CONSIDERING DIFFERENCES IN ORGANISATIONAL CULTURE MAKES JOINT SCIENCE -BUSINESS PROJECTS SUCCESSFUL

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Abstract
R&D projects performed by the joint academia- business teams, become more popular. Both, academia and business have different organizational culture and different motivation to join the projects. The diffusion between the cultures is reasonable and brings significant benefits as well to the academia as to the business. In this article the following thesis is formulated: there are cultural differences between academia and business that significantly influence the success of the joint projects. Those differences should be taken into consideration while managing the projects and additional activities should be applied to ensure the project success. The article formulates the thesis, which the present cultural differences between science and business environments have significant influence at the further long-term cooperation. To confirm or negation the thesis the additional research and analysis are required. The project managers of jointly delivered projects should consider the differences in organizational culture of both science and business environments, and apply extra effort to ensure project success. Based on the theoretical analysis the success factors are defined. The good practices of the earlier projects are pointed out. The article proposes the inclusion of activities into the PMI project management to unify the project culture.
Keywords: *project management, academia-business collaboration, science-business collaboration, science-industry collaboration, success factors.*

1. Introduction

Research and Development (R&D) supports collaboration between research units (science) and business. Compared with other European countries, the financing of research and development by private capital in Poland is relatively low, at less than 1% of GDP in 2011, while the EU-28 average amounted to 2% (Eurostat, 2014). According to PWC report on research and development projects, in the years 2012-2015, Polish entrepreneurs quite actively pursued

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partnership projects in R&D. More and more businesses opt for R&D projects undertaken jointly with scientific institutions (33%) and other companies (24%). Still, big companies are more active in carrying out such projects. Only 1/3 of joint R&D projects are carried out by small and medium-sized enterprises (SMEs) (36%). Previous statistics published in 2012 by Eurostat indicate that 31% of EU entrepreneurs were involved in developing innovation (introduction of new products and services) in cooperation with other entities. Such cooperation was most popular in the UK (67%), while, in Poland, it amounted to 30%, at average European level.

A number of incentives are further introduced to convince entrepreneurs to engage in financing joint R&D projects. For many years highly developed economies such as the United States and Japan have used fiscal incentives to promote R&D. Such ways of stimulating innovations have also been adopted by European countries, including Poland. Studies that are more rigorous find that one euro of foregone tax revenue on R&D tax credits raises expenditure on R&D by less than one euro.

Cooperation between science and business communities in Poland is still developing. In the future, thanks to cooperation, the activities of entrepreneurs and scientists probably will often interweave. It may also contribute to raising the level of innovation and bringing the joint projects to successful completion. For this to happen, one should understand what the key success factors of such projects are and how to effectively manage joint projects.

This paper is an attempt to identify the areas on which entrepreneurs and researchers particularly differ, based on literature review and observations made hitherto. The article also indicates those areas of project management that project managers should pay close attention to, in order to minimize the risk of failure. Successful completion of joint projects will give the base for establishing a long-term cooperation, which is the ultimate goal of this type of projects. The effects of projects carried out cooperatively by the scientific and business communities provide interesting material for further observation and empirical research.

This article is comprised of six parts, including the introduction and the conclusion. It presents the differences in the approach to project management and implementation between science and business projects (Kubiński, Kwieciński & Żurawowicz, 2010). Then it discusses the benefits of staff exchange as a way of building long-term relationships which foster the implementation of joint projects. The article identifies success factors and the key areas in which project management should particularly take into consideration, in order to successfully finalize joint science and business projects. The final part also contains a proposal for further empirical research on the impact of joint projects on long-term cooperation.

2. Key differences in of business and science culture

Implementation of joint research and development projects is beneficial to both entrepreneurs and scientists, even in spite of the differences in the approach to the performed tasks. Kubiński et al. (2010) compare the characteristics of researchers and entrepreneurs (Table 1) to illustrate the different motivation and approach of researchers and entrepreneurs to project implementation.

Table 1. Characteristics of scientist vs. the characteristics of an entrepreneur

Characteristics of a scientist	Characteristics of an entrepreneur
Creating intellectual value	Economic success
Long time horizon of actions	Long or short time horizon of actions (depending on needs)
Insight and precision	Effectiveness
Focus on mission/duty	Focus on market
Deductive or analytical approach/Disciplinary	Inductive or synthetic approach
Exploration/curiosity	Purpose or problem-oriented
No time limits	Bound by schedule
Public interest	Private (corporate) interest
Objective: scientific authority	Objective: strengthening the company's position on the market

Source: Kubiński et al. (2010).

A study published by Kubiński et al. (2010) discovered a low level of cooperation between science and business, resulting from the lack of understanding of mutual needs, differences in working style, bureaucratic and formal reasons, or lack of communication. Both the studies carried out by PWC and NCBR in 2014 and the earlier study published by Kubiński et al. (2010) show that the business undertakes market-oriented actions, with a desire to achieve success through implemented results. The project's costs are one of the factors determining its implementation. Business perceives time as a value that can be converted into money. Hence the desire for effective implementation of the project in a relatively short time and control of its results during the project. The leading motivation in business is the aspiration to effectively implement the results of operations on the market effectively.

Scientists often work in an environment where no time pressure is imposed on activities they undertake, and the mission to create new intellectual value is the overarching motivation for the implementation of projects. With such significant differences in the work culture, a passive attitude of waiting for a joint project to emerge is ineffective. Seeking new opportunities in a more proactive approach is much more fruitful. The rapprochement of two such distant cultures as science and business requires efforts before and during the project. Jasieński, Candi and Rzeźnik (2015) indicate that workshops dedicated for companies of

different size and conducted by scientists prove to be effective in networking. New contacts established there usually result in further cooperation.

3. Staff exchange as a way of building long-term cooperation

The exchange of staff and secondments are common practices of establishing cooperation both in the scientific and business community. Cross-exchange between universities and business is also becoming more and more common. It promotes not only the building of long-term relationships but, above all, the transfer of knowledge. In the Reinvent project (Jasieński et al., 2015), long-term secondments brought not only the transfer of knowledge between scientists and business or the establishment of long-standing cooperation but primarily a rapprochement of several cultures different in their organizational culture or nationality.

This type of staff exchange, lasting from a few weeks up to a few months, has numerous advantages. They are conducive to building mature, long term relations (Boulton, 2014). Those advantages include, among others (Table 2):

Table 2. The benefits of staff exchange

Benefits for academics (universities) include	Benefits for companies (business) include
• Understanding the context for their research, leading to more usefully applicable research • Access to real data • Providing impact examples • Broadening the range of contacts • Broadening the number of researchers involved • Reducing the workload in relationship maintenance • Linking to juniors who may eventually rise to positions of influence. • Enabling salary top-ups that makes recruitment of researchers easier	• Acquiring and assimilating new capabilities • Acquiring access to non-core capabilities and facilities • Solving specific problems • Access to 'different' thinking • Building a broader network of contacts • Foresight about new technologies and new directions • Staying close to the 'state of the art' • Benchmarking their own capabilities • Providing career options • The kudos of being seen to work with Cambridge • Serendipitous contacts, discoveries and new directions

Source: Boulton (2014).

The cultural rapprochement of business and science and, above all, the understanding of success factors allow increasing the likelihood of success and reducing the risk of failure of joint projects.

4. Success factors of joint science and business projects

An analysis of good practice resulting from joint projects identifies the key areas crucial for the successful project implementation: the credibility of the

partner, project management, trust management process and mutual benefits (Barnes, Pashby & Gibbons, 2002). On the basis of a ten-year study conducted in European organizations, Klofsten and Jones-Evans (1996) identified the most important aspects of joint projects implementation, namely:

- projects have to solve real problems,
- they must be conducted by a dedicated team,
- they must have a clear goal,
- partners must be reliable and closely related.

Pescas and Henriques (2006), on the basis of the 20 projects carried out by the Technical University of Lisbon, have also determined that business must be open to the absorption of new knowledge derived from this type of cooperation, while universities should preserve the confidentiality of information, as well as fulfil the objectives of the project in a timely manner. Research of the projects conducted jointly by science and business communities in Sweden and in Australia (ICEE Software, 2012), and the results of other studies on cooperation in projects involving universities and small and medium-sized enterprises (SMEs). Demain (2001), Guthrie and Ward (2002), Pecas and Henriques (2006), Davenport et al. (1999) clearly indicate the essential elements conducive to the project success:

- support for the project at the top management level of the company involved in the project,
- authorized project leader instead of someone who simply executes tasks,
- aligned understanding of the same issues by the "business team" and the "science team",
- numerous personal interactions within project teams. Regular, daily interactions within the team support achieving project success,
- soft skills play a significant role in long-term projects.

The elements conducive to achieving success increase the likelihood of successful project completion and indicate to the project manager which project management activities require special attention.

5. Success factors and project management

The project manager of the joint science and business project should take into account the cultural differences between those two communities. Starting from the main areas of activity in project management (according to PMI methodology, see e.g. Figure 1), we define those that require special attention during the implementation of joint projects.

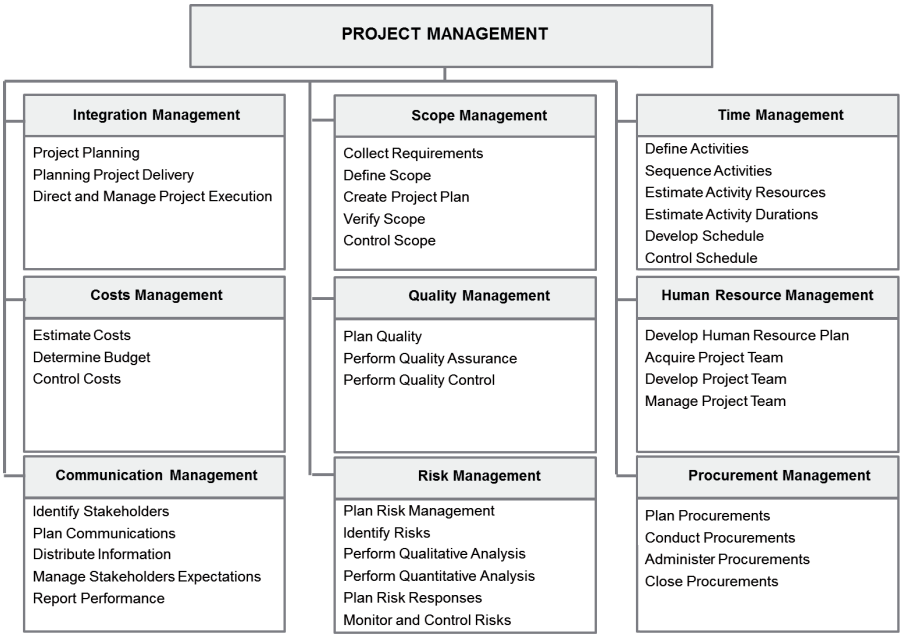

Figure 1. Project management activities by PMI

Source: Project Management Institute (2000).

PMI methodology of project management specifies nine areas of activity:

1) Integration management, including coordinating activities such as planning, coordinating changes.
2) Scope management, including defining the scope of the project, its verification, monitoring modifications in project's scope.
3) Time management, including defining a schedule, tasks, their order, schedule execution and control.
4) Cost management, including essential resource planning, budgeting and cost control.
5) Quality management, including all activities, aimed to meet user requirements with respect to project's quality characteristics.
6) Human resource management, including efficient resource allocation, acquiring contractors and employees.
7) Communication management, including preparation of the communication plan, ensuring efficient flow of information, selecting appropriate communication channels.
8) Risk management, including risks and issues identification and analysis, planning preventive actions and control over their implementation.

9) Procurement management, including planning and conducting procurement of goods and services necessary to implement the project.

Table 3. Examples of activities in project management, supporting the success of joint science-business projects

Success factor	PMI project management areas	Activities in project management
Trust between project partners	All areas of project management	• Defining the frame of cooperation • A confidentiality agreement • Defining intellectual property rights
Support at the top management level	All areas of project management	• Defining the project goals, scope, schedule, and budget • Informing the management Board regularly about the project's progress • The commitment of the top management to make crucial decisions about the project • Informing stakeholders of the project's progress
Project leader's authority	Human resources management Communication management	• Working experience of the project manager in project delivery
A clear project goal	Communication management	• Defining and communication of project goal • Selection of communication's frequency, channel and content
Numerous personal interactions within the project's team	Team management Communication management	• Regular exchange of information about the project's progress • Joint implementation of selected tasks
A common understanding of the same issues by the "business team" and the "science team".	Communication management	• Clear and precise definition of the project's goals (SMART) • Defining milestones, deliverables • Regular communication within the team
Timely delivery of the project's tasks	Time management	• Clearly defined and communicated roles and responsibilities of the project teams • Defining tasks, deadlines, responsibilities. • Schedule control
Soft skills	Team management	• Planning development of the team members • Team building

Considering the differences in motivation, work specification and environmental conditions, it is critical to the project implementation that the project manager takes every action aimed at achieving final success. Table 3 indicates what actions may be taken by the project manager. This list remains

open and can be modified depending on the individual experience of the project manager.

Considering the benefits of long-term science-business cooperation, it is desirable to eliminate the obstacles to achieve the results (Cyran, 2015; Ujwary-Gil, 2009). Programmes and tax incentives aim to stimulate and support long-term cooperation between research centres and SMEs, also after the completion of the project. From the project management perspective, it would be very interesting to analyze project's progress in its key areas and the results of long-term cooperation within hindsight, for example after the end of the project's sustainability period. Such analyses would help to answer the question of how project management transforms into long-term cooperation of science and business. Is the cooperation continued after the project is completed, and if so, in what form?

6. Conclusions

Drawing upon the experience gathered hitherto with regard to cooperation between science and business; we know it could lead to both successes and failures. Thanks to understanding the differences in motivation and work style, and taking them into account in the management of joint projects, the number of successful projects will increase and thus it will contribute to the implementation of innovations. This paper describes a theoretical inclusion of success factors for joint science and business projects in the methodology of project management by PMI. It also identifies good practices based on research and the important areas of the PMI methodology, which should be taken into account in the implementation of this type of projects. The article also points out the project managers' attention to those project management areas which are particularly affected by different organizational cultures. Further studies will also answer the question whether the project management transforms into further long-term cooperation.

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