge economics. He is a member of ICEDE international research group.