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**KNOWLEDGE-INTENSIVE BUSINESS SERVICES –
STATE AND FORECAST OF DEVELOPMENT**

**WIEDZOCHLONNE USLUGI BIZNESOWE –
STAN I PERSPEKTYWY ROZWOJU**

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Summary: Knowledge-intensive business services are one of the most dynamically developing areas in contemporary economies and at the same time they constitute one of the fundamental pillars of a knowledge economy. The services are provided by private enterprises, the activity of which is mostly based on the professional knowledge of workers. They supply knowledge-based products and services delivering satisfaction to intermediate demand. These are related, among others, to research and development activity, legal activity, activity in the sphere of architecture and engineering or information technology services. Interest in knowledge-intensive business services (KIBS) is a result of rapidly occurring changes in recent decades, the creation of a knowledge economy and an information society, the growing importance of knowledge and human capital as well as innovativeness. The goal of the article is to present the changes occurring in the sphere of KIBS in Poland between 2005 and 2012 with special attention focussed on employment and its forecast.

Keywords: services, employment, development, KIBS.

Streszczenie: Wiedzochlonne usługi biznesowe (*Knowledge Intensive Business Services*) stanowią jeden z dynamicznie rozwijających się obszarów we współczesnych gospodarkach, stanowiąc przy tym jeden z podstawowych filarów gospodarki wiedzy. Świadczone są przez prywatne przedsiębiorstwa, których działalność opiera się głównie na profesjonalnej wiedzy pracowników, a które dostarczają produkty i usługi oparte na wiedzy, służące zaspokajaniu popytu pośredniego. Związane są m.in. z działalnością badawczo-rozwojową, prawniczą, działalnością w zakresie architektury i inżynierii, czy usługami komputerowymi. Zainteresowanie wiedzochlonymi usługami biznesowymi (KIBS) jest wynikiem gwałtownie zachodzących zmian w ostatnich dekadach; tworzenia gospodarki wiedzy i społeczeństwa informacyjnego, rosnącej roli wiedzy i kapitału ludzkiego oraz innowacyjności. Celem artykułu jest przedstawienie zmian zachodzących w obszarze KIBS w Polsce w latach 2005-2012, ze szczególnym uwzględnieniem zatrudnienia oraz uwarunkowań i możliwości ich dalszego rozwoju.

Słowa kluczowe: usługi, zatrudnienie, rozwój, KIBS – wiedzochlonne usługi biznesowe.

1. Introduction

The depletion of the formula of the three-sector economy division (agriculture, industry, services) and its progressing servicisation show the growing importance of the changes occurring inside the service sector. KIBS – Knowledge-Intensive Business Services recognised in the middle of the 1990s are mainly associated with research and development activity, law-related activity, accounting and book-keeping or consulting in the sphere of information and communication. The demand for services of this type in Poland is constantly growing which is a consequence of progressing globalisation, the growing importance of knowledge and innovativeness in contemporary economies and most of all the development of new technologies in ICT. However, the dynamics of the changes is still insufficient. It ought to be stated here that the relatively small proportion of employment in KIBS is compensated by high productivity and the quality of the workplaces. This is because providing these services demands high qualifications and skills as well as professional experience from the workers. The changes occurring in the KIBS sector, particularly their growing importance as the source and channel of knowledge diffusion, bring the necessity to conduct studies in this sphere with a special focus on the forecasting processes. Their further development can favourably influence social and economic development, including economy innovativeness and the establishment of competitive advantage based on this factor. Considering the aforementioned circumstances, the goal of the paper is to present the changes occurring in the sphere of KIBS in Poland between 2005 and 2012, with special attention focussed on employment and its forecast.

2. KIBS – the concept of Knowledge Intensive Business Services

Changes in perceiving the service sector in recent years, mainly the growing importance of knowledge and innovativeness, has contributed to the distinction of services based on advanced knowledge that are referred to as knowledge intensive business services (KIBS). Although this notion was used for the first time almost twenty years ago by I. Miles with reference to services, the result of which is the “creation, accumulation or diffusion of knowledge” [Miles et al. 1995], in the literature of the subject there is still no coherence as for the way of defining the notion of KIBS.

Among the numerous definitions of KIBS, attention should be paid to den Hertog’s approach, according to which KIBS are private enterprises, the activity of which is based mostly on the professional knowledge of workers, and that supply products and services based on knowledge that provide satisfaction of intermediate demand [den Hertog, 2000]. A similar approach is presented by Bettencourt [Bettencourt et al. 2002], who perceives KIBS as ventures of value added which occurs as a result of the accumulation, creation, or dissemination of knowledge for the purpose of the

development of an existing service or the application of a solution satisfying the client's demand within its new type.

Attempts to define KIBS require asking the following questions: what distinguishes these services from others? On the basis of what criteria can we classify them? Searching for the answers to the questions formulated in this way demands reference to two important issues: their knowledge intensity and the satisfaction of intermediate demand. This allowed for the indication of the features distinguishing KIBS from other services [Miles et al. 1995]:

1. Their provision demands professional, specialist knowledge, which finds its reflection in the employment structure. The share of knowledge workers in this sector is high because they form a specific kind of knowledge “carriers”. The workers (scientists, engineers, experts in various fields) with their knowledge, skills and contacts are the most important resources of KIBS sector companies.

2. The supplied “products” are the source of information and knowledge for their users (for example in the form of training and consulting activity, as well as developed reports) or an intermediate contribution in the processes of information processing and the generation of own knowledge by customers. KIBS sector products are often based on new or developing technologies such as IT, with which their innovativeness is also associated.

3. Enterprises of industry or the service sector, including the public sector, are their customers.

Access to appropriate statistical data is the condition for the performance of studies aimed at the determination of KIBS' extent and the dynamics of the changes occurring inside the sector. For this purpose, on the basis of adopted criteria, knowledge intensive services have been distinguished from sector 3 – see Table 1. Here some imperfections in PKD 2004 [*Polish Classification of Business Activity 2004*] operating before 2007 ought to be indicated¹. The proposition of the new classification is to specify the forms and scope of KIBS activity, but also to consider data accessibility, particularly on a regional level. This is because limited access to data on a particular level of disaggregation poses a serious barrier to the performance of studies in this sphere. Considering the growing importance of this sector in modern economies, and its relationships with industry and influence on economic growth, it ought to be stated that the extent of the conducted studies is insufficient.

¹ Including in KIBS the services related to recruitment and making workers available, and particularly the activity of temporary agencies that employed workers of various levels of education and qualifications that were included in the number of employees in these agencies, as was done under PKD [*Polish Classification Activity 2004*] brought about objections from the researchers.

Table 1. KIBS in NACE Rev. 2 classification

| Section | No | Description |
|--|--|--|
| Section J Information technology and communication | 62 | Activity associated with software development and consultancy in the sphere of information technology and related activity Activity associated with: 62.01 software development, 62.02 consultancy in the sphere of information technology, 62.03 management of information technology devices, 62.09 other service activity in the sphere of information and computer technology. |
| | 63 | Service activity in the sphere of information technology 63.11.data processing; management of webpages (hosting) and similar activity, 63.12 activity of internet portals. |
| Section M Professional, scientific and technical activity | 69 | Law-related activity, accounting and book-keeping activity as well as tax consulting 69.1. legal activity, 69.2 accounting and book-keeping as well as tax consulting. |
| | 70 | Activity of head offices; consulting associated with management 70.1 activity of head offices and holdings, except for financial holdings, 70.2 consulting associated with management, including: 70.21 public relations and communication, and 70.22 other consulting services in the sphere of conducting business activity and management. |
| | 71 | Activity in the sphere of architecture and engineering; technical research and analyses 71.1. activity in the sphere of architecture and engineering and related, including: 71.12 activity in the sphere of architecture, 71.12 activity in the sphere of engineering and related technical consultancy, 71.2 technical research and analyses. |
| | 72 | Scientific research and development works 72.1 scientific research and development work in the sphere of natural and technical sciences, 72.2 scientific research and development works in the sphere of arts and social sciences. |
| | 73 | Advertising, market and public opinion research 73.1. advertising, 73.2 market and public opinion research. |
| 74 | Other professional, scientific and technical activity 74.1. activity in the sphere of specialist designing, 74.9 other professional, scientific and technical activity, not classified elsewhere. | |

Source: own case study on the basis of [Schnabl, Zenker 2013].

3. KIBS development in Poland between 2005 and 2012 – analysis of empirical data

The growing demand for knowledge-intensive business services finds its reflection, among others, in the increasing number of workers in this sector. The direction of changes occurring in Poland corresponds to that observed in highly developed countries, however its dynamics remain insufficient. Although between 2005 and 2012² almost a 38 percent growth in the number of workers in knowledge intensive services was observed, the share of KIBS in employment in services in Poland is still at a remarkably lower level when compared with the EU-15. In 2005 there were over 686 thousand people employed in KIBS in 236.5 thousand companies, which represented a nearly 7 percent share in total services – see Table 2, with the value added at the level of 14 million euros produced by this sector. In the same period in Luxembourg the share of employment in KIBS was higher than 25% and in Holland 22.2%. This confirms the fact that there is a gap that separates Poland from highly developed countries and that there is the necessity to intensify activities aimed at the further reconstruction of the structure of the Polish economy. This is particularly important because of the constantly growing importance of KIBS as one of the carriers of a knowledge economy that is characterised by high productivity and the possibilities to create work places intended for workers with high qualifications and professional skills.

Table 2. Employment in KIBS in Poland between 2005 and 2012

| Year | Number of workers (in thousands) | Share of employment in services (in %) | Absolute changes (in thousand) | | Relative changes (in %) | |
|------|----------------------------------|--|--------------------------------|----------|-------------------------|------------|
| | | | Previous year =100 | 2005=100 | Previous year =100 | 2005 = 100 |
| 2005 | 494,7 | 6.6 | x | x | X | 100.0 |
| 2006 | 508,2 | 6.3 | 13.5 | 13.5 | 2.7 | 102.7 |
| 2007 | 546,8 | 6.5 | 38.6 | 52.1 | 7.6 | 110.5 |
| 2008 | 574,5 | 6.6 | 27.7 | 79.8 | 5.1 | 116.1 |
| 2009 | 590,3 | 6.6 | 15.8 | 95.6 | 2.8 | 119.3 |
| 2010 | 599,5 | 6.4 | 9.2 | 104.8 | 1.6 | 121.1 |
| 2011 | 644,7 | 6.6 | 45.2 | 150 | 7.5 | 130.3 |
| 2012 | 681,7 | 6.9 | 37.0 | 187 | 5.7 | 137.8 |

Source: own case study on the basis of data from eurostat [www.eurostat.eu] (as of 17.08.2014)

² The research period does not include previous years due to the limited possibilities to compare data. This was caused by changes in PKD [*Polish Classification of Business Activity* 2004].

The analysis of knowledge intensive services shows the significant diversity in internal KIBS structure resulting, among others, from the differences between the markets in which they function, mean company sizes and the traditions of the methods of work. Law-related activity, accounting and book-keeping as well as tax services (69) and also services in the sphere of architecture, engineering and technical research (71), show a similar economic profile that is characterised by a similar share in the total number of enterprises and in the number of employed people. These two sub-categories account for over half of all the companies belonging to KIBS, but they employ only slightly more than 44% of the people working in the whole sector – see Figure 1.

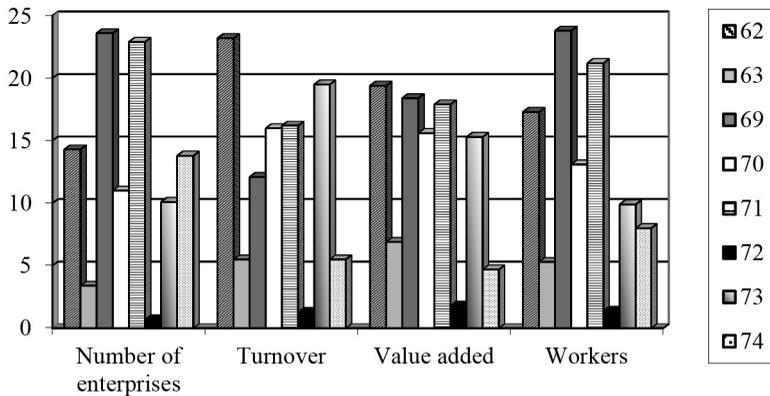


Figure 1. Share of individual service categories in KIBS with reference to the number of enterprises, turnover, value added and people working in Poland in 2012 – in %

Source: own case study.

These proportions show the predominant position of small enterprises that employ a relatively small number of people. On the other hand, services in the sphere of information technology and communication (62 and 63) are characterised by a smaller share in the total number of enterprises (18%) in comparison with the share of workers (23%), which suggests the higher rate of big enterprises. The development of new technologies and in consequence the growing demand on services associated with software development and consulting in the sphere of information technology, find their reflection in value added produced in the highest amount among KIBS services, their turnover and relatively high employment. The higher share of value added in comparison with the number of people working in computer services, in the sphere of management as well as in market research and development, proves the higher mean labour effectiveness which is related to the employment of highly qualified, specialist personnel providing consulting services in this field. In advertising (73), the higher share of turnover than employment reflects the fact that a significant part of this activity is associated with the buying and resale of

advertising space and time. The smallest share in all EU countries is reported in research and development services, although their remarkable diversity is observed. While this value in Luxembourg is 9.4% and in Sweden 5%, on average it is on the level of 2.2% for the EU-25, in Poland the share of employment in B+R is not higher than 1.4% and the share of the number of enterprises classified as scientific research and development (72) is only 0.7% – see Figure 1. This fact should cause concern as from the point of view of innovativeness and the creation of a knowledge-based economy, this activity is particularly important.

Summing up, we have to state that knowledge-intensive services do not constitute a predominant area in the service sector with respect to quantity, however, they are attributed much more importance than might result from their share in employment or created value added. This is because the sector of knowledge-intensive services represents one of the most rapidly developing areas of the European economy, while constituting at the same time one of the fundamental pillars of a knowledge economy. Its significance as an area in which labour places of high quality and well paid positions are created and as a source of innovativeness is constantly growing. The changes occurring in the KIBS sector, including the dynamic increase in the number of workplaces and the growing importance of the sector as a source and channel of knowledge transfer, has contributed to the development of quantity and quality research in the sector of knowledge-intensive services and the creation of scenarios of their further development [Skórska 2012].

4. Development or decline? Forecast for KIBS in Poland

On the basis of statistical data and with the use of quantitative and qualitative methods, a forecast has been prepared. Three scenarios have been developed as its result [Skórska 2012; Toivonen 2004; Kox 2002; Orłowski 2003; Karpinski 2008; *Polska 2030...* 2009; Smedlund, Toivonen 2007, Markusen, Strand 2007; *Sector Futures...* 2005; *Trends...* 2006]:

- 1) expansion,
- 2) polarisation and specialisation,
- 3) stagnation.

In their preparation, an important role was played by factors determining the direction and dynamics of changes that had to be considered for the proper performance of the forecasting process. Among these factors, the following were particularly important:

- globalisation and the resulting process of moving workplaces in the form of offshoring and outsourcing,
- technologies, particularly the development of information and communication technologies, as well as the application of Internet,
- institutional factors, including the deregulation / regulation of individual markets,

- functioning of the European Union, particularly the pace of creation of a uniform European market,
- knowledge infrastructure and the adopted strategy of the operation based on cooperation or competitiveness between the public sector, KIBS and other organisational units,
- quality of human capital, particularly the adequacy of education to the demands of the labour market and the threat of the occurrence of a gap of education and demographic conditions.

The first, most optimistic scenario, assumes the further, dynamic development of KIBS in Poland. In this case, the efficient use of the circumstances occurring in the environment, particularly deriving profits resulting from the process of globalisation and the phenomena that are associated with it directly or indirectly are the necessary condition. The development of technologies and consequently the growing demand on specialist services in the sphere of information technology and communication, are the key factors determining the development of KIBS. The practical application of solutions in the field of nanotechnology, biotechnology, and the nuclear power sector and health e-protection will be a serious challenge. The tendency of creating and modernising digitally integrated systems of values connected thanks to IT technologies, which can be perceived as a new life cycle of e-business will be more and more obvious. IT and e-business show new possibilities of outsourcing which will contribute to an increase in productivity of enterprises. The application of new technologies will influence a decrease in production costs, which in turn, will find its reflection in the growing demand on KIBS, as is declared by the SME sector, among others. The larger access to KIBS and the lower prices of the provided services will contribute to their development and growth in competitiveness, which in consequence will bring further growth in the demand for knowledge-intensive services. The attractiveness of our country as a location for outsourcing and offshoring centres is an important factor determining the further development of KIBS. In the most optimistic scenario, thanks to lower labour costs, high quality human resources, geographical and cultural proximity, as well as knowledge of foreign languages, the dynamics of the creation of work places in this field shall be growing. These processes will be supported among others by the progressing deregulation of the market and the liberalisation of trade in services.

Assuming, after Toivonen [Smedlund, Toivonen 2007], that many customers are not fully aware of their needs and that they expect from KIBS companies the activity in predicting possible difficulties and preventing them, attention should be paid to changing the relations between customers and service providers. Supplying complex solutions adjusted to the individual needs of customers, requires having appropriate knowledge, also concerning the nature of the functioning of their companies. For this purpose, a long-term partnership based on trust in which KIBS somehow assumes a leading role coordinating the activities undertaken by the customer is necessary.

This should lead to growth in demand for highly qualified workers with specific interpersonal skills.

Focussing on the internal diversity in KIBS, the dynamics of the development of particular services and factors determining their further potential growth were facts that constituted the basis for the creation of the second scenario. Considering the aforementioned circumstances, we can analyse the specialisation and polarisation of KIBS in three aspects:

1. Specialisation and the growing internal division of work in particular services included in KIBS.
2. Internal diversity in the sector and the dynamics of changes occurring in KIBS.
3. Spatial diversity in KIBS.

In the first approach, the progressing process of specialisation with respect to particular types of services with the simultaneous development of a group of services of a coordinating nature undertaken by customers ought to be expected. Thanks to growing specialisation, further growth in productivity and the innovativeness of services will be possible, and this will favourably influence their development. That dimension of specialisation is directly related to the next one, because services of high dynamics of growth and potential of further development, as well as those of stagnating character and significantly worse prospects can be indicated in each of the categories included in KIBS.

Services in the sphere of information technology and communication that are even currently characterised by a relatively high level of employment, productivity, produced value added and dynamics of changes are one of the groups of services included in the first category. In developed forecasts, further growth in demand on this type of services is predicted. Tele-conferences and video-conferences more and more often replace direct contacts between a service provider and a customer. This is because thanks to IT development their *on-line* contact is possible. Platforms of electronic trade (B2B) influence efficient cooperation between headquarters and branches of international concerns located in various parts of the world. The online provision of services influences an increase in the scope of activity of service provided to companies and the quality of interaction between the service provider and the customer. Despite many positive tendencies, it ought to be remembered that the lack of uniform regulations in the EU and the underinvestment of research and development in the ICT area are some of the barriers that limit the chances of competing by European companies, including Polish ones, on the world market in the sphere of software development or, more broadly, computer services. The implementation of new technologies can also contribute to limiting the demand for other services, e.g. accounting and book-keeping services. This is because the appropriate computer programs, and access to the Internet will let specific activities perform independently. Specialisation can also be expected among services classified as an activity in the sphere of architecture and engineering as well as research and technical analyses. In this field a growing demand is first of all observed in services

associated with environmental protection. EU legal regulations in the sphere of ecological policy implemented for over thirty years include several hundred legal instruments; Polish law that has been constantly developed since 2001 is becoming an equally complicated system, which makes enterprises face serious problems. Furthermore, undertaking pro-ecological initiatives has become an element of competitiveness of many enterprises and the creation of the image of a company responsible for the situation of the natural environment has become a significant element of marketing.

Megatrends that indicate the directions of changes in the contemporary world but also changes in the functioning of enterprises, on a macro level, have contributed to the growth in demand for services in the sphere of management. Nowadays these more and more often concern project, change or knowledge management. The efficient functioning of contemporary enterprises without consulting services is not possible, although it seems that the dynamics of their growth will be smaller and smaller because of market saturation. A similar situation is observed in advertising. A shift from the traditional to modern form of message seems more probable and this may be accompanied by a reduction rather than an increase in the number of work places. This results from a report [PricewaterhouseCoopers 2012] that in the next five years when more and more product offers of the media and entertainment market will reach the customers by means of digital and mobile platforms, advertisers will move their budgets to those channels for the purpose of a better adjustment to the more fragmented advertising market. The largest worries are caused by the existing decline in the sphere of research and development activity and the weak prospects of their dynamic development in the nearest future. Despite being aware of their importance in contemporary economies, this is not translated into an increase in interest in this type of activity in the private sector.

The specialisation and polarisation in KIBS also ought to be mentioned in the context of spatial diversity. This is because we should realise that KIBS location is associated, among others, with easy access to high quality labour resources, which in turn results in the fact that they are concentrated mostly in big agglomerations. This process can progress and thus the disproportions between outlying and metropolitan areas may be larger.

The third, most pessimistic, scenario assumes that the pace of growth in the KIBS sector will be constantly lower, reaching the dynamics comparable with the other parts of the economy, and in the case of some services even lower. The slow progress of the liberalisation of trade in services and the harmonisation of law in the area of the European Union, overlapping with the consequences of the world crisis, i.e. in the form of the increased isolation of national economies and regions, are important factors that weaken the pace of KIBS growth. As a result of the social pressure on an increase in salaries, Poland will cease to be an attractive country for offshoring investments. They will be located in Asian countries more and more often. Additionally the change in the philosophy of management, the departure from

outsourcing and offshoring, the establishment of strong internal agencies providing KIBS services for the needs of an organisation, shall determine the dynamics of the occurring changes. The potential growth in accessibility and the relative simplicity in the application of technological solutions will allow for the provision of these services and the performance of the KIBS function by internal offices. The strategy of a competition-oriented operation, and not cooperation, shall result in the fact that organisations in the public sector, universities and research centres will provide knowledge intensive services to business customers. Here, the process of population ageing of European countries, including Poland, should also be mentioned. This can result in an education gap, and consequently personnel scarcity, especially if the policy oriented at the increase in mobility will not bring the expected results.

5. Conclusions

Knowledge intensive business services constitute one of the most important areas of economy, the development of which positively influences the increase in innovativeness and the competitiveness of a country or a region. The analysis of available data shows that KIBS has been constantly developing in Poland. Between 2005 and 2012 an increase in employment by nearly 38% was observed. Even in the period of recession, despite decreased dynamics, growth in employment was reported. Considering the present direction and dynamics of changes as well as the fact that the share of employment in this sector in Poland is significantly lower than in highly developed countries (e.g. Great Britain, Germany, and Luxembourg) their further development should be expected.

According to the options of the solutions assumed in the developed forecast, scenario 2, showing the polarisation and specialisation in KIBS, is the most probable. This results on the one hand from internal diversity in KIBS and on the other hand from spatial diversity of Poland. A progressing specialisation has been observed, and is going to be observed, in individual services including the sphere of information technology, law and environmental protection, but also at the level of regions. The studies show that KIBS development is becoming an additional opportunity for developed, metropolitan regions. The presence of KIBS contributes to the location of investments in the region which influences an increase in the demand on knowledge-intensive services and in consequence on their further supply. In outlying regions, limited access to specialist external services is particularly seriously experienced by the sector of small and medium-sized enterprises. Therefore it is necessary to start appropriate activities within the implemented policy that aim at eliminating interregional disproportions in the sphere of access to new technologies and the development of innovativeness. This can be encouraged by the better understanding of the KIBS role and the appropriate use of knowledge-intensive services in regional clusters within functioning networks of production, development and, first of all, innovation.

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