Knowledge Management in IT Outsourcing/Offshoring Projects[1]

Jarosław Polak, PMP
Przemysław Wójcik, PMP
AGH University of Science and Technology, Cracow, Poland

Abstract

Outsourcing and offshoring in the Central Europe countries are increasingly common and they impact on sales and growth of global companies nowadays. This region attracts corporations from around the world because of the crucial costs reduction and by providing highly educated workforce with excellent language skills. The O&O projects in IT are a well-known trend; however, this sector is difficult, unstable and complex due to dynamic technology changes, frequent indecision of the customers and instability on the IT market. There are many challenges in O&O projects which can have potentially negative consequences, such as a loss or distribution of knowledge, when a company decides to outsource a part of its work abroad.

The aim of this paper is to present how companies can leverage knowledge management in O&O projects. The researchers indicate the barriers and facilitators in KM process and point out how maturity and experience in PM and KM are important in project life cycle.

The study was initiated by a review of literature, followed by a set of informal, conversational interviews which helped to determine areas of interests and prepare a list of the final questions. The last part of the research consisted of several standardized, open-ended interviews with members of top management, boards, executives and projects managers employed by medium and big companies implementing IT projects in Poland.

Key words: *project management, knowledge management, knowledge, outsourcing.*
JEL code: O22, D83

Introduction

A characteristic feature of service development is nowadays creating centers of support services and the transfer of business services between countries. The key here is the strategy of transnational corporations, which move a range of their activities outside the home office. Usually, it refers to activities and business processes that are not core business and can be successfully pursued outside the main seat of the organization. This is due to the phenomenon of globalization in the world economy. The changes result from, at least, two reasons. On the one hand, they are effects of competition and the consequent need to find ways of increasing

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productivity and efficiency of the company, where the reduction of operating costs is one of the basic methods. On the other hand, rapid technological development of Information and Communication Technologies (ICT) facilitates the development of successful models in the field of provision of business services. In practice, this amounts to the creation of outsourcing and offshoring centers.

Reports of A. T. Kearney Global Services Location IndexTM (The AT Kearney Global ..., 2011.2014) indicating the most interesting countries as far as investing in offshoring services is concerned, show that the top three countries have remained unchanged over the recent years. These are still India, China and Malaysia. However, a very significant place on the list belongs to the countries of Central and Eastern Europe (CEE). This is due to several factors, among others, to favorable business environment, financial attractiveness, or still cheaper and highly educated workforce, as well as the fact that most countries in the region are members of the European Union. One of the leaders is Poland, which over the last three years, has jumped thirteen positions up the list. About 40 percent of IT sector companies are in Krakow, Poland's "Silicon Valley." Among the global providers in Poland are IBM, HP, Accenture, Atos, Capgemini, and HCL, alongside tech giants such as Google and Cisco (The A.T. Kearney… 2014). The slide of the Baltic States in the ranking may be surprising (Latvia by 10 and Estonia by 11 positions), but the rate has not changed significantly, which means that there has not been a deterioration of conditions for O & O project and the countries are still attractive to investors.

The scope of outsourcing and offshoring is wide and can cover: financial services, logistics, HR and IT. In IT projects the key factor is knowledge management, especially when tasks are performed beyond the client's site or are carried out by an independent entity.

Knowledge management issues are a very popular area of research. In the respective literature, diversified research perspectives can be found. One of the most common cited works are Nonaka's studies (Nonaka 1994). Nonaka differentiates tacit and explicit as two dimensions of the knowledge in organizations. The tacit knowledge consists of the cognitive elements, such as mental models of paradigms, and technical elements, such as concrete knowledge or contextual skills. The explicit knowledge is the expressed and codified knowledge in symbolic form. Nonaka suggests four modes of the knowledge creation: internalization, externalization, combination and socialization. He also suggests that knowledge passes step by step from individuals to groups, to organization and inter-organization level thanks to communication between individuals. The knowledge-based view of the firm explains (Grant 1996) that: firms use knowledge to the production of goods and services, there is strategically valuable resource of the company, individuals create knowledge not organizations and firms exist thanks to high costs of coordination of individual's knowledge. In turn Dyer and Nobeoka (2000) consider knowledge-sharing network that: motivates members to participate, prevents free riders and reduces the costs associated with finding and accessing different types of knowledge. They suggest strong liaisons between individuals in their network and it results in dynamic learning capability between firm and its partners what creates a competitive advantage.

Irrespective of the research perspective adopted, the fact is that thanks to the adequate KM the following can be achieved (Mason M.K., 2015):

- increasing employee satisfaction due to greater personal development and empowerment,
- keeping employees longer and thereby, reduces the loss of intellectual capital from people leaving the company,
- saving money by not reinventing the wheel for each new project,
- reducing costs by decreasing and achieving economies of scale in obtaining information from external providers,
- increasing productivity by making knowledge available more quickly and easily,
- providing workers with more democratic working place by giving everyone access to knowledge,
- learning faster with KM,
- staying competitive.

The aim of the research presented in this article is to show the significance and the reasons of knowledge management in IT projects. Processes, methods and best practices of gathering and sharing knowledge, as well as barriers and facilitations in knowledge management have been presented through the research conducted among Polish executives in Polish companies of the IT sector.

Characteristics of IT, offshoring, outsourcing projects.

According to definition "project is a temporary endeavor undertaken to create unique product, service, or result" (PMBOK - Fifth Edition, p.2). Areas of project activities and their scopes are very wide and cover virtually every human activity. Particular type of projects, which the authors deal with in this paper, is the IT projects related to outsourcing and offshoring. IT (information technology) projects require a specialized knowledge, skills and experience in the field of computer science. The specific character of IT projects is based on both multiplicity and variability of technological conditions, as well as heterogeneity of the projects. The challenge for the project teams are changing customer expectations, diversity of hardware and software systems, security issues, as well as technological and market trends.

Based on the standard project management methodology, IT project passed through successive phases (project life cycle): requirements, design, implementation, verification, maintenance. Project setting, as mentioned above, makes the implementation of IT projects, following adoption of such an approach, ineffective.

Currently in relation to IT projects the most effective methods of project management are agile methodologies, in which the course of the project is of an adaptive character. Under this approach, the scope of the project is divided into smaller task groups called product backlog and project team works iteratively determines which tasks should be performed in subsequent iterations. After each iteration, the partial product is reviewed by the sponsor and the client, and project team receives feedback on product compliance with the expectations of the recipient. In this methodology, continuous customer engagement is necessary. Application of these methods enables flexibility and speed of response, as well as greater reliability to meet customer expectations.

Table 1

Characteristics of IT projects

Name	Main components and characteristics
Lack of constraints	IT projects do not have limitations as other engineering projects (for example as laws of physics for civil engineering). Sometimes expectations of the customer are much higher than the capability of the supplier to deliver.
Visualization	Software products, which are a main product in IT projects, are physically invisible and immaterial. It causes problems with presenting and monitoring the progress of the work to the stakeholders.
Flexibility	The intangible nature of software results in excessive requests for new features and potentially increases project failure. Flexibility means also multiple ways of solving problems.
Complexity	IT projects are multi-dimensional, scalable, diverse and heterogeneous. These are the reasons why achieving objectives in large complexity is difficult and assessment of feasibility is complicated.
Uncertainty	Lack of clear specifications for the projects software/products which can exceed technical capabilities and causes failure in implementation.
Software and failure	Infinite number of assumptions are in every piece of software, therefore small changes can make failure of the project. The system should be planned without any noticeable impact on the user.
Supporting change	There is need for suppliers to understand business processes and mistakes in this field resulting in slowing down of the IT system. It is required a close cooperation between customer and supplier.

Source: author's construction based on The Challenges of Complex IT Projects, 2004.

As it can be seen in table 1, IT projects are characterized by a high degree of complexity and require increasing resources. The result is that they are potentially exposed to a high risk of the ineffective implementation related to the initial assumptions. Many studies have shown what sort of human and technical factors may cause the failures (Kapellman… 2006). Often the scale, the needs and requirements of the cost expansions tend to go to more efficient models. Therefore, increasing number of IT projects are carried out outside one organization. Economic factors, globalization of the economy, along with the development of technology make the outsourcing phenomenon, namely the separation from the corporate structure of some in-house performed functions and delegating them to other entities (Trotsky M., 2001), common in IT projects.

There may be many organizational variations of outsourcing depending on the location of the entities to which the outsourced projects are assigned. These forms are:

- on shoring,
- nearshoring,
- offshoring.

On shoring is outsourcing tasks and projects to companies which are in the same country or region. Nearshoring refers to outsourcing to the companies that operate in adjacent or nearby countries, usually from within the same cultural circle, and often using the same language. Offshoring is outsourcing unlimited by space and can relate to every country in the world. Most often, the target countries are in different cultural zones and use different languages.

Each form of outsourcing has its advantages and disadvantages, so the choice depends on the analysis of potential profits and is determined by the characteristics of a particular project. The

most common reason for outsourcing is cost savings which the business model provides. In this respect, offshoring is preferred. Placements of offshoring in countries with cheap labor, where exchange rate differences provide additional opportunities to achieve high savings, are usually the highest. Also, the speed and flexibility of projects implementation under offshore format seems to be the best. This is due to low labor costs in the target country and makes it easy to find the necessary staff and specialists. Each project is inextricably linked with a risk. From this perspective, risk management in on shoring or even nearshoring projects is potentially easier than in implementation of offshoring projects.

Definitely the biggest barriers to offshoring projects are language and cultural differences. Also, the distance between the seat of the company commissioning work and the one to carry out the assignment, constitutes a certain limitation (time differences or the cost of trips - direct contact is needed at times). In on shoring there are no such problems, yet there are also no cost benefits. Nearshoring as an intermediate solution in many projects can be an effective and efficient idea.

In this article the researchers decided to present how the members of the project teams cope in their daily work, what other problems in the model O & O they perceive, and whether they have developed some experience, technology and observations supporting the process of the knowledge management.

Research results and discussion

The research was conducted using open-ended interviews with members of top management, boards, executives and projects managers employed by medium and big companies implementing IT projects in Poland. A total of 20 semi-structured interviews were conducted to explore reflection, interpretation and assessment of the respondents regarding knowledge management in IT projects from the perspective of their own experience. The research also allowed gathering a wide range of information about practical barriers in KM and practical approaches from an O&O perspective.

First of all, it should be emphasized that the analysis of linguistic layer shows that respondents have a very good knowledge and deep understanding of the subject matter. A very large number of specific terms (KM and IT jargon) and very clear way of expression indicate and confirm their involvement in KM processes. Below are presented in a very concise way only selected results of the research divided into two main categories: first sub-chapter depicts the main aspects of KM cycle, the next presents a summary of the most characteristic barriers and facilitators in this specific environment and deals with the most critical challenges in O&O IT projects.

Processes, best practices, methods of knowledge gathering and sharing within O&O IT projects

The first group of questions is closely related to organizational process assets and enterprise environmental factors. The vast majority of respondents clearly pointed to the differences between O&O IT projects and other categories of IT projects. The respondents also claim that the shape and maturity level of KM in O&O projects strongly depends on current strategic direction, market conditions and the level of staff turnover. The following characteristics were

dominant and were most frequently repeated among the opinions of the respondents about an internal organizational approach to KM:

- appropriate selection, recruitment process of employees (the team) for the project in a balanced proportion - 80% of new recruits must have: learning attitude, commitment ("take it till the end") and delivery attitude ("what I'd like it to be" and "make it work") . The rest - 20% of new recruits must have as their top priority: wider experience and creativity,
- centralized knowledge centres should be established and promoted across the entire organization, such a role can be provided by a PMO centres of excellence or knowledge centres,
- a set of established processes and procedures of knowledge gathering and sharing, a system of rewards and penalties for employees,
- an appropriate mentoring approach and a way of working with employees from different cultures and locations,
- each bigger, important virtual team or scarce resource should be frequently visited by a project manager or a line manager to ensure that sufficient level of effort and motivation is put in KM.

Organizational requirements for leveraging intellectual capital from an external source as suggested by the respondents should consist of the following:

- communities of practice, where both sides can share their experience and their thoughts, organized jointly with the customer or cooperating companies,
- brainstorming sessions should be established with representation of each side (major stakeholders) iterative through project life cycle,
- long-term contracts should generate common and shared base of known bugs, FAQ (frequently asked questions) and instructions,
- long-term cooperation should induce each side to adopt a more flexible way of working - including the use of cost-reimbursable contracts instead of firm fixed-price contracts,
- change control board and project steering committee should consist of a member of each major virtual team, group or department,
- customer should be interested and involved in determination and establishment of boot camp for new recruits (more focused on quantity and less on quality),
- customers should also be involved from the beginning in mentoring of not self-confident resources to increase their motivation and leverage their competencies for further on-site leadership and self-education (less focused on quantity and more on quality).

It should be noted that in several cases, respondents are quite sceptical about the significance of the above-described specific features of knowledge management due to the lack of comprehensive and universal approach to IT projects.

Barriers and facilitators in KM process within O&O IT projects

During the interviews the authors tried to obtain a wide range of information and opinions about some specific impediments and facilitations present in their organizations. The questions and the main stream of this part of interviews refer to their everyday events, controls and issues through

entire project life cycle. The summary of the most frequently indicated barriers and facilitators is presented below in table 2.

Table 2

Barriers (B) and facilitators (F) in KM within O&O IT projects

No.	Type	Name	Main components and characteristics
1.	B	Communication difficulties	Virtual teams, different time zones and locations, distinct ways of working, differences in culture, style of work - generally do not facilitate the transfer of knowledge.
2.	B	Directive leadership	Frequently in a distributed environment there is some kind of persuasive management style which supports "one-way" communication model.
3.	B	No time assigned	High utilization of employees in project's activities approaching a target. Lack of mandatory knowledge related to planned activities.
4.	B	No clear strategy for future	Frequently, there is no clear and specific explanation for "why to share if we don't know whether it will be useful"
5.	B	Emphasis on business continuity	Focusing on the current work limits KM processes.
6.	B	Lack of proper tools/processes, methods of rewarding	No proper tools, structures supporting KM, maintaining it and rewarding for related effort is demotivating.
7.	F	Community of practice	Entity of CoP is an often used tool for sharing and gathering knowledge in organization.
8.	F	Knowledge departments	In the more mature organization there is a perceived need for a separate, external unit for collecting information from all the projects and activities across the entire firm.
9.	F	KM career paths	Frequently firms open positions related to knowledge management activities, which is an evidence of significance and importance of this area.
10.	F	Well-structured motivation systems	It has a great impact on increased effort by rewards or penalties.
11.	F	Continuous learning environment	IT sector from the beginning has consisted of open-minded employees with learning attitudes and self-learning needs (to align with fast changing technologies and external environment).

Source: own research

In the course of the interviews - most respondents frequently emphasize the role of proper communication. The degree of openness of the culture, language and the way of interpreting communication content have a significant impact on the overall shape of the implemented KM. In addition to the significant barriers and facilitations listed in table 1, the respondents indicated that their organization actually does not recommended accumulation of knowledge due to possible leakage of sensitive business or technological data. With reference to this issue in the subsequent talks, the respondents were asked how the already codified data is protected in their organization and they pointed out, among others, to:

- mechanisms of monitoring exchanged information,
- application of statutory stipulations and developing appropriate safety policies,
- using "black box" procedures, by means of which knowledge is stored and accessible to a small group and distributed only by a few specified authorized individuals,
- application of dedicated software , such as: Data Loss Prevention System (DLP – Data Leak/Leakage/Loss Protection/Prevention) to support electronic data protection against theft or leakage.

Other respondents directly stated that despite all the regulations and control systems, knowledge cannot be effectively protected. There is a smooth flow of knowledge within an organization, where each employee (often due to the character of work – frequent reallocations between the projects) has access to knowledge exceeding their scope of responsibilities, and at the end of cooperation with the given entity the knowledge often leaves together with the employee.

Personnel fluctuation in KM related to O&O project is a major challenge. Many outsourcing companies are located in the same city, often special zones (clusters) are set up, bringing IT companies together. This creates natural opportunities for workers to move to other companies, offering better conditions for the development and higher earnings. Therefore, it is important to create a KM system retaining key employees in the original companies. The respondents indicated that a model system should cover:

- an effective incentive systems,
- a specified career path,
- an opportunity to gain expertise.

Conclusions

In Central Europe there is a high level of competitiveness in the IT sector; usually many O&O companies co-exist in the same local market and usually how they compete with each other also affects the offshoring or outsourcing capabilities. As demonstrated by the studies, KM in IT projects is fairly widely known and used by the Polish companies. Those firms pointed that to increase attractiveness and competitiveness to world-class level they should compile and use the right mix of methods and tools for knowledge management processes.

Polish companies recognize the potential behind KM and the increased awareness should be taken advantage of right in KM so that, especially in the most complex and risky projects within O & O, the project chances of success could be increased through effective and systematic learning, collecting and sharing experience within the organization.

In IT projects, being the projects of high technology, particularly those implemented through outsourcing, the key issue is knowledge. Effective knowledge management ensures implementation of O & O projects. Unfortunately, O & O business model in IT projects raises many problems. These include:

- communication problems due to language differences,
- cultural barriers adversely affecting the communication,
- problems in “remote” project management.

The study had the character of the pilot studies, and therefore has a number of limitations. However, preliminary results indicate real problems and a keen interest of the project team members in the knowledge of the management topics. The studies indicate the potential for expansion of the scope and focus on narrower areas of the IT sector in order to be able to adjust the tools and knowledge management techniques to a specific branch of the specificities of the sector or the market.

Bibliography

A.T. Kearney, 2011. *The A.T.Kearney Global Services Location Index™*. [Online] Available at: http://www.atkearney.com/research-studies/global-services-location-index/full-report [Accessed 21 January 2015].

A.T.Kearney, 2014. *The A.T.Kearney Global Services Location Index™*. [Online] Available at: http://www.atkearney.com/documents/10192/f062cfd8-ee98-4312-ae4f-0439afc10880 [Accesssed 21 January 2015].

Carmen E., Tjia P., 2005. *Offshoring Information Technology: Sourcing and Outsourcing to a Global Workforce.* Cambridge, Cambridge University Press.

Dyer, J.H., Nobeoka, K., 2000. *Creating and Managing a High-Performance Knowledge-Sharing Network: The Toyota Case.* Strategic Management Journal, Vol 21, pp. 345-367.

Grant, R. M., 1996. *Toward a Knowledge-Based Theory of the Firm*. Strategic Management Journal, Vol.17 (Winter Special Issue), pp. 109-122.

Groff T., Jones T., 2003. *Introduction to knowledge management: KM in business.* Burlington, MA : Butterworth-Heineman.

Kappelman L.A., McKeeman R., Zhang L., 2006. *Early Warning Signs of it Project Failure: The Dominant Dozen*. Information Systems Management, Vol. 23, Issue 4, pp. 31-36.

Krishna S., Sahay S., Walsham G., 2005. *Managing cross-cultural issues in global software outsourcing.* Communications of the ACM, Vol. 47, Issue 4, pp. 62-66.

Mason M.K.,2015. *Knowledge Management: The Essence of the Competitive Edge.* [Online] Available at: http://www.moyak.com/papers/knowledge-management.html [Accessed 18 January 2015].

Nonaka I., 1994. *A Dynamic Theory of Organizational Knowledge Creation*. Organization Science, Vol.5, Issue 1, pp.14-37.

Project Management Institute, 2013. *A Guide to the Project Management Body of Knowledge (PMBOK Guide) - Fifth Edition*.

The Royal Academy of Engineering, 2004. *The Challenges of Complex IT Projects.* [Online] Available at: http://www.bcs.org/upload/pdf/complexity.pdf [Accessed 15 January 2015].

Trocki M., 2001. *Outsourcing*. Warszawa, Polskie Wydawnictwo Ekonomiczne.

Wengraf T., 2001. *Qualitative Research Interviewing: Biographic Narrative and Semi-Structured Methods.* London, SAGE.

Wiig K.M., 1997. *Knowledge Management: An Introduction and Perspective.* Journal of Knowledge Management, Vol.1, Issue 1, pp.6 – 14.

About the Authors

Przemysław Wójcik

Krakow, Poland

Przemysław Wójcik has been working as a Project Manager for over 6 years in different areas and sectors. He is actually involved in delivering solutions for finance and banking sector. He has gained a BSc. in IT, a professional master's degree in IC. He is also currently a PhD candidate with a specialization in knowledge management. He has gained international and professional project management experience while working for global companies. He is PMP, P2P certified professional and he has rich & diverse experience in delivering complex projects. In addition to his professional work, he is also a lecturer at the University of Science and Technology in Cracow, Poland for the professional master study program in Project management. He is the author of several scientific and business publications. Przemysław can be contacted at wojcikkp@gmail.com.

Jaroslaw Polak

Krakow, Poland

Jaroslaw Polak has been working in the telecommunications industry, especially in mobile telephony, for over 20 years. He holds a master's degree in telecommunications engineering. He has also completed postgraduate studies in management (based on MBA programme). He is currently a PhD student with a specialization in management sciences. The areas of his scientific interests are issues related to inter-organizational relations. He has gained a broad managerial experience participating and managing the implementation of projects related to the construction and expansion of mobile networks in Poland. He was a project manager of a number of the telecommunication projects such as the exchange and sharing of technical infrastructure, introduction of new technologies (3G, CDMA, HSDPA +, LTE) and functionalities in mobile networks. He is PMP certificated professional and the author of several scientific publications. Jaroslaw can be contacted at jaroslaw.polak.119@zarz.agh.edu.pl.