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INTERDEPENDENCE BETWEEN FORMS OF COMPANIES INTERNATIONAL ACTIVITY AND USE OF EXTERNAL KNOWLEDGE SOURCES

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Abstract:
Knowledge is currently perceived in the scientific literature as a crucial element in creating competitive advantage of an enterprise (Jashapara 2006, p. 24; Paliszkiewicz 2007, p. 35). Therefore companies need to put particular attention to their actions in terms of this resource (Handzic and Zhou 2005, p. 4; Geisler and Wichramasinghe 2009, p. 18). It is especially important among companies in the internationalization process as they operate on many diverse markets and need more, heterogeneous knowledge (Soniewicki 2014). This article concentrates on the narrow, however very important, initial element of companies' knowledge actions – external knowledge acquisition. It examines the use of various knowledge sources, distinguished on the basis of knowledge management literature, by companies operating in foreign markets. The article presents in-depth analyzes of particular external knowledge sources usage by businesses applying various forms of internationalization. The analyzed data come from quantitative empirical research in which almost 1300 companies have been examined. 723 of them have been engaged in operations abroad. The results show that there are specific differences in use of examined knowledge sources depending on the form of internationalization that companies use while operating in foreign markets. Enterprises using advanced internationalization forms more intensively acquire external knowledge and put greater attention to more sophisticated and costly knowledge sources.

Keywords: knowledge, internationalization, knowledge management, external knowledge sources

1. INTRODUCTION

The aim of the study is to explore and learn what sort of external knowledge sources are typically used by companies that employ particular organizational forms in internationalization process. Importance of this issue has been triggered by changes in international economy.

Global economic processes have undergone substantial changes in the second part of the twentieth century, they were particularly evident in its last decade (Karlsson, Johansson and Sough 2006, p. 1). The mentioned changes involved considerable increase in knowledge resource status. Its role in creating value added in the global Economy has substantially grown (Kahin and Foray 2006, p. 17; Nijkamp and Siedschlag 2011, p. 15). In the past, knowledge very often has been perceived as publicly available resource and was not taken into account by researchers while constructing economic models. Today, it is mostly scarce resource which is predominantly strictly protected by companies (Gaczek 2009, p. 21, 24). OECD in 1996 portrayed discussed phenomenon in their report which was titled “Knowledge Based Economy” that has popularized the term in the literature (OECD 1996, p. 1).

Existence of global knowledge based economy compels companies to adjust to the current conditions and develop necessary competences. Many business practitioners and researchers highlight the issue of knowledge based competition (Chakravarthy et al. 2006, p. 305) due to the fact that knowledge can be perceived as unique production factor (Szromnik 2013, p. 9). Geisler and Wickramsinghe (2009, p. 3) state that creativity and ideas are currently crucial. Woodall, Lee and Stewart (2004, p. 165) emphasize that these days competitiveness of enterprises is, to a large extent, based on effectiveness of their knowledge activities.

Emergence of concepts such as knowledge management (KM), learning organization (LO) and organizational learning (OL) was the response to changing operating conditions of companies related to the increased importance of intangible resources in creating competitive advantage (Evans 2005, p. 11; Handzic and Zhou 2005, p. 3). Learning organization gained recognition as the first. When knowledge management became popular it overshadowed the former concept (Jashapara 2006, p. 307). It lead and still leads to the snowball effect – the concept is developing much faster as many publications refer to it (Soniewicki 2014, p. 63). The popularity of the concept is caused by its clarity and practical character (Vera and Crossan 2006, p. 124). Nevertheless, in literature one may find various model approaches to the KM. Among them the most popular are resource approach, Japanese approach and process approach (Perechuda 2005, p. 74; Kowalczyk and Nogalski 2007, p. 51; Paliszkiewicz 2007, p. 44-47; Tabaszewska 2012, p. 23-24). This article adopts the process approach as it is the most often referred to in literature. Moreover, probably also due to various existing model approaches, there are many definitions of the KM (Geisler and Wickramasinghe 2009, p. 3; Ahmed, Lim and Loh 2002, p. 12). Most of them differ only slightly. This article adopts the KM definition created by Cranfield Business School which specifies the concept as “collection of processes that enable the creation, dissemination and use of knowledge to achieve organizational objectives” (Perechuda 2005, p. 74). One may also find different approaches in literature to distinguishing particular processes. There are less or more detailed attitudes. One of the most popular division has been created by Probst, Raub and Romhardt (2004, p. 42) – locating knowledge and its acquisition, knowledge development, knowledge sharing and dissemination, knowledge exploitation and protection.

Effective knowledge activities are particularly needed in companies engaged abroad due to more complex, simultaneous conducting operations on many various often unfamiliar markets. (Soniewicki 2014, p. 152-160). Moreover, Hawryszkiewicz (2010, p. 75) notices that companies operating in many international markets may transfer best practices from one market to the other. In literature it is often underlined that international operations are more difficult for companies than local operations, so that they require more knowledge.

Unfortunately, because of the complexity and scope of the KM concept detailed examining of all KM processes in one article is not possible. That is why this paper concentrates on the first element of the concept – knowledge acquisition. Finding and obtaining knowledge from particular sources, is always crucial, regardless which partition of KM processes is favored (Soniewicki and Wawrowski 2014, p. 3). Knowledge can be acquired by a company from number of sources (Darroch 2003, p. 41). Paliszkiewicz (2007, p. 74) emphasizes that companies should cautiously choose knowledge sources

they use as this decision might influence their competitive advantage. Probst, Raub and Romhard (2004, p. 43) underline that large amount of knowledge in every enterprise comes from external sources while internal development of knowledge in a company is complementary. In literature, many authors stress the importance of external knowledge acquisition. One of the most known of them is Jack Welch (Kowalczyk and Nogalski 2007, p. 93). Nevertheless, one should note that it is difficult to draw a clear borderline between external and internal knowledge sources as many companies' R&D departments gain most of their knowledge from external sources rather than their own research (Probst, Raub and Romhardt 2004, p. 121-122, 138).

2. METHODOLOGY

In the study five internationalization forms have been distinguished (table 1). They have been put in the two groups (table 2). First of them gathers the ways of organizing foreign operations that denote low international involvement such as import, export and subcontracting. The second assembles forms that require high international involvement. Some examined entities, in their internationalization process, use several forms at same time. In such cases the most advanced forms have been taken into account with the use of hierarchy presented in the table 1. Although, this research concentrates on entities on various levels of internationalization process, results for companies not involved in foreign operations have also been presented for reference purposes.

Table 1: The quantity of examined enterprises using particular internationalization form or not involved in the internationalization process.

The form of company's foreign activity	*No of companies in the sample*
No international involvement	548
Export or import	465
Subcontracting	135
Non-equity cooperation (licencing, franchising)	26
Equity cooperation (joint venture)	21
Foreign Direct Investment (FDI)	76
Total:	1271

Source: own study.

Table 2: The quantity of examined enterprises in particular aggregated groups.

The intensity of company's foreign activity	*No of companies in the sample*
Low (export, import, subcontracting)	600
High (non-equity cooperation, equity cooperation, foreign direct investment)	123

Source: own study.

Knowledge sources examined in the research have been divided into four categories. These have been presented in the table 3.

Table 3: Knowledge sources which use has been examined in the research.

No.	*Knowledge source*	*Category*
1.	External trainings	Knowledge purchase
2.	Consulting companies	
3.	Publications (scientific, industry)	
4.	External expertise / external expert advice	
5.	Market research	Market related knowledge sources
6.	Customers	
7.	Suppliers	
8.	Competitors	
9.	Networking groups or associations	Governmental and non-governmental institutions
10.	Scientific institutions (including universities)	
11.	Governmental or local government institutions	
12.	Own research and development	Research and development activities

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

Empirical data for this article have been obtained within the project financed by Polish National Science Centre[1]. While creating the research tool the author's main goal was to construct as simple as possible instrument. This attitude helped to receive relatively large number of fully filled surveys. This paper is built on the first section of mentioned survey that concentrated on use of various knowledge sources by examined companies. All types of knowledge sources that have been tested in the research were those that are most often mentioned in the knowledge management literature in context of popular knowledge sources utilized by companies. Within all questions, 5-grade Likert scale has been applied in which 5 meant most intensive use of particular knowledge source and 1 – lack of use.

The sample of examined enterprises has been selected from Kompass Poland database. The study has been conducted in Poland among businesses operating in this country and consisted of two stages. The first of them, relied on Web-based questionnaire that used custom-made electronic surveying system. The second phase of the research has been conducted with use of traditional, paper-based questionnaire. It was due to license conditions enforced by database provider that allowed electronic dispatch of questionnaires to the selected businesses only. The results of both stages were analyzed together.

In this study almost 1300 filled questionnaire surveys have been acquired, but some were eliminated due to incompleteness or fact, that entities were outside the area of interest of the research. Finally, 1271 entities have been taken into account and studied. The exact numbers of enterprises using particular internationalization forms have been presented in the table 1. The research has been conducted in the second and third quarter of year 2012 and at the beginning of year 2013.

To examine statistical differences between intensity of use of particular knowledge sources between companies with low and high international involvement R programming language with RStudio (Integrated Development Environment) has been used. With this software Student's t-Test has been implemented.

3. RESEARCH RESULTS

As mentioned in the previous section, knowledge sources, examined in the research, have been divided into four categories. Results for the first group – knowledge purchase – have been presented in the table 4. In this set of knowledge sources the most popular are scientific and industry publications as well as external trainings. Consulting companies and external experts advice are used to limited extent, apart from companies implementing equity cooperation where this source is to some extent utilized.

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In general, in this group of knowledge sources, companies implementing equity and non-equity cooperation show the most intensive use of all featured elements. In turn, lower than expected intensity of use of examined knowledge sources, in comparison to other types of businesses, is represented by firms employing foreign direct investments, especially when it comes to scientific and industry publications. Such companies are, in general, considered as the most engaged in the processes of internationalization, and in theory, should require the most of knowledge resource.

Table 4: Knowledge purchase – the use of selected knowledge sources by companies using particular internationalization form or not involved in the internationalization process.

Knowledge source / *Internationalization form*	*External trainings*	*Consulting companies*	*Publica-tions (scientific, industry)*	*External expertise / external expert advice*
No international involvement	2.86	1.71	3.09	1.63
Export or import	2.64	1.83	3.09	1.67
Subcontracting	2.75	1.99	3.13	1.81
Non-equity cooperation	2.88	2.12	**3.54**	2.23
Equity cooperation	**3.24**	**2.38**	3.14	**2.29**
FDI	2.97	2.11	3.07	2.03

Source: own study.

Table 5 shows differences in intensity of use of knowledge sources, from the category of knowledge purchase, for companies divided into two groups: low and high international involvement. In case of all examined, in this category, knowledge sources, businesses more engaged internationally, on average, use them more intensively. The smallest difference has been observed in case of scientific or industry publications. At the same time, it is the most popular source of knowledge purchase by all types of examined companies (except companies implementing equity cooperation that more intensively use external trainings). Popularity of publications probably results from the fact that in many cases it is the cheapest way of obtaining industry or scientific knowledge resources. Much less expensive than employing external expert, consulting companies or purchasing some sort of external training.

Table 5: Knowledge purchase – the use of selected knowledge sources by companies with particular level of international involvement[2].

Knowledge source / *Intensity of internationalization involvement*	*External trainings*	*Consulting companies*	*Publications (scientific, industry)*	*External expertise/ external expert advice*
Low	2.67	1.87	3.10	1.70
High	3.00	2.15	3.18	2.11
Difference (high-low)	**0.34*****	**0.29*****	0.08	**0.42*****

Source: own study.

Table 6 shows intensity of use of selected market related knowledge sources by examined types of companies. The most popular sources in this category are customers and suppliers. It is understandable as companies have the most intensive contact with these types of entities. Moreover, knowledge about customers needs and wants is often considered crucial for every company's existence. This is reflected by the results in this category, in which one may note customers are the most important market related knowledge source for all examined types of companies. Nevertheless, one should note that all knowledge sources in this category are utilized much more intensively by companies with any form of international involvement in comparison with businesses operating locally only.

[2] *p < 0.1, **p < 0.05, ***p < 0.01

The least popular among market related knowledge sources is market research. Probably due to high cost. Nevertheless, one should remember that properly carried out market research may bring valuable input and contribute to company's competitive advantage.

Table 6: The use of selected market related knowledge sources by companies using particular internationalization form or not involved in the internationalization process.

Knowledge source / *Internationalization form*	*Market research*	*Custo-mers*	*Suppliers*	*Compe-titors*
No international involvement	2.16	3.07	3.05	2.61
Export or import	2.38	3.42	3.23	2.95
Subcontracting	2.39	3.44	3.39	2.89
Non-equity cooperation	**3.00**	3.69	**3.50**	**3.23**
Equity cooperation	2.81	**3.76**	3.29	2.95
FDI	2.70	3.34	3.16	2.87

Source: own study.

Table 7 reveals differences in intensity of use of market related knowledge sources between companies with low and high international involvement. The only statistically significant difference is observable in case of market research. Companies with high international involvement to the greater extent appreciate market research as valuable knowledge source.

Table 7: The use of selected market related knowledge sources by companies with particular level of international involvement.

Knowledge source / *Intensity of internationalization involvement*	*Market research*	*Custo-mers*	*Suppliers*	*Compe-titors*
Low	2.39	3.43	3.26	2.93
High	2.78	3.49	3.25	2.96
Difference (high-low)	**0.40*****	0.06	-0.01	0.03

Source: own study.

Table 8 shows the intensity of use of governmental and non-governmental institutions as knowledge sources by examined companies. This category is, in general, the least appreciated by examined companies. Particularly low utilization of mentioned knowledge sources can be seen among exporting or importing companies or entities with no international involvement. Interesting is the fact that knowledge sources from the discussed group enjoy the greatest level of utilization among companies implementing non-equity cooperation and are relatively little appreciated by businesses using FDI.

Table 8: The use of governmental and non-governmental institutions as knowledge sources by companies using particular internationalization form or not involved in the internationalization process.

Knowledge source / *Internationalization form*	*Networking groups or associations*	*Scientific institutions (including universities)*	*Governmental or local government institutions*
No international involvement	1.81	1.88	1.79
Export or import	1.75	2.01	1.63
Subcontracting	1.84	2.31	1.84
Non-equity cooperation	**2.42**	**2.54**	**2.54**
Equity cooperation	2.10	2.29	1.81
FDI	2.00	2.33	1.78

Source: own study.

Table 9 presents differences between intensity of use of knowledge sources in the category of governmental and non-governmental institutions for companies divided into groups of low and high engagement in internationalization process. One may note that quite significant differences between businesses with low and high international involvement, are visible in case of all knowledge sources in discussed division. Nevertheless, the most evident disparity exists in the matter of networking groups and associations. It can be seen that scientific institutions are the most popular in this category of knowledge sources, however overall use of even this knowledge source is still very low.

Table 9: The use of governmental and non-governmental institutions as knowledge sources by companies with particular level of international involvement.

Knowledge source / *Intensity of internationalization involvement*	*Networking groups or associations*	*Scientific institutions (including universities)*	*Governmental or local government institutions*
Low	1.77	2.08	1.68
High	2.11	2.37	1.94
Difference (high-low)	**0.34*** **	**0.29** **	**0.26*** **

Source: own study.

Table 10 presents importance of R&D activities as knowledge source for companies implementing particular internationalization forms or not involved in operations in foreign markets. This article concentrates on external knowledge sources used by various businesses and R&D activities may be considered as internal knowledge sources. Nevertheless, in the literature authors underline that in reality, the most of time of R&D departments is devoted for exploring external knowledge sources (Probst, Raub and Romhardt 2004, p. 121-122, 138). That is why this knowledge source has also been included in this paper.

As we may note in the table 10, the more advanced form of internationalization implemented by company, the more enterprise appreciates own R&D activities. Companies with no international involvement negatively stand out the most from the rest of examined businesses. Commitment in R&D is especially important for companies that are intensively involved in internationalization process. For them it is one of the most important knowledge sources.

Table 10: Engagement in R&D activities by companies using particular internationalization form or not involved in the internationalization process.

Knowledge source / *Internationalization form*	*Own research and development*
No international involvement	2.56
Export or import	2.92
Subcontracting	3.13
Non-equity cooperation	**3.38**
Equity cooperation	**3.29**
FDI	**3.32**

Source: own study.

Table 11 reveals statistically significant difference in reliance on own R&D between companies with high and low international involvement. R&D is very important because it brings unique knowledge that may largely contribute to competitive advantage.

Table 11: Engagement in the R&D activities by companies with particular level of international involvement.

Intensity of internationalization involvement \ *Knowledge source*	*Own research and development*
Low	2.97
High	3.33
Difference (high-low)	**0.36*** **

Source: own study.

4. CONCLUSION

The first and the most important conclusion is that companies utilizing equity cooperation or non-equity cooperation use practically all of examined knowledge sources most intensively. Probably this is because such entities receive business know-how from their foreign partners, most often from more developed countries, from firms were developing their business processes for years or even decades. Such know-how probably shows importance of knowledge resources and implies usage of many various knowledge sources in order to constantly develop and renew enterprise's knowledge assets. This is interesting finding for any sort of entrepreneur. It means that constant, intensive use of large number of diversified knowledge sources is important element of successful, developed over long period of time, business strategy.

The another valuable finding is low use of knowledge from scientific institutions, including universities by examined companies. This opens the possibility for many companies to gain competitive advantage over competitors as knowledge gained from these institutions may be the basis of unique competitive advantage. Moreover, relatively limited use of discussed institutions as knowledge sources is interesting in the view of the fact that R&D activities are quite popular among examined companies. Cooperation with external scientific and research institutions may be effective way of improving R&D activities already undertaken by many companies.

The research results have certain limitations that are related to utilized data collection method. The author's intention was to create questionnaire as simple as possible in order to be well understood by respondents. Such attitude increased the quality of the data that has been received. The main aim of the study was to recognize general interest and intensity of activities of examined companies in certain aspects of knowledge management, including the acquisition of knowledge resource from particular sources. The quality of such operations is likely to differ in various firms, but this is difficult to discover in quantitative research. The another research aspect prone to inaccuracy was sample selection. In this study Kompass database has been adopted but it does not contain all enterprises active in Poland.

Future studies in this area could compare companies from various industries. This is because one may expect that examined activities in entities from different sectors may vary. The another interesting research possibility is more detailed, qualitative analysis of enterprises' external knowledge acquisition processes.

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