

Agile methodology in construction project management: an information framework for establishing PMO

Tetiana Fesenko^{1,†}, Galyna Fesenko^{2,*} and Hryhorii Fesenko^{3,†}

¹ Kharkiv National University of Radio Electronics, al. Nauki 14, Kharkiv, 61166, Ukraine

² O. M. Beketov National University of Urban Economy in Kharkiv, st. Chornohlazivska 17, Kharkiv, 61002, Ukraine

³ Volodymyr Dahl East Ukrainian National University, st. Ioanna Pavla Druhoho, 17, Kyiv, 01042, Ukraine

Abstract

This research aims to develop a conceptual model for establishing an Agile Project Management Office (PMO) in the construction sector. The model integrates contemporary agile delivery technologies to improve adaptability, coordination, and overall project efficiency. Its objective is to align Agile methodologies, tools, and digital platforms with the specific requirements of large-scale infrastructure and construction projects. The study explores the transformation of traditional PMO functions into Agile PMOs, emphasizing key roles such as team coaching, stakeholder mentoring, and continuous value delivery. The proposed structural model encompasses interrelated components, including agile governance, portfolio management, resource allocation, risk and quality management, stakeholder engagement, and digital tool integration. Operationally, the model is grounded in iterative development, cross-functional collaboration, and servant leadership, ensuring responsiveness and flexibility throughout project execution. The evaluation phase focuses on key performance indicators (KPIs) to measure improvements in management effectiveness and project outcomes. This research contributes a comprehensive and multidisciplinary framework that supports Agile adoption within construction PMOs, aligning project delivery processes with strategic organizational goals in a dynamic industry environment. Future research should aim to empirically validate the model, deepen digital integration, and conduct a quantitative assessment of its impact across diverse construction contexts.

Keywords

Agile; project management; construction sector; Project Management Office (PMO); Value Delivery Office (VDO); Agile Center of Excellence (ACoE) ¹

1. Introduction

Modern project management in the construction sector is characterized by increasing complexity driven by evolving quality standards, strict scheduling requirements, sustainability goals, ongoing digital transformation, and the need for efficient collaboration among diverse stakeholders such as clients, contractors, designers, and regulatory bodies [1-3]. Construction projects are increasingly being implemented in conditions of high uncertainty, changes in the external environment, and growing expectations for flexibility, transparency, and management efficiency [4-6]. Traditional approaches based on detailed planning and strict control are increasingly proving insufficiently effective in dynamic external and internal uncertainty conditions. Therefore, there is a need to transform traditional approaches to project management: from classic models (Waterfall, directive management, functional project offices) to adaptive (Agile Project Management) [7-9].

The Agile and Lean concepts, which originated in the IT sector, are already being actively integrated into construction project management practices [10-13]. In particular, construction companies are demonstrating positive results from the implementation of Agile for: increasing team adaptability, reducing the time required to complete individual project phases, improving communication and transparency in decision-making, and managing risks [14]. In construction, agile


¹ SNE 2025: Workshop on Software and Knowledge Engineering, November 19-20, 2025, Almaty, Kazakhstan

* Corresponding author.

† These authors contributed equally.

✉ tetiana.fesenko@nure.ua (T. Fesenko); galyna.fesenko@kname.edu.ua (G. Fesenko); fesenko1491@ukr.net (H. Fesenko)

 0000-0001-9636-9598 (T. Fesenko); 0000-0001-7133-484X (G. Fesenko); 0000-0001-9749-8746 (H. Fesenko)

 © 2025 Copyright for this paper by its authors. Use permitted under Creative Commons License Attribution 4.0 International (CC BY 4.0).

technologies are mainly used in the early stages of a project [4, 11, 15]. Agile tools such as Scrum, Kanban, and Lean help increase stakeholder engagement, shorten decision-making cycles, and reduce costs [16]. Agile approaches accelerate iterative updates to work volumes, plan adjustments, and more efficient use of resources [17, 18].

The Project Management Office (PMO) has a special role in supporting the implementation of Agile in construction. Formerly, PMOs functioned as a control and administrative structure [19-22]. Current research shows PMOs as flexible knowledge centers that support decision-making, innovation, and strategic alignment between teams. In [23-25], the evolution of PMOs toward adaptive structures capable of performing both directive and facilitative functions is shown, which meets the requirements of Agile approaches. The PMBOK Guide [26] presents a set of hybrid approaches, management methods that can be applied regardless of the type of project, environment, and stakeholder requirements.

In the context of Industry 4.0, the Project Management Office (PMO) is increasingly responsible for managing digital transformation and implementing information technologies in construction project management. The Agile PMO ecosystem integrates tools such as Building Information Modeling (BIM), the Internet of Things (IoT), Artificial Intelligence (AI) and data analytics [27], the Last Planner System (LPS) [28], cloud services, digital twins, and computer vision. These technologies enhance information flow and enable real-time, data-driven decision-making. Researchers [13, 29] highlight the expanding role of the PMO in knowledge management, process standardization, and the integration of digital solutions, particularly in off-site construction [30]. The Agile PMO serves as a central organizational hub that aligns flexible methodologies, digital technologies, and strategic objectives. Case studies [31] demonstrate that traditional PMOs can successfully evolve into adaptive, value-oriented structures capable of responding to dynamic project environments.

Despite the growing interest in Agile methodologies, the implementation of Agile PMO in construction has not yet been widely represented in empirical research [32]. There is no unified classification of PMO models and algorithms for integrating Agile PMO into existing structures in the construction industry [12]. Most organizations face difficulties in integrating agile processes due to cultural resistance [33], lack of agile IT infrastructure, and insufficient staff training [34-36]. Construction is characterized by long cycles of material and equipment supply and document approval. Such processes cannot always be broken down into short sprints, as in traditional Scrum. In such cases, hybrid models are recommended, such as PRINCE2 Agile [37], Disciplined Agile Delivery [28, 38], or the integration of Lean Construction with elements of Agile [11, 39-42] and sustainable development [43-44]. Thus, most studies note the need for a systematic approach to transformation that encompasses not only processes but also structure, culture, digital infrastructure, and staff competencies. The creation of an Agile PMO in construction that would take into account organizational, process, and technological aspects is becoming a pressing issue.

2. Research goal and objectives

This research aims to develop a conceptual model for establishing an Agile Project Management Office (PMO) in the construction sector by integrating contemporary agile project delivery technologies to enhance the adaptability, coordination, and overall efficiency of construction project execution.

For this purpose, the following tasks need to be resolved:

- to examine the role and transformation of PMO functions in the context of Agile methodologies, particularly within the construction industry;
- to identify the most relevant Agile components applicable to large-scale infrastructure and construction projects;
- to develop a structural model for the establishment of an Agile Construction PMO incorporating Agile principles, tools, and integrated project platforms.

3. Research methodology

The methodological foundation of this research is based on a systematic synthesis and comparative analysis of international standards, Agile frameworks, and scientific sources addressing the transformation of project management offices in the context of digitalization and Industry 4.0.

The research was conducted in four consecutive stages:

- Systematic literature review (2020-2025). This stage focused on identifying publications related to PMO transformation, Agile implementation in engineering and construction, and digital project delivery models. The review identified theoretical gaps regarding the application of Agile principles to PMO structures in the construction sector;
- Cross-standard comparative analysis. A comparative review of the leading project management frameworks – PMBOK 7th Edition [26], PMBOK Construction Extension [1], PRINCE2 Agile [37], and Agile Practice Guide [38] – was performed. This allowed for the identification of PMO definitions, functions, and their evolution from traditional to Agile and Value Delivery models;
- Structural–functional synthesis. The results of the comparative analysis were integrated into a unified conceptual model of the Agile PMO. The synthesis emphasized governance mechanisms, digital tools (BIM, Enterprise Resource Planning – ERP, Customer Relationship Management – CRM, Project Management Information System – PMIS), and feedback-based continuous improvement processes;
- Expert validation. The conceptual structure was reviewed by subject-matter experts and cross-validated using academic literature, professional standards, and methodological guidelines. This ensured the internal coherence and theoretical soundness of the proposed model.

The applied methodology provides a robust conceptual framework for establishing Agile PMOs in the construction industry. It serves as a foundation for further empirical validation through case studies and pilot implementations.

4. Agile PMO in construction: Theoretical and methodological bases for establishing

In the seventh edition of the PMBOK Guide, the Project, Program, or Portfolio Management Office (PMO) is defined as an organizational unit that standardizes project governance processes and facilitates the sharing of resources, tools, methodologies, and techniques [26, p. 211]. When Agile principles are applied, this structure is referred to as a Value Delivery Office (VDO). The VDO acts as a coach, helping project teams build adaptive competencies and improve performance. For clients and product owners, it serves as a mentor, guiding stakeholders in effectively fulfilling their roles and responsibilities. Overall, the PMO or VDO is responsible for supporting teams in applying adaptive methods, managing change, and delivering value-oriented project outcomes. The main PMO and VDO models can be classified as follows:

1. *PMO – project management guidance*” (creates instructions, templates, and best practices for management standardization);
2. *“PMO – support service*” (uses ICT tools for effective planning, risk management, and tracking the effectiveness of task/project implementation);
3. *“Portfolio Management Office*” (provides centralized management of the project portfolio and ensures the achievement of strategically important results);
4. *“Enterprise-level PMO*” (provides centralized management of all projects, programs, and portfolios in the company);

5. “*Agile Center of Excellence*” (ACoE) or “*Value Delivery Office*” (VDO) (trains teams and helps develop agile skills and competencies throughout the project organization system, including sponsors, customers, clients, and product owners).

A company may establish multiple PMOs within a multi-level hierarchical structure. For instance, a “PMO for project management guidance” can operate within the production and technical department, while an Agile Center of Excellence (ACoE) may function within the capital construction department, which performs customer-related roles. Both offices can report to the central Enterprise-Level PMO. The selection of PMO types, their number, and reporting relationships should correspond to the project’s complexity, the scale of the organization, and its decision-making culture.

The PMBOK defines that the PMO supports the team in creating three key values:

1. *development of Agile competencies* focused on achieving results with added value (both within construction companies and other stakeholders). Talent development and support for a culture of change;
2. *achieving key project elements and improving overall efficiency through continuous improvement*. Focusing on critical initiatives;
3. *continuous improvement* based on the implementation of best practices (value of knowledge). Implementing smart and simple processes and eliminating actions that do not create value.

The Agile Practice Guide [38] emphasizes that cultural transformation within an organization should begin with the PMO. This is the unit where key project decisions are made – including funding allocation, scheduling, communication formats, and training needs. An Agile PMO should prioritize value creation and maintain close collaboration with clients throughout all project stages. In essence, it must operate as a customer-oriented entity [2, 5]. Its role may vary from advisory support to acting as a construction client representative. Close interaction between the Agile PMO and developers fosters trust, enhances communication transparency, and encourages openness to innovative or non-standard decisions. The continuous adoption of new practices enriches the organization’s knowledge base and contributes to the Agile PMO’s maturity and overall value.

Construction project management increasingly extends beyond traditional project control. Many initiatives require organizational restructuring, cross-functional coordination, and specialized expertise in areas such as change management, stakeholder engagement, or business model innovation. Consequently, the Agile PMO must evolve into a multidisciplinary competence hub – an Agile Center of Excellence (ACoE). Such a unit develops standards, supports continuous learning, and integrates digital and managerial innovation across the organization:

- *Developing and implementing standards*. Creating templates for technical specifications (for different types of building functionality), artifacts with basic value parameters, and expected results (e.g., values in the Sustainable Development Goals coordinate system [4–5]. Selection of software tools (Microsoft Project, Smartsheet, Asana, Jira, GanttPro, Trimble Tilos, BIM technologies) and creation of work schedule templates (packages, sprints);
- *Developing personnel through training and mentoring*. Organizing training for the team in agile technologies and agile thinking. Agile PMO, as a mentor, helps to perform agile project activities;
- *Multiproject management*. Organization of flexible coordination between multifunctional and geographically remote teams. Information and communication technologies (BIM technologies, Geographic Information System (GIS), video monitoring, etc.) are used for operational data exchange, project changes and/or adjustments, and tracking reports. Automated document flow at the program, portfolio, or individual project level;
- *Facilitating organizational learning*. Data collection on project execution speed (Velocity), generalized assessment of the value of results, and development of Agile maturity;

- *Managing stakeholders.* The PMO organizes training for the customer (if they are not in the construction industry) on Agile technologies, algorithms for checking and accepting completed work, preparing executive documentation, etc. Also, the PMO engages subject matter experts (SMEs) whose assessments carry the highest weight;
- *Recruiting, selecting, and evaluating team leaders.* The model for assessing the competence and selection of project managers takes into account the level of knowledge and skills in Agile methods, tools, and technologies;
- *Executing specialized tasks for projects.* The PMO supports and coordinates the implementation of procedures for tracking and managing changes in requirements, technical conditions, risk management, and quality of Agile construction projects (including with the involvement of experts).

In the PRINCE2 Agile methodology [37], the term “Portfolio, Program, and Project Offices (P3O)” defines an integrated organizational structure that supports the creation and execution of business processes for effective portfolio, program, and project management. The P3O framework enhances decision-making, promotes consistent project delivery, and ensures that outcomes generate measurable value. It serves as a unifying mechanism that connects strategic objectives with operational execution across all levels of project activity. P3O performs the following key functions:

- Support for portfolio, program, and project management (PPM). P3O® is an integral part of the PPM system, which is involved in the entire change management lifecycle within an organization;
- Adding value. P3O contributes to adding value by improving decision-making, timeliness, and informing relevant stakeholders;
- Project and program selection. P3O helps select programs and projects that align with the company's strategic goals;
- Versatile structure. P3O provides support and decision-making structures for all changes within the organization.

In the PMBOK Construction [1], the Project Management Office (PMO) is defined as a structural unit responsible for maintaining internal consistency in project management and execution. Within the construction sector, the PMO plays a central role in coordinating key functional areas that ensure compliance, quality, and operational efficiency. Its scope of activity typically includes: occupational health and safety management; environmental protection and site security; coordination of contractors, subcontractors, and suppliers; change management in technical requirements, orders, and deliveries; contract administration and claims management; quality assurance and third-party verification (including inspections by regulatory authorities); knowledge management through the creation of archives and digital repositories based on completed projects.

Table 1 shows the terminological definitions of a project office in various agile project management standards.

Table 1
PMO definitions in Agile project management standards

PM standards	Definitions of a Project Office	
	Acronym	Terminological Description
PMBOK Construction [1]	Project Management Office in the construction industry	It is mainly focused on maintaining internal consistency in the management and execution of projects (maintaining best practices).
	Project Management Office (PMO)	A management structure that standardizes the project-related governance processes and facilitates the sharing of resources, methodologies, tools, and techniques.
	Agile Center of Excellence (ACoE)	Is a team or group within an organization that is dedicated to promoting and supporting agile practices.
PMBOK [26]	Value Delivery Office (VDO)	A project delivery support structure that focuses on coaching teams; building agile skills and capabilities throughout the organization; and mentoring sponsors and product owners to be more effective in those roles.
	Enterprise-level PMO (EPMO)	It is a high-level, centralized function within an organization responsible for overseeing and managing the entire portfolio of projects, programs, and initiatives to ensure alignment with strategic business goals. The EPMO works directly with executives and senior leadership, providing strategic oversight, guidance, and standardized processes for project execution across the enterprise.
Agile Practice Guide [38]	Project Management Office (PMO)	A management structure that standardizes the project-related governance processes and facilitates the sharing of resources, methodologies, tools, and techniques.
PRINCE2 Agile [37]	Portfolio, Programme and Project Offices (P3O)	A globally recognized support structure that helps organizations create, develop, and maintain appropriate business structures for effective management of portfolios, programs, and projects.

5. Conceptual structure model of establishing agile PMO in construction

The structural model of the Agile Project Management Office (PMO) for the construction industry is grounded in the integration of flexible methodologies, digital technologies, and process automation, supported by a culture of continuous improvement. The establishment of an Agile PMO in construction follows a four-stage process:

1. System assessment and goal setting. A comprehensive review of the existing construction project management system is conducted to identify strategic priorities for Agile PMO implementation.
2. System organization. A management framework is developed to incorporate key Agile components such as governance, project portfolio management, resource allocation, communication tools, risk and quality management, performance monitoring, stakeholder engagement, and digital platforms.
3. Methodological foundation. A unified knowledge base is created, combining project management standards, agile practices, and digital tools to ensure methodological consistency.

4. Performance evaluation. The implemented system is assessed through feedback and performance metrics to determine improvements and validate outcomes (Fig. 1).

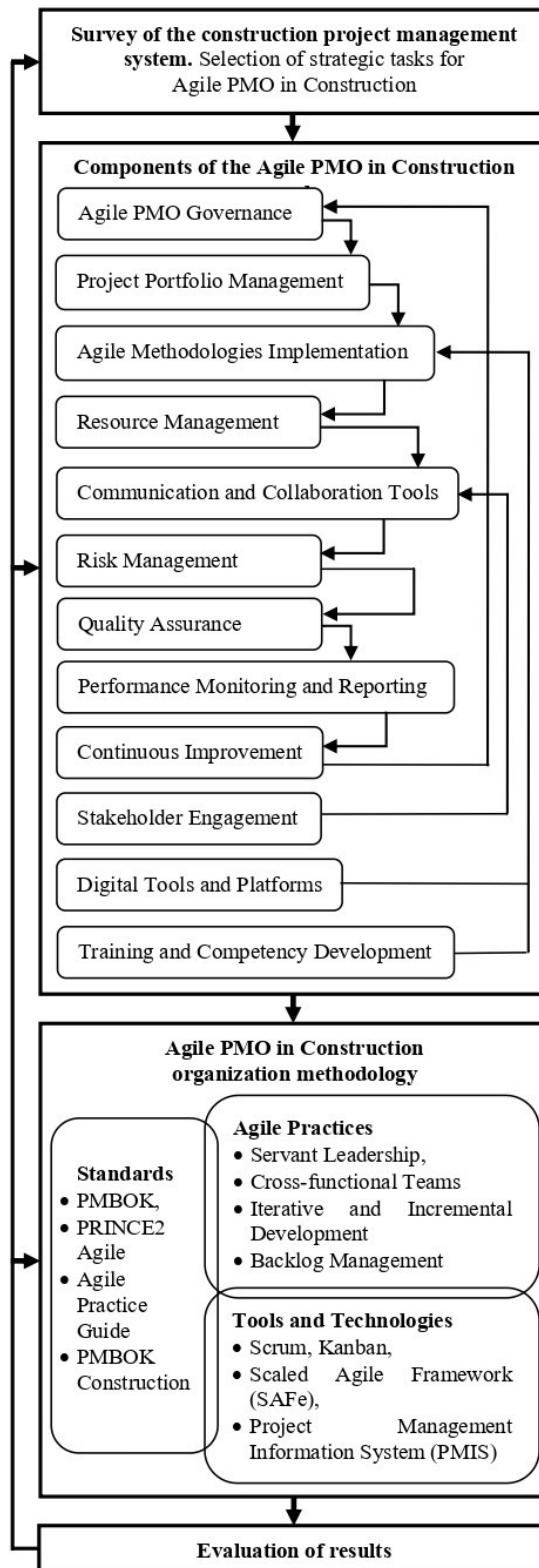


Figure 1: Structure Model of Establishing Agile PMO in Construction.

The components of Agile PMO in the construction sector are interconnected and characterized by their own tasks:

- *Agile PMO governance.* Defining agile management policies, standards, and strategies. Organizing feedback for Continuous Improvement, Performance Monitoring, and Stakeholder Engagement;
- *Project portfolio management.* Providing information about project priorities, statuses, and resources to other stakeholders. Obtaining data from risk management, performance monitoring, and resource management to manage changes in the project portfolio;
- *Agile methodologies implementation.* Implementation of Scrum, Kanban, Lean, and other agile approaches. Obtaining information about project goals, priorities, and results from project portfolio management and performance monitoring to adapt agile methodologies to specific conditions and requirements;
- *Resource Management.* Providing other stakeholders with data on the availability, distribution, and use of human, material, and financial resources (information on team workload, availability of materials, and budget limits for planning and implementing projects). Obtaining information about changes in resource requirements and project priorities. Organizing feedback on the effective use and optimization of resources;
- *Communication and collaboration tools.* Ensuring information exchange between all stakeholders (transfer of data on project status, risks, resource requirements, quality control results);
- *Risk management.* Identification and management of risks using analytical data. Obtaining information from Stakeholder Engagement to organize effective interaction, team coordination, and support for process transparency;
- *Quality assurance.* Sharing quality control, audit, and testing results with other stakeholders to adjust processes and make decisions. Getting info on implementing flexible methodologies, resource management, and risk management to set quality criteria and plan audits;
- *Performance monitoring and reporting.* Collection, analysis of key performance indicators (KPIs), and progress visualization. All other components use the distribution of project progress reports for decision-making. Obtaining information from Quality Assurance, Resource Management, and Agile Methodologies Implementation to create infographics on effectiveness and identify problems;
- *Continuous improvement.* Based on project results analysis, generating recommendations and changes for Agile PMO governance, agile methodologies implementation, resource management, and other components. Data from performance monitoring, communication tools, and risk management will be obtained to assess the current state and identify areas for improvement;
- *Stakeholder engagement.* Communication of requirements, feedback, and analysis of expectations from customers and other stakeholders. Obtain information from communication tools and performance monitoring to support effective interaction and decision-making;
- *Digital tools and platforms.* Integration of BIM, ERP, CRM, and cloud services; obtaining requirements from agile methodologies implementation, resource management, and performance monitoring for configuring and developing digital solutions;
- *Training and competency development.* Training staff in agile methodologies and digital tools. Obtaining information from performance monitoring and Agile PMO Governance about training and development needs.

The primary management flow within the Agile PMO runs from Governance to Continuous Improvement, forming a closed feedback cycle that supports organizational learning and adaptive decision-making. Digital platforms, together with training and competency development, enable the effective application of agile methodologies across all project levels.

The success of Agile PMO implementation depends on two key factors: a well-established knowledge system, grounded in recognized project management standards and agile frameworks,

and The team's practical expertise, particularly its ability to apply agile practices, tools, and technologies effectively:

- Servant leadership. The team leader is focused on helping and supporting the team to achieve project goals;
- Cross-functional teams. The teams include specialists from various fields (architecture, engineering, planning, security, finance, etc.) and are able to independently complete a full cycle of tasks;
- Iterative and incremental development. Staged project development. Implementation of tasks in short sprints with the possibility of adaptation based on feedback;
- Backlog management. Development of the register of project tasks (backlog) and its regular updating.

Agile PMO works in short iterations (sprints) with regular meetings (daily stand-ups, sprint reviews, etc.). Visualization of work through Kanban boards (To Do – In Progress – Done) helps to control the workload of the team, minimize the effect of “bottlenecks,” and accelerate the speed of work. The Scaled Agile Framework (SAFe) is used to coordinate multiple teams working on a common goal in construction mega-projects, large programs, and portfolios. The PMIS will provide storage of project data, planning and monitoring of progress, budget control, and information exchange between participants. In addition, PMIS can integrate with BIM, ERP, CRM, and other corporate platforms.

The final stage evaluates the results and checks whether the construction project management system has improved thanks to Agile PMO. To evaluate the results, key indicators (KPI) are used, planned, and final data are compared, and qualitative and quantitative indicators of management efficiency are analyzed. Automated reports are generated using PMIS in combination with analytics tools that are integrated into a single Agile PMO information platform.

6. Discussion and conclusions

The study substantiates the critical importance of transforming traditional Project Management Offices (PMOs) into Agile PMOs within the construction industry. This transformation aims to enhance adaptability, coordination, and overall project efficiency in a sector characterized by high uncertainty and dynamic external conditions. The analysis of PMO evolution under Agile frameworks shows that Agile PMOs – including Agile Centers of Excellence (ACoE) and Value Delivery Offices (VDO) – perform multifunctional roles that go beyond conventional governance. They coach teams in developing adaptive competencies, mentor customers and stakeholders, and facilitate continuous improvement cycles centered on value creation.

The transition toward Agile PMOs requires a customer-centric mindset that emphasizes collaboration, transparency, and trust. This cultural shift encourages innovation and supports the implementation of non-standard, high-impact solutions. Consequently, Agile PMOs evolve into multi-competent, cross-disciplinary units capable of addressing complex challenges in construction management while maintaining alignment with strategic objectives.

The developed conceptual model for establishing an Agile PMO in construction integrates contemporary Agile methodologies, digital platforms, and management tools, reflecting the complexity and scale of modern infrastructure projects. It identifies a set of interconnected components – Agile governance, project portfolio management, resource management, communication and collaboration systems, risk and quality management, stakeholder engagement, and continuous improvement. These elements are supported by advanced digital environments such as BIM, ERP, CRM, PMIS, and cloud-based solutions, which enable real-time data exchange and informed decision-making.

The model emphasizes iterative and incremental development, backlog management, and the use of frameworks such as SAFe, ensuring flexibility and responsiveness in managing large construction

programs. Each component contributes to creating a feedback-driven system, where performance monitoring and reporting reinforce learning loops and value delivery. This aligns with the principles outlined in PMBOK, PRINCE2 Agile, and the Agile Practice Guide, ensuring methodological coherence and international compatibility.

The structural model represents an integrated management system in which digitalization and agility complement one another. Automated reporting and analytics within PMIS enhance transparency and data-driven control, promoting a collaborative project environment. As a result, Agile PMOs become enablers of both operational excellence and strategic adaptability, supporting sustained performance improvements across project portfolios.

The evaluation stage of the model highlights the importance of monitoring key performance indicators (KPIs) to assess the actual effects of Agile PMO implementation on project outcomes. These indicators provide the basis for evidence-based decision-making and continuous refinement of project delivery practices. This ensures that adaptive mechanisms are not purely conceptual but lead to measurable organizational benefits.

In summary, this research delivers a scientifically grounded and practice-oriented framework for establishing Agile PMOs in the construction sector. The proposed model responds to the industry's growing demand for agility amid increasing complexity, digital transformation, and sustainability goals. By integrating Agile principles, digital technologies, and continuous improvement processes, the model provides construction organizations with a robust mechanism to enhance project performance, stakeholder engagement, and organizational resilience.

Future research should focus on empirical validation of the conceptual model through case studies and pilot applications in various construction contexts. Quantitative assessment of KPI dynamics and further optimization of digital tool integration will contribute to refining Agile PMO functionality. This advancement strengthens both the theoretical foundation and the practical methodologies for agile transformation in construction project management, fostering sustainable, value-driven outcomes for the industry.

Declaration on Generative AI

During the preparation of this work, the authors used Grammarly in order to: Grammar and spelling check, paraphrase and reword. After using this service, the authors reviewed and edited the content as needed and takes full responsibility for the publication's content.

References

- [1] *A Guide to the project management body of knowledge Construction (PMBOK® Guide)*. USA: Project Management Institute, 2016, 489 p.
- [2] T. Fesenko, and D. Minaev, "Customer focus in the project communications management (on the example of house building)", in *Eastern-European Journal of Enterprise Technologies*, Vol. 5 (3), 2014, pp. 4-10, doi: 10.15587/1729-4061.2014.28032.
- [3] T. Fesenko, G. Fesenko, and D. Minaev, "The decision-making modeling for the building project scope evaluation in conditions of the recreational territory development", in *Eastern-European Journal of Enterprise Technologies*, Vol. 1 (3 (79)), 2016, pp. 32-37. doi: 10.15587/1729-4061.2016.60644.
- [4] T. Fesenko, "Improving models for sustainability evaluation of construction projects in the initiation and planning processes", in *Eastern-European Journal of Enterprise Technologies*, Vol. 4 (3 (118)), 2022, pp. 51-66, doi: 10.15587/1729-4061.2022.263668.
- [5] T. Fesenko, A. Shakhov, G. Fesenko, N. Bibik, and V. Tupchenko, "Modeling of customer-oriented construction project management using the gender logic systems", in *Eastern-European Journal of Enterprise Technologies*, Vol. 1 (3), 2018, pp. 50-59, doi: 10.15587/1729-4061.2018.123124.

- [6] T. Fesenko, G. Fesenko, and N. Bibik, "The safe city: developing of GIS tools for gender-oriented monitoring (on the example Kharkiv city, Ukraine)", in *Eastern-European Journal of Interiorise Technologies*, Vol. 3 (2 (87)), 2017. pp. 25-33. doi: 10.15587/1729-4061.2017.103054.
- [7] S. Bushuyev, D. Bushuiev, N. Poletaev, M. Malaksiano, and D. Kravtsov, "A machine learning method for real estate operation projects forecasting", in *CEUR Workshop Proceedings*, 2024, pp. 77-89.
- [8] S. Bushuyev, and A. Puziichuk, "Development organizational structure for value-oriented reengineering project of construction enterprises", in *International Scientific and Technical Conference on Computer Sciences and Information Technologies*, Vol. 2, 2021, pp. 367-370. doi: 10.1109/CSIT52700.2021.9648758.
- [9] R. Trach, and S. Bushuyev, "Analysis of communication network of the construction project participants" in *Scientific Review Engineering and Environmental Sciences*, Vol. 29 (3), 2020, pp. 388–396. doi: 10.22630/PNIKS.2020.29.3.33.
- [10] Y. Huaricallo, and J. Becerra, "Agile Frameworks in Construction Project Management: A Systematic Review", in *Proceedings of the 10th World Congress on New Technologies (NewTech'24) Barcelona, Spain – August 25-27, 2024*, 114. doi: 10.11159/icceia24.114.
- [11] R. Gohil, K. Hogg, and I. Jefferson, "The application of Agile and Lean concepts to construction projects: A systematic literature review", in *Engineering, Construction and Architectural Management*, Vol. 30 (1), 2023, pp. 106–125. doi: 10.1108/ECAM-12-2020-1041.
- [12] A. Veronika, and Y. Latief, "The Dynamics of PMO in Construction Companies: A Systematic Literature Review", in *Journal of Project Management Research*, Vol. 1 (1), 2025, pp. 1-24, doi: 10.13140/RG.2.2.33478.38721.
- [13] B. G. Appuhamilage, M. Ershadi, and M. Jefferies, "A Review of the Role of Project Management Offices in Establishing Offsite Construction Capabilities", in Tutesigensi, A and Neilson, C J (Eds) *Proceedings of the 39th Annual ARCOM Conference, 4-6 September 2023*, University of Leeds, Leeds, UK, Association of Researchers in Construction Management, 2023, pp. 467-476.
- [14] A. S. Oyegoke, M. M. A. Khalfan, P. McDermott, and M. Dickinson, "Managing risk and uncertainty in an agile construction environment: Application of agile building specialist model", in *International Journal of Agile Systems and Management*, Vol. 3 (3-4), 2008, pp. 248-262. doi: 10.1504/IJASM.2008.021212.
- [15] R. Trach, K. Pawluk, and M. Lendo-Siwicka, "The assessment of the effect of BIM and IPD on construction projects in Ukraine", in *International Journal of Construction Management*, Vol. 22 (10), 2022, pp. 1844-1851. doi: 10.1080/15623599.2020.1742636.
- [16] B. Succar, "Building information modelling framework: A research and delivery foundation for industry stakeholders", in *Automation in Construction*, Vol. 18 (3), 2009, pp. 357-375. doi: 10.1016/j.autcon.2008.10.003.
- [17] J. Sithambaram, M. Nasir, and R. Ahmad, "A compilation of factors associated to the governance and management of Agile projects: A systematic literature review" in *Malaysian Journal of Computer Science*, Vol. 34 (3), 2021, pp. 266-307. doi: 10.22452/mjcs.vol34no3.4.
- [18] D. C. Lalic, B. Lalic, M. Delić, D. Gracanin, and D. Stefanovic, "How project management approach impact project success? From traditional to agile", in *International Journal of Managing Projects in Business*, Vol. 15 (3), 2022, pp. 494-521. doi: 10.1108/IJMPB-04-2021-0108.
- [19] H. Kerzner, *Strategic planning for project management using a project management maturity model*. New York: John Wiley & Sons, 2001, 256 p.
- [20] G. I. Kendall, and S. C. Rollins, *Advanced project portfolio management and the PMO multiplying ROI at wrap speed*. London: Transatlantic, 2003, 434 p.
- [21] R. D. Archibald, *Managing High-Technology Programs and Projects*. USA: Wiley, 2003, 415 p.
- [22] H. Kerzner, *Project management: A systems approach to planning, scheduling and controlling* (10th ed.). USA: John Wiley Sons Inc. 2009.
- [23] K. Chadwick, "The role of the Project Management Office (PMO) in knowledge management and transfer: A systematic literature review and future research agenda", in *International Journal of*

- Management & Entrepreneurship Research*, Vol. 7 (2), 2025, pp. 121-133. doi: 10.51594/ijmer.v7i2.1804.
- [24] A. Monteiro, J. Varajão, and V. Santos, “Project Management Office Typologies, Types, and Functions: A Systematic Analysis of the Literature and Directions for Research”, in *Project Management Journal*, 2024, pp. 1-18. doi: 10.1177/87569728241297899.
- [25] H. Kerzner, *Project Management: A Systems Approach to Planning, Scheduling, and Controlling* (13th Edition). USA: Wiley, 2022, 880 p.
- [26] *A Guide to the project management body of knowledge (PMBOK® Guide)*: Seventh Edition. USA: Project Management Institute. 2021, 589 p.
- [27] L. T. Damasceno, L. A. De Souza, F. S. D. Neto, and H. G. Costa, *Adapting Project Management Offices to the Era of Hybrid Work, Agile Methodologies, and Industry 4.0*, in Bajaj, A., Mishra, P.M., Abraham, A., Kahraman, C. (eds) *Hybrid Intelligent Systems. HIS 2023. Lecture Notes in Networks and Systems*: Springer, Cham, Vol. 1226, 2025, pp. 153-161. doi: 10.1007/978-3-031-78934-2_15.
- [28] M. D. Kadenic, and T. Tambo, “Reinstitutionalization of project management offices by large-scale agile frameworks” in *The Journal of Modern Project Management*, Vol. 9 (1), 2021, pp. 87-101. doi: 10.19255/JMPM02607.
- [29] C. Cocchiara, G. Lo Nigro, P. Roma, and A. Ragusa, “Project and knowledge management at European public space agencies: The need for a three-dimensional project management office” in *Space Policy*, Vol. 70, 2024, 101639. doi: 10.1016/j.spacepol.2024.101639.
- [30] H. Xue, T. Sun, J. Zheng, “Organizational Elements and Collaborative Organizational Citizenship Behavior in Off-Site Construction Projects: Configurational Approach”, in *Journal of Construction Engineering and Management*, Vol. 148 (10), 2022, 04022108. doi: 10.1061/(ASCE)CO.1943-7862.0002379.
- [31] Reddal. *Bringing Agility to A Traditional PMO to Thrive in Volatile Situations*. 2024. Available online: <https://www.reddal.com/insights/bringing-agility-to-a-traditional-pmo-to-thrive-in-volatile-situations/> (accessed on 08 August 2025).
- [32] V. Umasekar, “Evaluating the Role of Project Management Offices (PMOs) in Large-Scale Construction Projects: Insights from Construction Industry Professionals” in *International Journal of Multidisciplinary: Applied Business and Education Research*, Vol. 5 (1), 2024, pp. 302-310. doi: 10.11594/ijmaber.05.01.27.
- [33] T. Raharjo, and B. Purwandari, “Agile project management challenges and mapping solutions: A systematic literature review”, in *Proceedings of the 3rd International Conference on Software Engineering and Information Management*, 2020, pp. 123-129. doi: 10.1145/3378936.3378949.
- [34] M. L. Springer, *Project and Program Management: A Competency-Based Approach*. Purdue University Press, 2023, 628 p. doi: 10.2307/j.ctv36xw8cx.
- [35] M. H. I. Esam, and E. S. Abu Elnasr, “Robust competency-based evaluation matrix for directive PMO services in construction projects”, *Journal of Infrastructure, Policy and Development* Vol. 8 (14), 2024, 9978. doi: 10.24294/jipd9978.
- [36] S. Perera, B. Ginigaddara, Y. Feng, and P. Rahnamayiezekavat, *The new generation of construction skills: Transition from onsite to offsite*, in S H Ghaffar, P Mullett, E Pei and J Roberts (Eds) *Innovation in Construction*, Cham: Springer, 2022, pp. 429-446. doi: 10.1007/978-3-030-95798-8_17.
- [37] *PRINCE2 Agile. United Kingdom*: AXELOS Limited, 2018, 529 p.
- [38] *Agile Practice Guide*. USA: Project Management Institute, 2017, 178 p.
- [39] G. Yang, X. Xu, Z. Wang, and L. Zhou, “Vulnerability analysis and optimal design of lean construction system”, in *ICCREM 2013: Construction and Operation in the Context of Sustainability – Proceedings of the 2013 International Conference on Construction and Real Estate Management*, 2013, pp. 366–376. doi: 10.1061/9780784413135.035.
- [40] A. Vestermo, V. Murvold, F. Svalestuen, J. Lohne and O. Lædre, “BIM-stations: What it is and how it can be used to implement lean principles” in *IGLC 2016 – 24th Annual Conference of the International Group for Lean Construction*, 2016, pp. 33-42.

- [41] P. Nowotarski, and J. Paślowski, “Lean and Agile Management Synergy in Construction of High-Rise Office Building”, *Archives of Civil Engineering*, Vol. 62 (4), 2016, pp. 133-147. doi: 10.1515/ace-2015-0112.
- [42] O. Koseoglu, and E. T. Nurtan-Gunes, “Mobile BIM implementation and lean interaction on construction site: A case study of a complex airport project”, in *Engineering, Construction and Architectural Management*, 2018, Vol. 25 (10), pp. 1298–1321. doi: 10.1108/ECAM-08-2017-0188.
- [43] N. B. Overgård, L. B. Jensen, and C. Thuesen, “Strategies to benchmark sustainability performance within a project-based organization in the building industry: A case study in Denmark”, in *Journal of Architectural Engineering*, 2022, Vol. 28 (3). doi: 10.1061/(ASCE)AE.1943-5568.0000548.
- [44] S. Bushuyev, N. Bushuyeva, and V. Bushuyeva, *Methodology Hybridization for Sustainable Strategic Management of Circular Projects and Programs*, in *Sustainable Business Change: Project Management toward Circular Economy*. Springer International Publishing, 2023, pp. 197-209. doi: 10.1007/978-3-031-23543-6_8.