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**The use of external knowledge sources by Polish  
private-owned and state-owned enterprises  
in the internationalization process\***

**Abstract**

The article aims to compare the intensity of use of external knowledge sources in various types of businesses. It focuses on companies in the process of internationalization as they operate in diverse, demanding environment. Furthermore, the form of ownership of companies is also taken into account as effectiveness of private- and state-owned enterprises is the topic of ongoing debate in many countries. The results show that Polish private- and state-owned enterprises engaged abroad characterize with their own specificity in terms of knowledge sources they use. Nevertheless, they acquire external knowledge less intensively than foreign owned businesses.

**Keywords:** knowledge management, knowledge source, external knowledge acquisition, state-owned, private-owned, internationalization.

**JEL classification:** C14, D22, D83, O32.

**Introduction**

This study aims to investigate small but yet not explored area within the literature stream of research that deals with knowledge management processes in the functioning of enterprises.

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The overall role and significance of knowledge resource increased in the recent decades. It became central element influencing economic growth [Welfe 2007, p. 9; Nijkamp and Siedschlag 2011, pp. 15, 17]. This put a pressure on companies to adjust to changing conditions by making their knowledge activities more effective. Many concepts were developed that aimed at helping firms to successfully accomplish this task, e.g. organizational learning, learning organization, but certainly the dominant theory in this matter is currently knowledge management.

Knowledge management is perceived by many authors as the businesses' response to changing and increasingly volatile environment and as a tool enabling them to achieve competitive advantage [Evans 2005, p. 11; Handzic and Zhou 2005, p. 3].

First and very important challenge of knowledge management is knowledge acquisition, including external knowledge sourcing. In the literature it is emphasized that "(...) increasing the amount of information and specialization cause that companies cannot develop their own know-how entirely alone" [Probst, Raub and Romhardt 2004, p. 118].

External knowledge acquisition is important in every enterprise, however its intensity and knowledge sources that are used may vary. Particularly interesting, in this matter, seem companies in the process of internationalization. They operate on many markets often in the unfamiliar environment, encountering competitors, customers and other entities that are crucial for their success but often not well known.

Another characteristic of a company that may have an effect on its actions, including knowledge management activities, is the type of its ownership. For years endless debate takes place in many countries concerning effectiveness of state-owned companies against private-owned businesses. This article aims to bring very small contribution to this debate by comparing behavior of both types of companies in terms of knowledge acquisition.

In connection with issues raised, the goal of the publication is examining the use of often mentioned in the literature external knowledge sources by Polish private-owned and state-owned companies in the process of internationalization.

The following section of the article – literature review – is intended to provide basic theoretical background for this research, it touches three areas: knowledge management, internationalization process and ownership form of enterprises. The main goal of this part is selection of the most popular external knowledge sources used by companies on the basis of the literature. Afterwards, methodology section describes the empirical research and implemented statistical methods. Research results in detail present the outcome of the quantitative research. Conclusion summarizes all the findings. The article ends with the description of limitations of the research methods used and suggestions for the future research.

## **1. Theoretical background**

This article touches three theoretical fields and concepts: knowledge management, company internationalization process and ownership type of an enterprise.

First of them, knowledge management, according to Geisler and Wickramasinghe [2009, pp. 4, 6] is increasingly quoted determinant of companies' success as firms, through suitable processes, make value of their intellectual assets [Geisler and Wickramasinghe 2009, pp. 4, 6]. There is no single, widely acknowledged definition of knowledge management in the literature. Hasan and Handzic [2005, p. 4] consider this concept as "(...) complex interplay of people and technology in innovative and organizational actions aiming to achieve business goals". In turn Darroch [2003, p. 41] describes the theory as "(...) the process that creates or locates knowledge and manages the dissemination and use of knowledge within and between organizations".

There are three main theoretical, model approaches to the concept found in the literature [Perechuda 2005, p. 74; Kowalczyk and Nogalski 2007, p. 51; Paliszkievicz 2007, pp. 44-47; Tabaszewska 2012, pp. 23-24; Gruszczyńska-Malec and Rutkowska 2013, p. 50]:

- the resource approach – main contributor: Leonard-Barton,
- Japanese approach – main contributors: Nonaka and Takeuchi,
- process approach – main contributors: Davenport and Prusak; Probst, Raub and Rombhardt; Bukowitz and Williams.

In this article authors decided to use process approach that is, in general, the most often adopted approach in the literature due to its advantages: clear arrangement of structure and prospect of process exploration through quantitative research methods.

The process concept of knowledge management implies the existence of series of consecutive and interrelated knowledge activities. In the literature there are different attitudes to distinguishing individual processes, e.g.:

- discovering knowledge, generating knowledge, valuing knowledge, dissemination of knowledge and the application of knowledge [Jashapara 2006, pp. 5-9];
- accumulation, protection and the use of knowledge [Chakravarthy et al. 2006, p. 305];
- locating knowledge, knowledge acquisition, knowledge development, knowledge sharing and dissemination, knowledge exploitation and knowledge preservation [Probst, Raub and Romhardt 2004, p. 42];
- acquisition, creation, preservation and dissemination, exploitation and protection of knowledge [Soniewicki 2014, p. 88].

The scope and complexity of knowledge management concept does not allow to conduct sufficiently detailed empirical analysis of actions undertaken by

companies in this area in a single article. That is why studies undertaken in this paper concentrate on the first knowledge management process – knowledge acquisition. One should note that regardless which knowledge management processes partition is favored, the first and crucial element is always locating and obtaining knowledge by company from particular sources.

With regard to obtaining knowledge by companies often the issue of importance of internal and external sources arises. Many researchers and business practitioners stress that knowledge should be constantly acquired by companies from their environment. One of the best known proponents of such actions is Jack Welch [Kowalczyk and Nogalski 2007, p. 93]. In the opinion of Probst, Raub and Romhardt [2004, p. 43] significant share of companies knowledge comes from external sources while internal knowledge development supplements external knowledge acquisition.

In reality, it is often very difficult to distinguish between internal and external knowledge sourcing. For example, in this article R&D has been placed among external knowledge sources what may be questionable. Authors decided to do so, because several research results indicate that companies' R&D departments in fact, for most of their time concentrate on "skillful acquisition of external knowledge" [Probst, Raub and Romhardt 2004, pp. 121-122, 138].

Nevertheless, the dominant perspective in the literature is that companies should try to maintain the balance when it comes use of internal and external knowledge sources which has been empirically confirmed by the research carried out by Diaz-Diaz and De Saa-Perez [2014, p. 430].

Moreover, external knowledge acquisition is crucial element, often starting point of companies knowledge base and businesses should carefully choose knowledge sources they rely on, as not all sorts knowledge sources may influence competitive advantage of an enterprise [Paliszkiewicz 2007, p. 74].

The most of publications concerning enterprises' knowledge acquisition concentrate on companies' strategies in this matter or advantages of internal and external knowledge acquisition [Cassiman and Veugelers 2004; Liu and Liu 2008; Krstić and Petrović 2011; Kang and Kang 2014; Åkerman 2015]. In terms of particular external knowledge sources in many cases authors give several examples of such sources, like Åkerman [2015], but they do not go into details. Articles that examine intensity of use of respective knowledge sources are rare. There are exceptions, such as Caloghirou, Kastelli and Tsakanikas [2004] or Tidd and Trewhella [1997], but what is the most important there has been no comparative research on external knowledge acquisition by state- and private-owned companies. Moreover, many articles on knowledge acquisition concentrate on high technology companies only [Friesl 2012].

In numerous scientific articles one can find records of possible knowledge sources. Basing on the literature the list of 8 knowledge sources has been produced. The presented list is intentionally short and contains popular sources, frequently mentioned in the literature only in order to precisely examine their use in various types of businesses.

**Table 1.** Frequently mentioned in the literature external knowledge sources

|   |                                   |
|---|-----------------------------------|
| 1 | Market research                   |
| 2 | Customers                         |
| 3 | Competitors                       |
| 4 | Suppliers                         |
| 5 | Scientific institutions           |
| 6 | R&D                               |
| 7 | Consulting companies              |
| 8 | Networking groups or associations |

Source: Own study on the basis: [Davenport and Probst 2002, p. 13; Soo, Midgley and Devinney 2002, p. 17; Darroch 2003, p. 45; Probst, Raub and Romhardt 2004, pp. 126-133; Kowalczyk and Nogalski 2007, p. 94; Paliszkiewicz 2007, pp. 71-73; Mazur, Rószkiewicz and Strzyżewska 2008, p. 151; 2011, pp. 141-144; Sparrow 2010; Soniewicki 2014, p. 90].

This research focuses on companies in the process of internationalization. The issue of knowledge has been analyzed in literature in the context of internationalization previously. The most popular internationalization model is Uppsala model, created by Johanson, Wiedersheim-Paul and Vahlne [Gorynia and Jankowska 2008, p. 78; 2011, p. 44]. Mentioned authors underlined that lack of knowledge is one of the frontiers in the internationalization process [Johanson and Wiedersheim-Paul 1975, p. 306]. This issue was also later highlighted by Johanson and Vahlne [1977, p. 26]. This underlines the importance of knowledge resource and its acquisition in the companies' in the internationalization process.

One may find many definitions of the internationalization in the literature [Andersen 1997, p. 28]. According to Turnbull, internationalization is described as "outward movement in a firm's international operations" [Andersen 1997, p. 28]. Moreover, internationalization can be considered as state of company in particular moment (static) or as a process – dynamic [Stepień 2011, p. 99]. Mentioned issue is also highlighted by other authors, such as Duliniec [2009]. This article adopts the definition of Rymarczyk [2004, p. 19], who considers internationalization as "any type of economic activity which might be undertaken by enterprise abroad". What is important in this matter for the current research, is the fact that companies in the process of internationalization might be to some extent different when it comes to knowledge management processes, especially external knowledge sources they use as they operate in diverse, more demanding environment. This aspect is underlined by Fonfara [2012, p. 23], who notices that business operating abroad "(...) faces an unknown cultural, legal, economic and

technical environment, as well as various unfamiliar entities, such as buyers, distributors and competitors”. This feature is further taken up by Wiktor, Oczkowska and Żabikowska [2008, pp. 13-14], who underline dissimilarity of local and international environments. In the opinion of Daszkiewicz [2004, p. 35] company’s international operations require from the business some additional competitive advantage – e.g. economy of scale, more advanced technology or better product. Considering the importance of knowledge in today’s economy, well organized knowledge management processes may constitute such advantage.

Apart from the scale of given company’s operations there is another factor that may influence the organization of knowledge management processes in the company – its ownership type. The strategic effectiveness of private-owned and state-owned enterprises is the topic of ongoing debate that is visible not only in Poland, but also in other countries: e.g. Spain [Arocena and Oliveros 2012] or China [Xiaomin and Ping 2012]. On the basis of research results presented at the beginning of literature review section, that concern the importance of knowledge management, this study has a chance to contribute some empirical evidence to the issue. One needs to underline the fact that the analysis of use of external knowledge sources in enterprises with various ownership types is rare in the literature. The only studies, that investigate the general characteristics of knowledge management in companies according to varied ownership forms have been conducted by Saiz Alvarez and Olalla Caballero [2010], as well as Sheung and Canon [2010], but these authors concentrated on family-owned businesses. Another study exploring the topic, although in a very specific way, has been conducted in Turkey by Sahin and Ansal [2010] among “knowledge intensive businesses”. These authors find that “(...) nature of ownership is strong determinant of using knowledge” in observed companies [Sahin and Ansal 2010, p. 1].

## **2. Methodology**

The aim of this article is examining the intensity of use of selected, often mentioned in the literature, knowledge sources by Polish private-owned and state-owned companies that are involved in the process of internationalization. For the reference purposes Polish entities operating locally-owned and foreign-owned companies have been also analyzed.

Data for this paper have been obtained as part of the project financed by Polish National Science Centre. All questions in the survey questionnaire used 5-grade Likert scale. In questions concerning intensity of knowledge acquisition from particular sources respondents could select the following answers next to each source: 1 – lack of exploitation, 2 – low exploitation, 3 – average exploita-

tion, 4 – high exploitation, 5 – very high exploitation. While constructing the research tool the main goal was to create as simple as possible instrument. This helped to receive relatively large number of filled questionnaires.

In order to examine all presented types of enterprises the quantitative research has been conducted. The sample of enterprises was selected from Kompas Poland database. The research has been conducted in Poland among enterprises operating in this country. It consisted of two stages. First, relied on Internet based questionnaire that used custom made electronic surveying system. Second stage of the research was conducted with the use of traditional – paper based questionnaire, due to the database license that allowed electronic dispatch of questionnaires to selected businesses only. The results of both stages were analyzed together.

**Table 2.** The quantity of enterprises in each group

| Enterprise ownership form \ Scope of operation | Operating locally | In the process of internationalization |
|--|-------------------|--|
| Private-owned (Polish)                         | 446               | 571                                    |
| State-owned (Polish)                           | 60                | 37                                     |
| Foreign-owned                                  | –                 | 108                                    |

In the research almost 1300 questionnaire surveys have been received. Nevertheless, some were not taken into account due to incompleteness or the fact, that organizations were outside the area of interest of this study. For example, the collection of foreign-owned enterprises operating in Poland, locally only, was identified. Due to the relative small size of mentioned group and fact, that foreign-owned enterprises are presented here for reference purposes only, the mentioned group was not scrutinized in this research. Finally, 1222 entities have been taken into account in this research. The detailed number of firms in each group has been presented in Table 2. The study has been conducted in the second and third quarter of year 2012 and at the beginning of year 2013.

The comparison of differences between enterprises has been carried out with the use of Mann-Whitney test. It has been created to check whether differences between two independent groups are statistically significant. It is nonparametric test what means that dependent variable does not need to be normally distributed [Chakraborti and Gibbons 2003, p. 268]. The null hypothesis says that two population have the same distribution against alternative hypothesis that values in one population are larger than in the other. The Mann-Whitney test is based on joint ranks of the observations from two considered groups. The test statistic is built from the sum of ranks within group [Everitt and Landau 2004, p. 40].

The result can be analyzed using the p-value and the significance. The p-value is identical with the lowest significance level at which the null hypothesis can be accepted. Comparing this value with the predetermined significance level ( $\alpha$ ) decision about the rejection or acceptance of the null hypothesis is made. If the p-value is less than alpha, then there are basis to reject null hypothesis [Gustafsson, Herrmann and Huber 2007, p. 106]. In the article three significance levels were considered:  $\alpha=0.01$ ,  $\alpha=0.05$  and  $\alpha=0.1$ . If p-value  $< 0.01$ , there is very strong presumption against null hypothesis, in case when statistical significance was between 0.01 and 0.05 there is strong presumption and finally if p-value was from range 0.05-0.1, then there is low presumption against null hypothesis.

### **3. Research results**

As it was mentioned in the theoretical part of the article, the process approach to knowledge management, that has been adopted in this paper, implies partition of knowledge actions in the enterprise into several, consecutive processes. Average intensities of specific knowledge management processes in particular, examined types of enterprises have been presented in the Tables 3 and 4. As we may note, the intensity of these processes, with minor exceptions, is generally higher in the businesses engaged in the international markets. However, among state-owned companies not all differences are statistically significant. Discussed empirical data show that the most interesting results appeared in case of knowledge acquisition process. Differences in this matter between companies operating locally and engaged in the foreign markets are meaningful and statistically significant in case of both private-owned and state-owned enterprises.

**Table 3.** The intensity of knowledge management processes in Polish private-owned enterprises operating locally and Polish private-owned enterprises in the process of internationalization

|   |   | <b>Intensity</b>                                      |                         |                           |                                  |  |
|---|---|---|-------------------------|---------------------------|----------------------------------|--|
| <b>Enterprises' ownership form and scope of operation, difference, statistical significance</b> |   | Knowledge acquisition intensity from selected sources | Knowledge dissemination | KM information technology | Knowledge appreciation and usage |  |
| <b>Private-owned (Polish)</b>   | <i>Operating locally</i>                      | 2.33  | 3.67                    | 2.77                      | 3.52                             |  |
|   | <i>In the process of internationalization</i> | 2.60  | 3.76                    | 2.92                      | 3.63                             |  |
| Difference (int.-loc.)  |   | <b>0.27</b>   | <b>0.09</b>             | <b>0.15</b>               | <b>0.11</b>                      |  |
| Statistical significance  |   | <b>0.000***</b>                                       | <b>0.034**</b>          | <b>0.005***</b>           | <b>0.055*</b>                    |  |

Note: \*p<0.1, \*\*p<0.05, \*\*\*p<0.01.

**Table 4.** The intensity of knowledge management processes in Polish state-owned enterprises operating locally and Polish state-owned enterprises in the process of internationalization

|   |   | <b>Intensity</b>                                      |                         |                           |                                  |  |
|---|---|---|-------------------------|---------------------------|----------------------------------|--|
| <b>Enterprises' ownership form and scope of operation, difference, statistical significance</b> |   | Knowledge acquisition intensity from selected sources | Knowledge dissemination | KM information technology | Knowledge appreciation and usage |  |
| <b>State-owned (Polish)</b>   | <i>Operating locally</i>                      | 2.37  | 3.81                    | 3.10                      | 3.66                             |  |
|   | <i>In the process of internationalization</i> | 2.80  | 3.77                    | 3.15                      | 3.70                             |  |
| Difference (int.-loc.)  |   | <b>0.43</b>   | -0.04                   | 0.05                      | 0.04                             |  |
| Statistical significance  |   | <b>0.007***</b>                                       | 0.504                   | 0.771                     | 0.876                            |  |

Note: \*p<0.1, \*\*p<0.05, \*\*\*p<0.01.

The results presented in Tables 3 and 4 demonstrate that the precise examination of the acquisition intensity of particular knowledge sources (knowledge acquisition) in companies in the internationalization process in comparison to their local counterparts is especially interesting issue among series of knowledge management processes and might bring valuable conclusions.

The precise analysis of knowledge sources used by Polish private-owned and state-owned companies in the internationalization process will be carried out by comparing these entities with their local counterparts (the same ownership form) and with foreign-owned companies. At the end Polish private-owned and state-owned firms involved in the international operations will be compared between each other in terms of examined issue.

Table 5 presents the acquisition intensity of particular knowledge sources by private-owned companies with different scope of operation. The intensity of knowledge acquisition from all types of sources by these businesses in the process of internationalization is higher, with most of differences statistically significant. This is probably due to the fact the firms engaged in the foreign markets need much more various knowledge due to the greater number of markets they operate in.

One should note that the general structure of importance of both types of entities is the same but there are differences in the intensity of acquisition of particular sources by enterprises. In particular the results draw the attention in case of knowledge sources directly delivering market knowledge to the company – customers and market research. Their acquisition among companies involved internationally is much more intense. Similarly, acquisition of other market related sources – competitors and suppliers is greater in the latter type of business.

Considerable difference can also be noted in the importance of research and development as well as cooperation with scientific institutions. Nevertheless, the general intensity of acquisition of the latter knowledge source is very low in both types of entities.

Another type of reference unit for examined enterprises are foreign-owned companies. In this comparison both types of evaluated businesses are involved in international operations. The comparison of use of particular knowledge sources has been presented in Table 6.

**Table 5.** The intensity of acquisition of selected knowledge sources by Polish private-owned enterprises operating locally and Polish private-owned enterprises in the process of internationalization

| Knowledge source  |   | Market research | Customers       | Competitors     | Suppliers       | Scientific institutions | R&D             | Consulting companies | Networking groups or associations |
|---|---|-----------------|-----------------|-----------------|-----------------|-------------------------|-----------------|----------------------|-----------------------------------|
| <b>Enterprises' ownership form and scope of operation, difference, statistical significance</b> | <i>Operating locally</i>                      | 2.11            | 3.08            | 2.67            | 3.09            | 1.79                    | 2.58            | 1.63                 | 1.72                              |
|   | <i>In the process of internationalization</i> | 2.42            | 3.47            | 2.95            | 3.34            | 2.05                    | 2.96            | 1.83                 | 1.77                              |
| Difference (int.-loc.)  |   | <b>0.31</b>     | <b>0.39</b>     | <b>0.28</b>     | <b>0.25</b>     | <b>0.26</b>             | <b>0.38</b>     | <b>0.20</b>          | 0.05                              |
| Statistical significance  |   | <b>0.000***</b> | <b>0.000***</b> | <b>0.000***</b> | <b>0.000***</b> | <b>0.000***</b>         | <b>0.000***</b> | <b>0.000***</b>      | 0.179                             |

Note: \*p<0.1, \*\*p<0.05, \*\*\*p<0.01.

**Table 6.** The intensity of acquisition of selected knowledge sources by Polish private-owned enterprises in the process of internationalization and foreign-owned businesses operating in Poland

| Knowledge source  |   | Market research | Customers     | Competitors | Suppliers | Scientific institutions | R&D   | Consulting companies | Networking groups or associations |
|---|---|-----------------|---------------|-------------|-----------|-------------------------|-------|----------------------|-----------------------------------|
| <b>Enterprises' ownership form and scope of operation, difference, statistical significance</b> | <i>In the process of internationalization</i> | 2.42            | 3.47          | 2.95        | 3.34      | 2.05                    | 2.96  | 1.83                 | 1.77                              |
|   | <i>In the process of internationalization</i> | 2.80            | 3.67          | 3.06        | 3.19      | 2.10                    | 3.09  | 2.20                 | 2.08                              |
| Difference (foreign-priv.int.)  |   | <b>0.38</b>     | <b>0.20</b>   | 0.11        | -0.15     | 0.05                    | 0.13  | <b>0.37</b>          | <b>0.31</b>                       |
| Statistical significance  |   | <b>0.005***</b> | <b>0.054*</b> | 0.296       | 0.193     | 0.500                   | 0.310 | <b>0.000***</b>      | <b>0.029**</b>                    |

Note: \*p<0.1, \*\*p<0.05, \*\*\*p<0.01.

The intensity of acquisition of examined knowledge sources makes Polish private-owned companies in the process of internationalization more similar to foreign-owned firms than to their Polish counterparts operating locally as not so many differences are statistically significant. Nevertheless, one should note that the foreign-owned companies are exploiting tested knowledge sources more intensively than their Polish counterparts. The exception is one category – suppliers, but this difference is statistically insignificant.

The interesting are categories of knowledge sources that directly deliver market knowledge to the company – customers and market research. Their more intensive use by Polish private-owned companies involved internationally in comparison to their counterparts operating locally has been mentioned earlier in the article. The importance of these knowledge sources for foreign-owned companies is even greater. Moreover, customers are considered by these entities as the most important knowledge source of the surveyed. Foreign-owned businesses also utilize to a greater extent consulting companies knowledge and networking possibilities.

The presented comparison proves that Polish private-owned companies in the process of internationalization are on the very good level when it comes to knowledge acquisition from suppliers, cooperation with scientific institutions along with research and development activities.

The another type of examined entities are state-owned enterprises. These businesses in the processes of internationalization, similarly as private-owned firms before, will be collated with their locally operating counterparts and afterwards with foreign-owned companies also in the process of internationalization. State-owned companies in Poland are generally less numerous than private-owned firms, thus examined sample also contained less entities of this type. This resulted in lower level of statistical significance of discovered differences than in case of private-owned businesses.

**Table 7.** The intensity of acquisition of selected knowledge sources by Polish state-owned enterprises operating locally and Polish state-owned enterprises in the process of internationalization

| Enterprises' ownership form and scope of operation, difference, statistical significance | Knowledge source |                 |             |               |                         |                |                      |                                   |  |  |
|--|------------------|-----------------|-------------|---------------|-------------------------|----------------|----------------------|-----------------------------------|--|--|
|  | Market research  | Customers       | Competitors | Suppliers     | Scientific institutions | R&D            | Consulting companies | Networking groups or associations |  |  |
| State-owned (Polish)   | 2.02             | 2.63            | 2.28        | 2.63          | 2.53                    | 2.67           | 2.10                 | 2.07                              |  |  |
| <i>Operating locally</i>   | 2.59             | 3.27            | 2.65        | 3.03          | 3.00                    | 3.36           | 2.14                 | 2.27                              |  |  |
| <i>In the process of internationalization</i>  | <b>0.57</b>      | <b>0.61</b>     | 0.37        | <b>0.40</b>   | <b>0.47</b>             | <b>0.69</b>    | 0.04                 | 0.20                              |  |  |
| Difference (int.-loc.)   | <b>0.026**</b>   | <b>0.006***</b> | 0.105       | <b>0.093*</b> | <b>0.046**</b>          | <b>0.011**</b> | 0.859                | 0.240                             |  |  |
| Statistical significance   |                  |                 |             |               |                         |                |                      |                                   |  |  |

Note: \*p<0.1, \*\*p<0.05, \*\*\*p<0.01.

The average difference in intensity of knowledge acquisition from examined sources between state-owned companies operating locally and internationally is greater than in case of private-owned businesses, although less of them are statistically significant. State-owned companies are generally perceived in Poland as not very customer oriented. These results fit into this image, however one should note that these businesses involved in the international operations considerably more appreciate customers and market research as important knowledge sources. Nevertheless, the most important knowledge source for state-owned companies engaged in the process of internationalization are research and development activities. In case of their locally operating counterparts R&D measures are far less intense.

The following step is comparison of state-owned companies involved in international operations with their foreign-owned counterparts also in the process of internationalization (Table 8).

In this comparison we get only three statistically significant differences. In the previous table results revealed that state-owned companies in the process internationalization much more appreciate customers as knowledge source than their local counterparts. Here we may note that this level is still much lower than foreign-owned companies' standard. Very similar situation occurs in case of knowledge acquisition from competitors. Nevertheless, in case of other knowledge source which delivers direct market knowledge – market research there is no statistically significant difference between compared types of companies. Interesting is the fact that analyzed Polish state-owned firms, much more than foreign-owned companies, appreciate cooperation with scientific institutions as well as research and development activities. However the difference in case of the latter is not statistically significant.

Analyzes presented up to this point compared Polish private and state-owned companies in the internationalization process either with their counterparts operating locally or foreign-owned firms. Following analysis is to contrast Polish businesses of two different ownership forms involved in international operations (Table 9).

**Table 8.** The intensity of acquisition of selected knowledge sources by Polish state-owned enterprises in the process of internationalization and foreign-owned businesses operating in Poland

| Enterprises' ownership form and scope of operation, difference, statistical significance |               | Knowledge source |                |               |           |                         |       |                      |                                   |  |  |
|--|---------------|------------------|----------------|---------------|-----------|-------------------------|-------|----------------------|-----------------------------------|--|--|
| State-owned (Polish)   | Foreign-owned | Market research  | Customers      | Competitors   | Suppliers | Scientific institutions | R&D   | Consulting companies | Networking groups or associations |  |  |
| <i>In the process of internationalization</i>  |               | 2.59             | 3.27           | 2.65          | 3.03      | 3.00                    | 3.36  | 2.14                 | 2.27                              |  |  |
| <i>In the process of internationalization</i>  |               | 2.80             | 3.67           | 3.06          | 3.19      | 2.10                    | 3.09  | 2.20                 | 2.08                              |  |  |
| Difference (foreign-state int.)  |               | 0.21             | <b>0.40</b>    | <b>0.41</b>   | 0.16      | <b>-0.90</b>            | -0.27 | 0.06                 | -0.19                             |  |  |
| Statistical significance   |               | 0.455            | <b>0.035**</b> | <b>0.061*</b> | 0.335     | <b>0.000***</b>         | 0.348 | 0.748                | 0.249                             |  |  |

Note: \*p<0.1, \*\*p<0.05, \*\*\*p<0.01.

**Table 9.** The intensity of acquisition of selected knowledge sources by Polish private-owned and state-owned enterprises in the process of internationalization

| Enterprises' ownership form and scope of operation, difference, statistical significance |   | Knowledge source |           |             |           |                         |        |                      |                                   |  |  |
|--|---|------------------|-----------|-------------|-----------|-------------------------|--------|----------------------|-----------------------------------|--|--|
|  |   | Market research  | Customers | Competitors | Suppliers | Scientific institutions | R&D    | Consulting companies | Networking groups or associations |  |  |
| Private-owned (Polish)   | <i>In the process of internationalization</i> | 2.42             | 3.47      | 2.95        | 3.34      | 2.05                    | 2.96   | 1.83                 | 1.77                              |  |  |
| State-owned (Polish)   | <i>In the process of internationalization</i> | 2.59             | 3.27      | 2.65        | 3.03      | 3.00                    | 3.36   | 2.14                 | 2.27                              |  |  |
| Difference (state-priv.)   |   | 0.17             | -0.20     | -0.30       | -0.31     | 0.95                    | 0.40   | 0.31                 | 0.50                              |  |  |
| Statistical significance   |   | 0.385            | 0.250     | 0.116       | 0.041**   | 0.000***                | 0.067* | 0.042**              | 0.003***                          |  |  |

Note: \*p<0.1, \*\*p<0.05, \*\*\*p<0.01.

Table 9 reveals that state-owned companies to the greater extent appreciate scientific knowledge. It can be seen by their much more intensive knowledge acquisition from scientific institutions and more intense activities in the area of research and development. Noteworthy is their closer cooperation with consulting companies and involvement in networking associations. On the other hand private-owned businesses are more oriented on the market related knowledge sources (suppliers, customers, competitors). Nevertheless, crucial market related knowledge source – market research is more appreciated by state-owned firms. However, it must be emphasized that not all of the differences in this matter are statistically significant.

## **Conclusions**

Presented empirical data revealed that examination of knowledge acquisition intensity from particular sources exposes interesting differences between knowledge management activities of Polish private-owned and state-owned enterprises involved in the international operations. In general, Polish entities engaged in the internationalization process, on average, much more intensively acquire external knowledge than their locally operating counterparts. Nevertheless, their overall proficiency in examined activity is still, although not strongly, less intense than among foreign-owned businesses. Furthermore, private-owned and state-owned enterprises involved in the internationalization process possess their own specificity in terms of knowledge acquisition and vary from their counterparts with the same ownership form but operating locally.

Private-owned companies involved in the international operations in comparison to their equivalents operating locally more intensively acquire knowledge from practically all sources. In particular, these businesses appreciate and rely on sources that are market related. They consider customers as the most important knowledge source among the examined. Moreover, worth mentioning is their intense knowledge acquisition from suppliers.

On the other hand state-owned businesses engaged abroad intensively cooperate and acquire knowledge from scientific institutions. What is more, the most important knowledge source for them are research and development activities. This gives them a chance to become, on average, more innovative than private-owned companies providing the proper use of the obtained knowledge.

In the authors' opinion, very valuable finding of this research is the fact that Polish state-owned enterprises in the process of internationalization are more market aware and sensible than their locally operating counterparts. This is reflected by their comparatively stronger perception of customers and market research as valuable and useful knowledge sources.

### **Practical implications**

The presented research results may be source of several practical advices for companies. Firstly, companies in the process of internationalization, regardless their ownership form, acquire much more knowledge. This means that companies that consider expansion of their activity into foreign markets should increase the intensity of their external knowledge acquisition. They should concentrate on market related sources. In particular their attention should be focused on developing close relations with their customers and effective acquisition of necessary knowledge from them, but also on regular conducting market research.

Secondly, companies operating locally are in general characterized by very low level of knowledge acquisition. Such weakness of this kind of entities can be also perceived as a chance. Increasing activities in the matter of knowledge acquisition may easily improve their competitiveness.

### **Limitations and further research**

Presented research results have certain limitations, that most of all concern adopted data collection method. The aim was to create as simple as possible questionnaire survey which would be well understood by respondents. Such research tool does not give detailed, in depth picture of external knowledge sources usage by examined enterprises, but increases the response rate. The survey was supposed to recognize the interest and intensity of actions in particular areas of knowledge management, including knowledge acquisition, in examined enterprises. Unfortunately, the quality of this sort of actions in each enterprise is likely to differ, but it is difficult to account for this aspect in a quantitative survey.

The sample selection was another area prone to inaccuracy. Kompas database, which was adopted, is not the perfect database of enterprises active in Poland. Another aspect is that the research did not focus on particular branches, instead it was trying to find some general rules. Knowledge management and external knowledge acquisition should exist in any enterprise, but one cannot rule out that there is some stronger than expected branch specificity in this matter.

Very important limitation in this research, concerning Polish state-owned enterprises, is their relatively small representation in the examined sample. This is because they do not constitute large share of Polish enterprises but still this may result in inaccuracy of obtained results.

Further research in the examined topic, in the first place, should concentrate on detailed understanding of other knowledge management processes in each of distinguished enterprise type. In the author's opinion the most effective tool of further study would be the qualitative research tool as it would allow for precise

understanding of entire chain of cause and effect. Very important in this matter is cohesion of the processes because none of them is able to make any contribution to value added of given enterprise on their own. Another crucial matter to explore in this subject is the quality of execution of the processes which defines contribution of entire concept to the competitive advantage of enterprise.

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