The role of project management office in the multi-project environment

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Abstract: The number of projects run by companies has increased significantly over the last two decades. Therefore, apart from the challenges associated with single-project realisation, the multi-project environment created new issues that companies have needed to address. In the mid-90s of the last century, the concept of project management office (PMO) was proposed to support companies simultaneously managing numerous projects. This article discusses the role of PMO as a facilitator of the activities supporting operations in the multi-project environment. The results of the study of PMO cases are presented according to the needs addressed to them by companies.

Keywords: project management office; PMO; project; efficacy; project management; multi-project; company; knowledge management; enterprise development.

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1 Introduction

Managing projects as a practical ability has a long history, mostly in the area of construction. However, as of the middle of last century, we have observed that more attention to project management has been given by both practitioners and academics alike. Therefore, as a scientific discipline field, it is relatively young (Andersen, 2010) and an increasing number of research projects in that particular area and related topics have been carried out recently (Aubry et al., 2010a; Belt et al., 2009; Bourgault et al.,

2009; Ecchia, 2011; Fricke and Shenhar, 2000; Hung et al., 2007; Ika, 2009; Iskanius and Helaakoski, 2009; Karlsen et al., 2006; Killen et al., 2007; Sandhu and Helo, 2006; Smith, 2008; Trocki et al., 2009; van Rooij, 2011). Furthermore, we can also observe the further development of their standards by professional communities such as the Project Management Institute (2008a, 2008b, 2008c), the Association for Project Management (2006), the International Project Management Association (2006) and American Management Association (Dinsmore and Cabanin-Brewis, 2011).

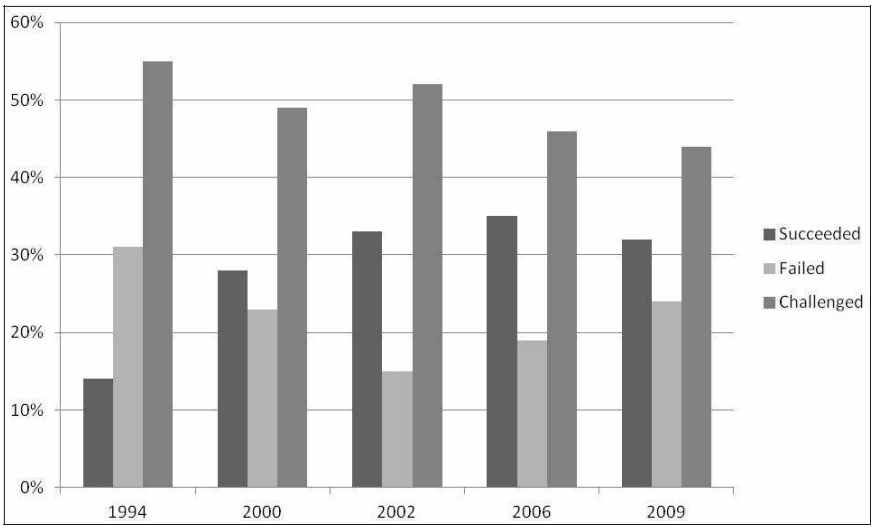
In the second half of last century, we could observe the rapid development of the tools and techniques supporting the increase in efficiency of a single project. At that time, it was in-line with the need of companies as they ran mostly separate projects. Kloppenborg and Opfer (2002), in their study on the topics of publications on project management, pointed that out as well.

Moreover, only a few projects were completed at the same time and, therefore, the project portfolio concept was used in a limited number of companies only.

At the very beginning, projects were managed as separate entities. It was rarely noticed that more than a couple of projects were managed by the organisation at the same time. The sharp increase in the number of projects completed by companies in the same period of time could be observed, beginning from the eighties and continuing through the nineties. That reality generated new challenges related to operating in the multi-project environment and efficacy of the company in that new reality (Andresen et al., 2007; Chen and Lee, 2007; Fricke and Shenhar, 2000; Phusavat et al., 2007; Ren and Xiong, 2010; Shamsuzzoha and Helo, 2009; Shenhar et al., 2001).

The new problems associated with functioning in the multi-project environment could be perceived as the main cause for projects' failure nowadays (Spalek, 2011). After years of continuous improvement in the level of successful projects completed, we could observe not only stagnation but even a minor increase in the number of failed projects (Figure 1).

Figure 1 Percentage of succeeded, failed and challenged projects across the years 1994–2009



Source: Adapted from Standish Group (1994, 2000, 2002, 2006, 2009) CHAOS reports

It is remarkable that between the years 1994 and 2000, we could observe some positive trends like:

1 a significant increase in the success rate (from 14% to 28%)

2 a drop in failed projects (from 31% to 23%)

3 a reduction in challenges posed (from 55% to 49%).

Between the years 2000–2002, we could observe a mix of positive and negative trends. The plus was that the level of successfully completed projects rose from 28% to 33% and, furthermore, there was a reduction in the number of failed ones from 23% to 15%. However, the first warning signs appeared in the 'challenged' projects rate which increased from 49% to 52%. The term 'challenged projects' refers to all projects which were completed and came to the operational phase with an overrun budget, exceeding of estimated time or with limited functionality in comparison to that which was originally specified (Jørgensen and Moløkken Østvold, 2006).

In the following years, 2002–2009, successful project completion witnessed a minor increase to 35% in the year 2006. However, it dropped to 32% in 2009.

The negative trend was also observed in failed projects, whose rate increased from 15% in 2002 to 19% in 2006 and finally ended up at a significant 24% in the year 2009 (which was a worse result than in the year 2000). The percentage of challenged projects decreased slightly from 52% in 2002 to 44% in 2009, which was a positive trend.

We assume that a bigger challenge in project management nowadays would be to change the negative trends in successful and failed projects' rates. However, the question is what the reasons for this predicament are. In our opinion, one of the most important factors is that companies have been facing new organisational problems related to their operations in the multi-project environment. Those problems appeared in the last decade of the 20th century and became more visible in the first decade of the present century, something which was reported by the Standish Group (1994, 2000, 2002, 2006, 2009) and by other authors as well (An, 2011; Aritua et al., 2011; Ben-Zvi and Lechler, 2011; Canonico and Soderlund, 2010; Fang et al., 2011; Formentini and Romano, 2011; Fricke and Shenhar, 2000; Lee et al., 2009; Li and Bai, 2011; Phusavat and Jaiwong, 2008; Phusavat and Kanchana, 2008; Phusavat et al., 2007, 2008; Sandhu and Helo, 2006; Shamsuzzoha and Helo, 2009; Xiao et al., 2011; Zhang, 2011).

Furthermore, the importance of project portfolio management increased as a result of operating in the multi-project environment. This was examined by a number of authors (Archer and Ghasemzadeh, 1999; Cho and Moon, 2006; Cooper et al., 2000; Elonen and Artto, 2003; Gulledge, 2008; Jasemi et al., 2011; Killen et al., 2007; Payne and Turner, 1999).

Very interesting research was presented by Müller et al. (2008), based on the quantitative analysis of a worldwide survey with 242 responses. They identified the measures for portfolio management performance. In addition, they noticed that measures of portfolio performance could be associated with different portfolio control mechanisms.

Based on the aforementioned studies, we come to the conclusion that the efficiency of the company operating in the multi-project environment depends on both the performance of single projects and their project portfolio as well. Moreover, we determine that various activities can influence operations in the multi-project environment with different strengths. Therefore, we propose to split them into three groups, having

1 strong

2 medium

3 insignificant relevance to the efficacy of operations in the multi-project environment.

We imply that all activities related to project portfolio and knowledge management are those of strong relevance, while all activities related to the performance of single projects are of medium relevance. The remaining activities are of insignificant relevance.

Among different concepts proposed to increase the efficacy in operating in the multi-project environment, the idea of establishing project management office (PMO) is an interesting approach. The PMO concept was proposed in the mid-nineties of last century (Kerzner, 2003) and its main idea was to centralise all the issues related to managing the projects in one place in the company. That should result in gathering both theoretical and empirical knowledge and allow for its use in future projects in order to increase their efficiency. Furthermore, project portfolio management should be incorporated into PMO.

Andersen (2010) discussed the progress of project management in the years 2000 and 2008. He found that there was a development of practices which were improved, such as:

1 defining project objectives

2 adapting the organisation to project needs

3 teamwork improvement.

In our opinion, in order to deal with the problem of *adapting the organisation to project needs*, the company should establish the PMO.

Furthermore, Martinsuo and Lehtonen (2007), in their research, noticed that the performance of a single project influences the final outcome of the group of projects realised in the company. Nevertheless, there are factors which could be associated with managing the number of projects in parallel, which is more connected with project portfolio management. The research on that topic considers different areas. One of them was the transfer of information between projects (Nobeoka and Cusumano, 1997), with some advice on how to improve it. We believe that PMO could be very helpful in the knowledge management area.

However, after more than a decade of dealing with PMO, we can observe many variations of it and despite a number of articles on that topic (Andersen et al., 2007; Aubry et al., 2010a, 2010b; Ha and Lv, 2006; Hill, 2004; Hobbs and Aubry, 2006; Isola et al., 2006; Jia et al., 2011; Liu and Yetton, 2007; Martin et al., 2007; Singh et al., 2009) there are still a lot of unknowns and therefore there is a need to investigate that topic to advance the current state of knowledge on how to implement PMO in practice, something which should result in helping to more accurately paint the picture of PMOs.

Therefore, in this article we would like, based on the research study done on 444 cases, to add some knowledge on the chosen issues related to PMO and discuss the role it serves currently in the multi-project environment. Moreover, we would like to determine and discuss the needs the companies address to PMOs and identify among them those activities which could be of strong and medium relevance to the efficacy of operations in the multi-project environment.

2 Literature review on PMOs

The PMO as a research topic appears in international journals. Julian (2008) claims that in order to improve project management performance, we should implement PMO within the organisation. Also, other authors (e.g., Dai and Wells, 2004; Kerzner, 2003; Martin et al., 2007; Rad and Levin, 2002; Stanleigh, 2006) notice the importance of PMOs and one of their roles, which is supporting the operations of the company in the multi-project environment. Aubry and Hobbs (2011), in their article, discuss the issue of organisational performance and contribute to the "better understanding of the role of project management generally and PMOs specifically".

Although there have been some studies on PMOs so far, there is still no common understanding or mutual agreement about the PMO entity. The major works which need to be mentioned were done by: Aubry et al. (2010a, 2010b), Dai and Wells (2004), Desouza and Evaristo (2006), Hill (2004), Hobbs and Aubry (2007), Hobbs et al. (2008), Hatfield (2008), Interthink Consulting (2002), Martin et al. (2007), and Stanleigh (2005).

Table 1 The summary of research on PMO in different papers

Author(s)	*Research outline*
Dai and Wells (2004)	Empirical study on establishment and use of PMO. Likert-type questionnaire. Two samples of 234 (targeted sample) and 96 (random sample). Identified different functions and services of PMOs. Assessed these against project performance for both samples.
Hill (2004)	Describes continuum of PMO competency.
Desouza and Evaristo (2006)	Outlines nature and characteristics of PMOs. Blends project management and knowledge management concepts. Classifies PMO archetypes with respect to administrative vs. knowledge-intensive dimensions. Identifies critical success factors for PMOs.
Martin et al. (2007)	Interviews with senior managers and directors of PMOs in 32 IT organisations. Use of formal project management practices on information systems (IS) projects. Identification of which specific project management practices, including PMOs, provide most value for IS projects. Survey responses from 129 IS project managers drawn from PMI.
Hobbs and Aubry (2007)	Three-phase research programme to better understand PMOs and their perceived value. Descriptive survey of 500 PMOs. Development of classification typology. In-depth study of four PMOs through 11 transformations. Confirmatory study to validate findings.
Hobbs et al. (2008)	In -depth qualitative and quantitative analysis of four PMOs, whose life spans were 4, 8, 10, and 12 years old. Each organisation reconfigured its PMO every three to four years, resulting in 11 organisational transformations.

Source: Adapted from Hurt and Thomas (2009)

An interesting summary of the research on PMOs was done by Hurt and Thomas (2009), see Table 1. However, they also pointed out the variety of approaches to that topic by the authors, in contradiction to the limited number of studies.

Hatfield (2008) gives some advice on how PMO should be configured to better serve the organisation. Aubry et al. (2010a) address the issues of instability and frequent changes of PMOs based on the extensive research conducted by Hobbs et al. (2008).

However, Hobbs et al. (2008) contend that, due to their short lifespan, PMOs add little sustainable value to an organisation. Hurt and Thomas (2009) disagree with that. They are of the belief that PMOs add real value to the organisation if they follow the main principle of improving project management in the company. They studied the start-ups of three successful and sustainable PMOs and presented the results showing how to add value to the organisation through investment in PMOs.

Following the in-depth analysis of the three case-studies approach of Hurt and Thomas (2009), we would like to add to this knowledge the results of quantitative studies on more than 400 PMO cases world-wide. We think that in dynamic organisations as described by Aubry et al. (2010a), the PMO plays a significant role in terms of efficacy of operating on several projects.

Consequently, the main purpose of the article is to demonstrate that companies are investing in PMOs to increase the efficacy of their operations in the multi-project environment. Therefore, they address their needs to the PMOs in various areas of their activities, expecting, as a result, an increase in project management performance. It denotes that the companies assign to the PMO role of the facilitator of the activities which should increase the efficacy of the their operations in the multi-project environment.

Therefore, for the purpose of this article, we will focus on the needs the companies operating in the multi-project environment address to PMOs at the start up and how they change after some time.

3 Methodology

Considering the complexity of PMOs and various views on them, there has been little empirically grounded research on the topic. Any new research could help academics to better understand and describe these entities. Therefore, the purpose of the survey was to add to the existing knowledge on PMOs to the current state in the following areas:

1 the PMO's life-span

2 the start-up processes

3 the needs the companies address to the PMOs

4 the reasons for shutting down the PMOs.

The structure of the questionnaire was divided into these parts accordingly. For the purpose of this paper, we focused on the data analysis of the companies' expectations toward PMOs operations. The presented research should be considered as descriptive, presenting the key findings on PMO start-ups and operations nowadays and, furthermore, as an investigation of the needs that companies address as regards PMOs. However, in

this article, we limit data presentation to snapshots of the current needs of companies committed to PMOs.

The survey was created to gather quantitative data. The data collection process was started in April 2010 and finished in August 2010. As a result, data on 444 PMO case studies was gathered. Data was collected on-line through the network of a professional community in the form of PMO Specific Interest Group and was also posted on the Project Management Institute website.

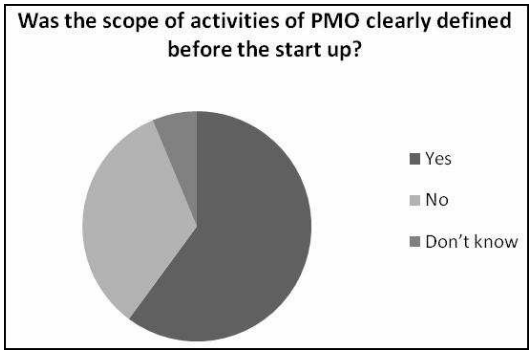
4 The survey results

The data on 444 cases of geographically dispersed PMOs was obtained and represented the following areas: North America (36.3%), South and Latin America (14.4%) Europe (44.6%) Middle East and Africa (12.4%) and Asia and Pacific (23.6%).

In this article, the main area of interest concerned the company needs addressed to PMO at the start-up and after the time of operations. Consequently, the key findings represent: PMOs scope of activities in terms of definition at the start-up and detailed description of the needs both at the start-up and after four years of operations. However, it is worth mentioning that eight PMOs (1.8%) out of the total surveyed were created at the start-up on a temporary basis (to serve a special need for a predefined period of time). Those cases were not analysed as in our article, we focus on the PMO concept as a permanent body placed in the organisation to support its ongoing operations like the other departments, e.g., purchasing, accounts and sales.

The scope of activities of the majority (60.1%) of PMOs was defined at the start-up while 33.6% did not. There is no knowledge regarding the remaining 6% (see Figure 2).

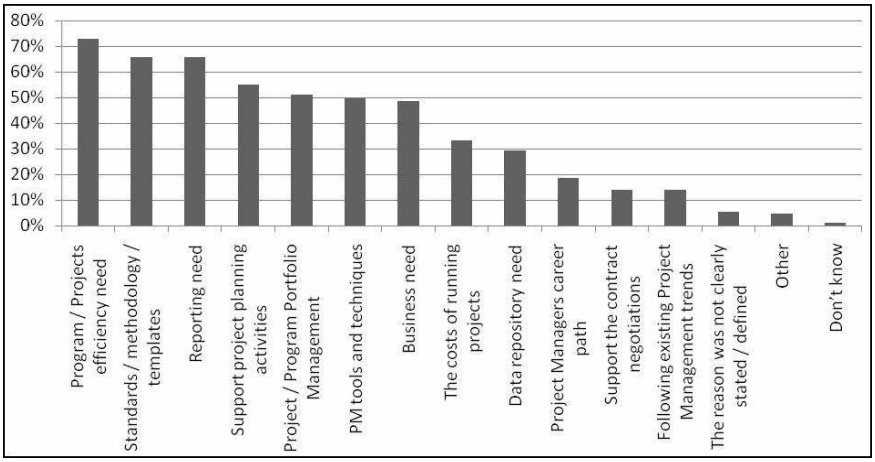
Figure 2 The definition of the scope of activities at the PMO start-up



Source: Author's own studies

The other area that was investigated was the reasons for establishing the PMO (Figure 3). Here, we could determine the places where organisations were looking for improvements in the multi-project environment. Among them, we distinguished three types of needs related to insignificant, medium and strong relevance to operations in the multi-project environment. For the purposes of our article, we will focus mainly on medium and strong ones (Table 2). However, in some parts, we will present a full set of needs to achieve a fuller picture.

Figure 3 The main reasons for establishing PMO



Source: Author's own studies

Table 2 Determined needs of strong or medium relevance to the operations in multi-project environment

Description of need	*Relevance to the operations in multi-project environment*	
	Medium	*Strong*
The programme/projects efficiency need	x	
Setting up and enforcing standards/methodology/templates		x
Reporting need (gathering data on project status)		x
Support project planning activities (e.g., resources, risk etc.)	x	
Project/programme portfolio management (prioritisation of the projects)		x
Setting up and enforcing PM tools and techniques	x	
Handling the costs of running projects	x	
Data repository need (access to the historical data obtained and lessons learned)		x

Source: Author's own studies

The group of needs having strong relevance to the multi-project operations is as follows:

1 *setting up and enforcing standards/methodology/templates*, with the result of 65.9% showing how important and valuable applying the knowledge on project management is for companies

2 the *reporting need (gathering data on project status)* received 65.7%

3 *project/programme portfolio management (prioritisation of the projects)*, which is significant topic for each company operating in the multi-project environment, with the result of 51.1%

4 a *data repository need (access to the historical data obtained and lessons learned)* – 29.5%.

Very important information was received from the last three feedback points: *the reason was not clearly stated/defined*, and *do not know* which received 6.3% in total. That result confirms that, while establishing PMO, the decision-making persons are really aware what their needs and challenges are regarding the efficiency of the company operating in the multi-project environment.

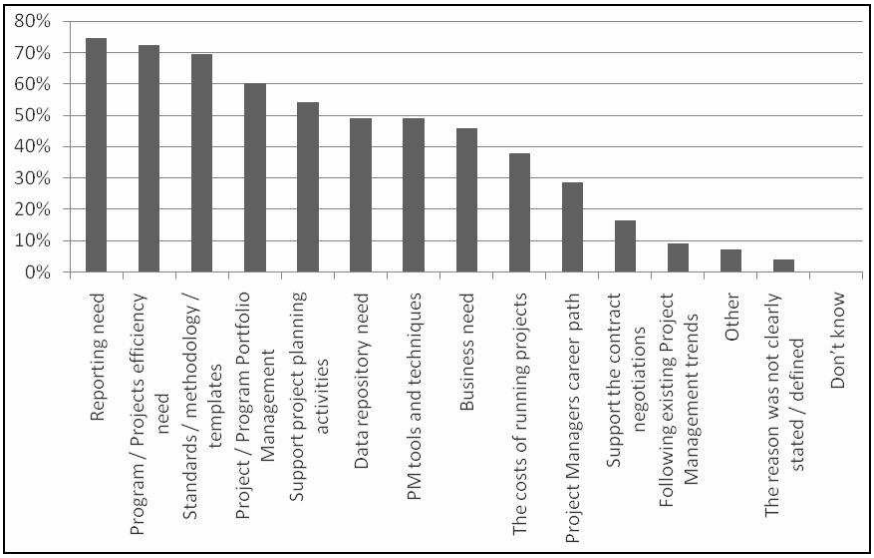
The group of needs having medium relevance to the multi-project operations is as follow. The most common demand was *the programme/projects efficiency need* (72.9%) in terms of completing more projects on-time, within the budget and within the scope. This challenge of project management is an issue we can observe in other research as well (Standish Group, 2009). The study detected that companies, by founding PMO, are desperately seeking to improve in that field.

After that, we could witness the sub-group of three reasons with a result around 50%. In that group are two needs which could be joined together under the topic of tools and techniques: *support project planning activities (e.g., resources, risk, etc.)* 54.9% and *setting up and enforcing PM tools and techniques* – 49.6%.Furthermore, *handling the costs of running projects* was an issue in 33.3% of cases.

It is remarkable to know how, if at all, the areas of activities could change after some time into PMO operations. Taking into account that 88.1% of shut-down surveyed PMOs 'survived' less than five years, for further considerations we decided to take into account PMOs that had been in operation for at least five years.

If we compare the reasons for establishing PMOs at the start up with the needs of PMOs being in operation for at least five years, we will notice some changes pertaining to the level of needs. However, the order remains largely unchanged (Figure 4).

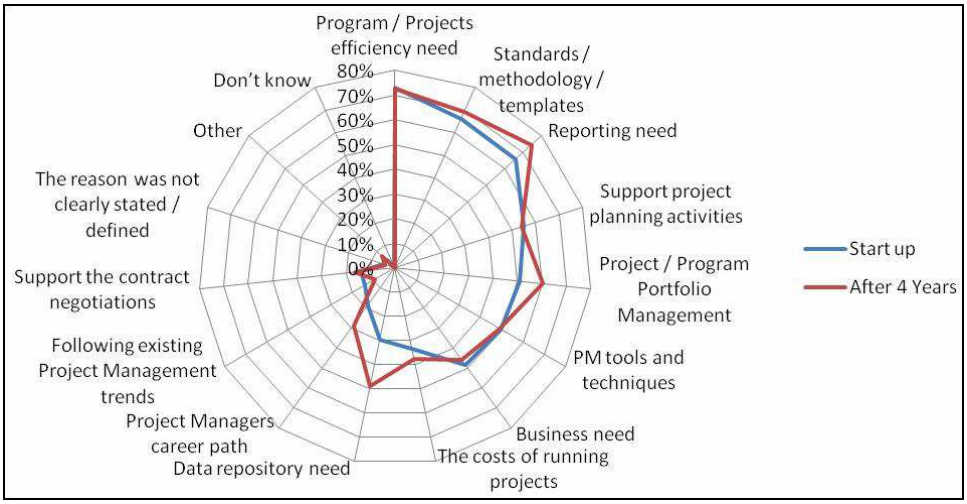
Figure 4 The main reasons for PMO after four years of operation



Source: Author's own studies

When we compare the needs at the start-up and after four years of operation, it is remarkable that in the *levels of needs*, it increased in eight areas while it decreased in two areas and two changed insignificantly (Figure 5).

Figure 5 The changes in companies' needs at the start up vs. after four years of operation period of PMOs (see online version for colours)



Source: Author's own studies

The increase of over 5% in expectation towards PMOs was on *data repository need; access to the historical data obtained and lessons learned* (+19.5%), *maintain the project managers career path, including training* (+10.1%), *project/programme portfolio management; prioritisation of the projects* (+9.1%), *reporting need; gathering data on project status* (+8.8%).

The biggest increase in data repository needs could be a result of seeking knowledge of the lessons learned to improve the efficiency of current projects. In addition, a significant increase in project and portfolio management and reporting needs shows how the focus of companies has changed toward solving the issues related to the operations in the multi-project environment. That increase shows that the companies, after some period of time, realise the importance of the PMO as a facilitator of the activities supporting operations in the multi-project environment.

Increases below 5% were on: *to handle the costs of running projects* (+4.5%), *setting up and enforcing standards/methodology/templates* (+3.5%), *other reasons* (+2.5%) and *support the contract negotiations* (+2.4%) .

We could also notice an insignificant decrease in, *business need; to support the company strategy* (–2.8%) and a somewhat bigger decrease in *following existing project management trends; copying others* (–4.7%).

The reasons: *programme/projects efficiency need; more projects on-time, within the budget and within the scope, setting up and enforcing PM tools and techniques, support project planning activities; e.g., resources, risk etc., do not know* and *the reason was not clearly stated/defined have insignificantly changed the level.*

It is remarkable that all needs strongly related to the issues connected with operations in the multi-project environment increased over the four year period of time. That demonstrates that the companies ascribed to PMO the role of facilitator of actions that should improve their operations in the multi-project environment.

5 Discussion

PMOs can serve various functions in the company. In the paper, we focused on the role of facilitator of the activities supporting operations in the multi-project environment. Based on the world-wide survey, we determined the needs of the companies which could be related to the efficiency of operations in that environment. Those needs companies addressed through PMO and we focused on those of strong and medium relevance to operations in there. Among the strong ones, we determined:

1 setting up and enforcing PM standards, including methodology and templates

2 gathering information from projects

3 prioritisation of projects

4 access to the historical data and lessons learned.

Among the medium ones we determined:

1 the efficiency of single projects approach

2 supporting various planning activities in the project

3 setting up and enforcing PM tools and techniques

4 supervising the costs of running projects.

All of the above-stated needs were addressed by the surveyed companies in most cases through the PMO with special attention from the firms to the strongly related ones. That shows that organisations treat the role of PMOs as facilitator of desired activities with full respect. However, due to the insufficient amount of data, it is difficult to conclude if there are any industrially specific needs. Therefore, research across different industrial sectors could be considered. Furthermore, it would be desirable to investigate more deeply the needs of the companies in the chosen areas and combine them with the assessment of maturity in project management.

Moreover, we discovered that after four years of operations, the majority of the needs addressed were of greater importance. That result supports the thesis of Hurt and Thomas (2009) regarding the PMO as an entity which creates added-value to the company, something which was contested by some authors in their publications (Aubry et al., 2010a; Hobbs et al., 2008).

Based on the findings of the research, some advice on managerial practice could be formulated.

6 Managerial implications

Managers face many challenges related to operations in the multi-project environment. Based on the survey results, in order to support their activities in that field, we propose a special approach to PMO. Our advice is to focus on the start-up phase of PMO and, during that phase to define the scope of activities related to operations in the multi-project environment. However, in the first instance, the mechanisms supporting a strong

influence should be implemented and only then the medium impact ones. Such a procedure would significantly increase the role of PMO as a facilitator of desired activities within a short time from its initiation and more quickly create added value for the company.

After the successful initiation of PMO, as the next step, the ongoing procedure of looking for improvement in operations of PMO should be established. It is highly recommended that such a procedure be a part of the overall system of assessment and improvement in project management maturity for the entire company.

Therefore, it is crucial from the top management perspective to place the PMO in the organisational structure and assign to it an adequate level of authority in a way which would enable its potential to increase the efficiency of operations in the multi-project environment.

Following the proposed approach, the company should be able to establish the PMO which could be perceived by middle-level managers and staff not only as an additional 'paperwork body' but could be supportive for them. They could profit out of standardisation of the methodology, tools and techniques. Moreover, if the historical data is gathered and analysed, the usage of the knowledge based on the lessons learned (Paliszkiewicz, 2009) could be much appreciated by the project managers. However, there is also a need that the supporters of the PMO concept should sell the idea in a proper way before the PMO starts up its operations.

7 Conclusions

The PMO as a concept was proposed in the mid-90s last century and therefore has a relatively short history (Kerzner, 2003). It was created mainly as a response to issues related to the sharp increase in the number of projects completed by companies in the same period of time (Ika, 2009). Companies realised that operating in the multi-project environment was a challenge and an opportunity as well. Challenges were posed due to the limitation of resources and enforcement of standards across the projects. Opportunities arose owing to project knowledge management.

There has been some research showing the positive influence of PMO on the efficiency of the companies' operations (Hurt and Thomas, 2009). However, more study in this area would be advised to determine the practical and managerial aspects of implementing PMO within the company.

From the very beginning, PMO was mainly supposed to be a support option for managing several projects running within companies at the same time. That support could be enabled through the gathering of knowledge from projects (ongoing and concluded), setting the standards and managing the portfolio of projects. The research results confirmed that the companies addressed such needs to PMOs. Among them, we determined those of strong relevance to multi-project environment issues and recognised that they were placed among the ten top of all needs addressed to PMOs at their start-up. Those needs are:

1 *setting up and enforcing standards/methodology/templates addressed* in 65.9% of studied PMOs
2 *reporting need (gathering data on project status)* which appeared in 65.7% of PMOs

3 *project/programme portfolio management (prioritisation of the projects)* reported in 51.1% of studied PMOs

4 *data repository need (access to the historical data obtained and lessons learned)* – occurred in 29.5% of studied PMOs.

Furthermore, it was determined that after four years of PMO operations, companies more frequently addressed needs strongly related to project knowledge management remarkably.

Moreover, we determined needs addressed to PMOs at their start up, as having medium relevance to the activities in the multi-project environment:

1 *the programme/projects efficiency need*, reported in 72.9% of studied PMOs

2 *support project planning activities (e.g., resources, risk, etc.)*, in 54.9%

3 *setting up and enforcing PM tools and techniques* in 49.6%

4 *handling the costs of running projects* in 33.3%.

Therefore, the study indicated that companies perceive one of PMO's roles as facilitators of their actions supporting operations in the multi-project environment. However, due to the lack of mutual agreement on the standardisation of PMOs themselves (Aubry et al., 2010b), this role is difficult to implement in practice and the means of application could be a subject of another study. Moreover, a study on the specifics of PMO implementation could be considered as the next step of research.

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