

**USPOSTAVLJANJE KANCELARIJE ZA UPRAVLJANJE PROJEKTIMA
(PMO) SUPORTIVNOG TIPA U UNIVERZITETSKIM
NAUČNOISTRAŽIVAČKIM ORGANIZACIJAMA: ULOGA KOLEKTIVNE
INTELIGENCIJE U PROCESU DIZAJNA I IMPLEMENTACIJE**

**ESTABLISHING A SUPPORTIVE PMO IN UNIVERSITY-BASED SCIENTIFIC
RESEARCH ORGANISATIONS: THE ROLE OF COLLECTIVE INTELLIGENCE
IN THE DESIGN AND IMPLEMENTATION PROCESS**

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Apstrakt: Ovaj rad predlaže model za uspostavljanje kancelarije za upravljanje projektima (PMO) unutar univerzitetskih naučnoistraživačkih organizacija (NIO), zasnovan na principima kolektivne inteligencije (KI). Cilj je doprineti efikasnijem upravljanju istraživačkim projektima u akademskom sektoru, gde postojeći pristupi često ne uspevaju u potpunosti da obuhvate složenost i kolaborativnu prirodu naučnog rada. Istraživanje koristi kvalitativni pristup koji uključuje pregled relevantne literature i formulaciju modela koji uključuje principe KI i naglašava njihovu primenu u dizajnu i implementaciji PMO suportivnog tipa. Model obuhvata četiri faze: analizu potreba i očekivanja, zajednički dizajn strukture i uloga PMO, pilot implementaciju sa iterativnim usavršavanjem i održivu institucionalizaciju. Na osnovu modela, PMO suportivnog tipa zasnovana na KI može poboljšati koordinaciju, povećati transparentnost i izgraditi jaču kulturu upravljanja projektima unutar NIO. Rad nudi praktične smernice za akademske institucije koje žele da ojačaju svoje interne strukture podrške istraživanju i pruža uvide koji mogu doprineti budućim istraživanjima u ovoj oblasti.

Ključne reči: kancelarija za upravljanje projektima (PMO), PMO suportivnog tipa, naučnoistraživačka organizacija (NIO), kolektivna inteligencija, upravljanje istraživačkim projektima

Abstract: This paper proposes a model for the establishment of a supportive Project Management Office (PMO) within university-based Scientific Research Organisations (SROs), grounded in the principles of Collective Intelligence (CI). The aim is to contribute to a more effective management of research projects in the academic sector, where existing approaches often fail to fully capture the complexity and collaborative nature of scientific work. The research uses a qualitative approach that includes a review of the relevant literature and the formulation of a model that incorporates the principles of CI and emphasises their application to the design and implementation of a supportive PMO. The model consists of four phases: analysis of needs and expectations, co-design of PMO structure and roles, pilot implementation with iterative refinement and sustainable institutionalisation. Based on this

model, a supportive PMO grounded in collective intelligence can improve coordination, increase transparency and build a stronger project management culture within SROs. The paper offers practical guidance for academic institutions seeking to strengthen their internal research support structures and provides insights that may contribute to future investigations in this area.

Keywords: project management office (PMO), supportive PMO, scientific research organisation (SRO), collective intelligence, research project management

1. INTRODUCTION

In this paper, the term ‘university-based Scientific Research Organisation’ (university-based SRO; hereinafter only SRO) refers to academic institutions such as faculties and university-affiliated research institutes. Scientific research projects at universities differ in many characteristics from ‘standard’ projects in terms of project funding, duration, scope and environmental factors (Twohig et al., 2023), and are usually call-based (Beukers, 2011). Ideally, the management of scientific research projects at universities would allow researchers to devote themselves exclusively to science. In practise, however, the complex administrative and organisational procedures for which they are not sufficiently trained take up a lot of time. There is rarely a separate research Project Manager (PM) – in most SRO projects, the Principal Investigator (PI) is by default PM and responsible for project management (Twohig et al., 2023). The problem is that many PIs not only lack managerial skills, but also do not identify with the role and functions of PM (Fernandes et al., 2021). In scientific research in the life sciences, for example, the main problems in establishing a PMO are that researchers do not like project management, are not used to reporting, experts have a high degree of autonomy, the PMO needs to influence others but has no formal hierarchical power, there is a lack of systemic support from the SRO, etc. (Beukers, 2011).

Nevertheless, the importance of the Project Management Office (PMO) is increasingly recognised in SROs. According to Fernandes et al. (2021), universities and university research centres have recently been keen to establish PMOs to strengthen their project management capabilities. In the sixth edition of the ‘PMBOK® Guide’ (Project Management Institute, 2017), the ‘project management office’ stands for ‘an organizational structure that standardizes the project-related governance processes and facilitates the sharing of resources, methodologies, tools, and techniques’. The analysis of five PMOs shows that the PMO plays a key role in knowledge transfer between projects, which can be essential for SROs that rely on the accumulation and sharing of knowledge (Tshuma et al., 2022). However, there are very few studies on PMOs in universities. Wedekind and Philbin (2018) point out that there are many benefits to supporting complex multidisciplinary research through PMO and emphasise this with the example of its successful use in the EDEN2020 project funded by the European Commission. In a Brazilian study, PMO was shown to improve financial management in scientific research projects (Junqueira & Passador, 2020). Widforss and Rosqvist (2015) categorised the functions of several academic PMOs in Sweden into pre-award, post-award and implementation phase, with most functions focused on proposal support, advice and liaising with funding organisations. The SRO environment is unstable (Mosurović Ružičić & Obradović, 2020). In that case the PMO which provides administrative, organisational and

methodological support, is ideal as it assumes the role of an advisor with a low degree of control and a high degree of flexibility.

The successful establishment of a PMO in a scientific research environment requires the active participation of all the different stakeholders: researchers, administrative staff, management. Collective Intelligence (CI) can therefore be an excellent tool for the design and implementation of a PMO. According to Lévy (2010), 'collective intelligence' is 'the capacity of human collectives to engage in intellectual cooperation in order to create, innovate and invent' and is 'a determining factor in competitiveness, creativity and human development in a knowledge-based economy, or in an information economy'.

This paper aims to present a model for establishing a supportive PMO in university-based SROs, grounded in the principles of CI. The approach is founded on the belief that the viability and functionality of the PMO should emerge from collective deliberation and consensus-based decision-making, rather than from imposed solutions.

2. THEORETICAL FRAMEWORK

2.1. SUPPORTIVE PMO: FUNCTIONS AND CHARACTERISTICS

There are several typologies of PMO (Monteiro et al., 2016). The best known and most frequently mentioned is the one presented in the sixth edition of the 'PMBOK® Guide' (Project Management Institute, 2017), where three types of PMO are defined: supportive (an advisory role; provides templates, project management best practises, training and lessons learned from previous projects; low degree of control), controlling (moderately controls projects by ensuring compliance with project management standards, acts as a project standardisation mechanism), and directive (provides project management services for their successful implementation; high degree of control).

As mentioned above, the environment in which SROs typically operate is dynamic, making a supportive PMO unit ideal for such organisations. This type of PMO provides researchers with a high degree of flexibility and adaptability; otherwise, organisational factors that restrict researchers' autonomy could be detrimental to their creativity (Mosurović Ružičić & Obradović, 2020). Desouza and Evaristo (2006) have defined a similar type as 'the supporter': it has a passive administrative role, provides services only on request and does not influence projects or their selection. Unger et al. (2012) use the term 'supporting role' to describe support in project implementation, including training, motivation, methodological development and strengthening the project management culture. Some authors also speak of a 'project support office' (Englund et al., 2003) or 'consulting PMO' (Letavec, 2006), with very similar tasks.

2.2. THE CONCEPT OF COLLECTIVE INTELLIGENCE

As mentioned in the introduction, collective intelligence refers to the ability of groups to work together intellectually to create, innovate and invent, and is of particular importance in the knowledge-centered economy. It assumes that a group of average people can, under certain circumstances, achieve superior outcomes than any individual in the group (Leimeister,

2010), while respecting the principles of diversity, decentralisation and independence of thought, i.e. different approaches to problem solving. CI is a phenomenon that has long been the focus of scientific research, in the natural, medical, social and technical sciences (Leimeister, 2010).

3. THE MODEL FOR ESTABLISHING A SUPPORTIVE PMO IN A UNIVERSITY-BASED SCIENTIFIC RESEARCH ORGANISATION THROUGH COLLECTIVE INTELLIGENCE

The proposed model for establishing a supportive PMO in a SRO, based on collective intelligence, consists of 4 phases presented on Figure 1.

The model for establishing a supportive PMO in a university-based SRO through collective intelligence



Figure 1. Phases of the proposed model for establishing a supportive PMO in a university-based scientific research organisation using collective intelligence

3.1. PHASE 1: ANALYSIS OF STAFF NEEDS AND EXPECTATIONS

The first phase of the model focuses on analysing the needs of all employees whose work will be affected by the PMO, and on their active participation in the process itself. This includes all researchers, the organisation's management, but also the administrative services: legal, finance, purchasing, IT, technical, etc. By obtaining and considering the opinions of all relevant parties, CI is used as a diagnostic tool. This ensures that the PMO's work is in the interests of as many people as possible and that the PMO set-up focuses from the outset on what is important for the staff and the SRO.

This phase is about getting the opinions of all employees on how the PMO should function, what responsibilities and tasks it should have, what its objectives should be, who the stakeholders are, what size it should be, etc. The first step is to appoint a responsible person (preferably within the organisation) who will be the driving force behind the process but will not have much influence over the staff. Initially, a series of workshops should be held to familiarise employees with the concept of the supportive PMO and what does and does not fall within its remit. The workshops should include the participation of experts who have experience in the supportive PMOs in other organisations. The opinions of employees would then be gathered through structured surveys. The surveys are then evaluated, and their results serve as the basis for a problem tree analysis, an objective tree analysis and a stakeholder analysis. All these analyses are then presented to the employees to check whether their needs and expectations have been correctly understood. When the majority agree, the model is ready to enter the second phase.

3.2. PHASE 2: CO-DESIGN OF PMO STRUCTURE AND ROLES

The aim of the second phase is to define the structure and processes of the PMO with the help of CI. For this purpose, it is necessary to form a Working Group (WG) with this responsibility. The WG should be made up of people who have different primary roles in the SRO, so that the view of the PMO from different perspectives is guaranteed. One or two representatives from each research group and each service should be included in the WG. They will also inform their primary team about the work of the WG, thus ensuring transparency, i.e. that all employees always have insight into the work of the WG and that they can react immediately via their representative if necessary. Care should also be taken to ensure that the WG includes people with different levels of experience (e.g. a junior and a senior researcher).

The WG should have a set amount of time to develop an initial proposal for the organisational structure of the PMO and its functions. The proposal is then presented to all employees. An open discussion will take place to assess the extent to which the proposal made corresponds to the original idea. All interested parties are welcome to this discussion and ideally all employees should be involved. (Of course, the larger the SRO, the more difficult this is.) Not too much time should be spent on this phase, as phase 3 is about improving the PMO through iterations.

3.3. PHASE 3: PILOT IMPLEMENTATION, FEEDBACK LOOPS AND ITERATIVE REFINEMENT

Phase 3 begins with pilot implementation and subsequent evaluation. It is important to point out that this is not the final form of PMO, but that the current form is much closer to the ideal PMO due to the use of CI from the start, as the voices of all stakeholders have been heard from the beginning. By using CI for design, far fewer resources are wasted because a good direction has been set from the beginning. The same applies to the implementation phase – it is therefore important that employees can immediately comment on whether something has been done well or poorly, whether it corresponds to what they had originally agreed in the final proposal for the PMO. In this phase, feedback loops are set up in real time. If individuals or teams have developed better ideas in the meantime, this should be considered in the next

iteration. It is important that changes to procedures, rules and ways of working are not imposed from above (so-called top-down) but are developed transparently in cooperation with employees. After a certain trial period, the PMO formation WG analyses the feedback and makes an improved proposal for the functioning of the PMO. The PMO is put back into operation and after some time the evaluation is carried out again. After several such iterations, the supportive PMO is good enough to begin its institutionalisation – the model now moves to phase 4.

3.4. PHASE 4: INSTITUTIONALISATION AND SUSTAINABILITY

By stage 4, the supportive PMO should have already achieved so many results that both the staff and the management of an SRO understand the importance of its institutionalisation; in other words, it is necessary to anchor the PMO in the organisational chart. This step would enable long-term sustainability, which must be ensured so that it can continue to offer real value for employees and the SROs in the future. To achieve this, the power of CI needs to be harnessed again to base policy on shared knowledge and experience. Of course, the institutionalised form is not final either: the PMO in the SRO should be structured like a living system, i.e. it should be able to constantly adapt and improve based on feedback.

4. DISCUSSION: POSITIONING SUPPORTIVE PMO WITHIN UNIVERSITY-BASED SCIENTIFIC RESEARCH ORGANISATIONS

In this paper, the approach of establishing a supportive PMO with the help of CI has numerous advantages. The first advantage is that the shared establishment of the office is a prerequisite for legitimacy. If it is well designed, the PMO can contribute to positive cultural changes in the organisation. In this way, the fulfilment of this prerequisite leads to another benefit, namely greater and faster acceptance of the PMO by employees. Since they themselves were involved in the creation of the PMO, employees will be more willing and motivated to participate in the further maintenance and development of the PMO. This leads to the next advantage: the long-term sustainability of such a model. In addition to the greater employee engagement, another factor contributes to the sustainability of the proposed model – adaptability. It is important that the PMO is not a rigid organisation, but a flexible institutional structure that adapts to a dynamic environment (Thiry, 2007), that respects scientific autonomy while professionalising project management. As mentioned earlier, a CI-based PMO should be seen as a living, flexible entity enabled by the establishment and maintenance of a feedback system. Despite the obvious advantages, the approach of setting up the PMO with the help of CI is not without risks. The process can be slow and lengthy, especially because disagreements are to be expected. However, potential conflicts should not be avoided. If they are constructive, they can also contribute to the development of the PMO in a positive way.

In the work of Andersen et al. (2007), in which 4 cases of commercial organisations were analysed, there are recommendations for PMO establishing that are somewhat similar to this model: the use of a stakeholder analysis, the definition of objectives and the role of a responsible person (‘sponsor’) who should initiate and lead the process. However, the paper differs from the approach suggested in this paper in that it recommends utilising the

experience of senior managers and not giving enough space to the opinions of younger colleagues. It also suggests planning the development of the PMO in advance, without using feedback loops and iterative improvements based on them.

One of the limitations of the model presented in this paper is that it does not consider the distinction between public and private scientific research organisations. The paper is largely based on theoretical assumptions, whereas primary research (e.g. interviews, surveys) conducted with researchers and PMO staff would strengthen it considerably. Another problem is that the concept of PMO is still relatively poorly recognized, developed and formalised in academic institutions, so it can be assumed that the implementation of the recommended model in practise may prove limited without prior adaptation.

5. CONCLUSION

Establishing a supportive CI-powered PMO in university-based SROs allows the office to align with the actual needs of a particular research community. A PMO in an SRO should not only be a technical solution, but also a cultural one, to continue adding value for both the staff and the institution itself. Once established, the supportive PMO should be used as a tool to strengthen research capacity through fellowship, support and knowledge sharing. Finally, the PMO should grow together with the SRO, which the model proposed in this paper ensures.

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