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Assessment of the maturity of project management offices of government agencies of Kazakhstan: analysis, trends, and development prospects

ABSTRACT: *In recent years, Kazakhstan has actively adopted project management practices in the public sector to improve the efficiency of government programs, optimize resource use, and enhance transparency. A central element of this transformation has been the establishment of project management offices (PMOs) within government agencies. However, the maturity of these PMOs – and their capacity to support strategic objectives through advanced project management methods – remains underexplored, particularly in the context of developing and transitional economies.*

This study aims to contribute to the international discourse on public sector project management by assessing the maturity of PMOs in Kazakhstan using the Portfolio, Program, and Project Management Maturity Model (P3M3). Data were collected through a structured survey of public officials responsible for project oversight and analyzed using cluster analysis, analysis of variance (ANOVA), and descriptive statistics to identify maturity levels and common barriers.

The findings revealed that the majority of PMOs are in the early stages of maturity (P3M3 levels 1 and 2), with limited institutional integration and inconsistent project governance practices. Key challenges include inadequate staff training, weak procedural frameworks, and poor alignment between project management activities and broader public administration systems.

This study provides empirical evidence to support targeted interventions aimed at improving PMO maturity in government institutions. It offers a practical framework for policymakers, public managers, and researchers to design reforms that strengthen project governance and advance public sector performance in Kazakhstan and comparable contexts.

KEYWORDS: Kazakhstan, public administration, government agency, project management office, maturity of the project management office, assessment.

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INTRODUCTION

The effectiveness of public administration is largely determined by the quality of the strategies being implemented and the mechanisms for their implementation. In recent years, the project approach has become an integral element of public administration, contributing to improving the effectiveness of government programs and initiatives. In this context, project management offices (PMOs) play a key role, ensuring the management of projects, programs, and portfolios at the system level. Modern research confirms that the maturity of project management has a significant impact on the effectiveness of government agencies, but the question remains about the degree of integration of project management into the public sector and its impact on achieving strategic goals.

In Kazakhstan, the implementation of project management in the public sector is taking place in the context of global and domestic challenges requiring optimization of administrative processes and increasing the efficiency of government structures. One of the tools for improving efficiency is to assess the maturity of PMOs, which allows us to determine the level of their organizational development, identify the problem areas, and develop measures to improve project management. Despite significant efforts taken

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to implement the project approach, challenges remain in government agencies, which are related to the lack of unified standards, insufficient coordination between ministries, and the lack of systematic monitoring of the effectiveness of PMOs.

This research contributes to the advancement of both project management theory and practice by offering a detailed analysis of PMO maturity and providing actionable recommendations for their improvement. The study is based on data collected through a survey of government officials responsible for project management. Statistical methods are employed to identify patterns and trends, which will form the foundation for recommendations aimed at enhancing the maturity of PMOs.

The findings will be valuable for managers, policymakers, and researchers in public administration, offering practical recommendations for improving PMOs and boosting their efficiency.

Effective application of project management is essential for achieving strategic objectives and improving the performance of government agencies (Singh, 2017). As Kazakhstan undergoes economic development, assessing the maturity of PMOs within government institutions is crucial for understanding their current state and areas for improvement.

This study evaluates the maturity levels of PMOs across Kazakhstan's government agencies, with an aim to identify challenges, gaps, and opportunities for improving project management practices. The analysis is based on a quantitative survey assessing the institutionalization of project management processes, complemented by a qualitative focus group designed to explore the underlying factors and practitioner perspectives in greater depth.

LITERATURE REVIEW

Current issues of assessing the maturity of PMOs

Modern project management research encompasses a broad spectrum of topics, including PMO maturity, digital transformation, strategic project management, and success factors in the public sector.

A foundational study by Hobbs & Aubry (2007) examined 500 organizations with Project Management Institute (PMI) support, identifying core PMO functions and developing a conceptual framework that remains influential in assessing their maturity. This research initiated a systematic approach to evaluating PMOs, providing empirical insights into their role within organizations. Pinto (2012) further emphasized that the evolution of maturity assessment methodologies has been a major focus of both academic and professional project management communities, underscoring the increasing importance of standardized evaluation frameworks.

Among the most widely recognized project management maturity models are Organizational Project Management Maturity Model (OPM3), Portfolio, Program, and Project Management Maturity Model (P3M3), and Project Management Maturity Model (PMMM).

OPM3, introduced by PMI in 2003, offers a comprehensive maturity framework that assesses processes, competencies, and achieved outcomes (Fahrenkrog et al., 2003). It serves as a roadmap for organizations seeking structured improvements in project management capabilities.

P3M3, developed by Axelos (2015), evaluates an organization's maturity across portfolio, program, and project management, providing a structured pathway for organizations at different stages of maturity.

PMMM (Kerzner's maturity model) follows a five-tier system, characterizing organizational project management evolution while acknowledging common barriers such as resistance to change and misalignment of strategic priorities (Kerzner, 2019).

These models have been widely applied in both academic research and professional practice, serving as benchmarks for assessing PMO effectiveness. However, research on their application in public sector settings remains relatively limited, necessitating further empirical analysis to determine how these frameworks align with government agencies' operational realities.

Impact of project management maturity on performance

The relationship between maturity levels and project success has been extensively studied. Burger et al. (2024) found that higher maturity levels contribute to improved project performance, but they do not guarantee success independently. Their study in the mining industry emphasized that organizational and strategic enablers are equally important for project effectiveness. This suggests that while maturity models provide a useful framework, their success depends on complementary organizational factors.

Similarly, Van der Waldt (2020) examined project management maturity in public sector institutions, concluding that higher maturity correlates with better policy implementation and social program success. However, he emphasized that maturity alone is insufficient and institutions must also integrate project management into their broader governance structures. To address these challenges, Karim et al. (2022) proposed that maturity should be viewed as an organization's ability to institutionalize best practices, rather than just a measure of process formalization.

Digital transformation and project management maturity

Digital transformation presents unique challenges that require robust project management structures. Hafsel et al. (2021) analyzed government digital transformation projects, highlighting that technological innovation, organizational readiness, and stakeholder engagement are all critical factors. Their research suggests that higher project management maturity levels contribute to better digital transformation outcomes, as agencies with formalized project governance structures tend to manage digital initiatives more effectively.

Similarly, Titov & Titova (2022) emphasized that strategic alignment between digital transformation and organizational goals is essential, highlighting the need for adaptable project management methodologies. Hurochkina & Zvonar (2020) further contributed to this discourse by comparing traditional and agile digital project management approaches, concluding that agile methods improve adaptability and efficiency, particularly in government settings.

The connection between project success and maturity was also explored by Cao & Swierczek (2010), who analyzed infrastructure projects in Vietnam. Their study underscores the importance of managerial competence, project professionalism, and a stable external environment in achieving project success. Notably, they found that the early planning phase is crucial, as maturity models are most effective when applied systematically from the project's inception.

Project management in the public sector

Public sector projects introduce additional complexities due to regulatory frameworks, political considerations, and bureaucratic structures. Lawani & Moore (2016) highlighted that project implementation in developing countries is often hindered by structural inefficiencies, inconsistent regulations, and contractor management challenges. Shkaft et al. (2021) reinforced this view, emphasizing that early-stage planning and competent leadership are critical success factors for government projects.

The role of PMOs in public administration was extensively analyzed by Menon (2024), who identified best practices for their establishment, methodology selection, and competency development. These findings reinforce the notion that PMOs serve as critical enablers of structured project execution in government agencies.

The strategic dimension of project management was explored by Too & Weaver (2014), who proposed a four-component model integrating portfolio management, project sponsorship, PMOs, and long-term project governance. Their findings align with those of Karayaz & Gungor (2013), who argued that PMOs facilitate stakeholder coordination, promote standardization, and integrate project management with institutional objectives. These studies collectively underscore the importance of strategic integration in project maturity models.

Kazakhstan's approach to project management maturity

The introduction of project management in Kazakhstan's public sector has been driven by efforts to improve transparency, efficiency, and adaptability in response to dynamic socioeconomic conditions. The Concept for the Development of Public Administration in Kazakhstan until 2030 (2021) establishes institutionalization of PMOs as a key component of government efficiency reforms.

Initially, the Ministry of National Economy managed PMO coordination (Government Resolution, 2021); but in 2023, the responsibility shifted to the Ministry of Digital Development, Innovation, and Aerospace Industry (Government Resolution, 2023), reflecting the increasing strategic importance of digital project management.

In addition, the Prime Minister's Decree (2023) established the National Project Office (NPO), operating within the Office of the Digital Government as a matrix structure that integrates various project governance entities, including the following:

1. Department of Project Management Policy (Ministry of Digital Development, Innovation, and Aerospace Industry)
2. The Presidential Project Office (Delivery Unit)
3. Project Monitoring and Management Center (Digital Government Support Center)
4. Center for the Development of Project Management in Public Administration (Academy of Public Administration under the President of the Republic of Kazakhstan)
5. PMOs across all central and regional government agencies

Thus, Kazakhstan's public sector is undergoing a structured transition toward project-based governance. The study of PMO maturity in government agencies is particularly relevant as it provides insights into the degree of project management institutionalization, identifies existing gaps, and informs further strategic development efforts.

Despite the global expansion of project management maturity research, there remains a notable gap in empirical studies focused on transitional public sectors, particularly in post-Soviet and Central Asian contexts. Most widely adopted maturity models – such as P3M3, OPM3, and PMMM – were developed in Western institutional environments and often presume a level of managerial autonomy, strategic integration, and performance accountability that may not align with the bureaucratic and politically influenced structures of emerging public administrations. In Kazakhstan, recent efforts to institutionalize project management – through national standards, centralized PMO coordination, and digital transformation initiatives – represent a unique case of top-down reform. However, the extent to which these reforms have translated into actual improvements in project management maturity across government bodies remains unclear. This study aims to address this empirical and contextual gap by applying the P3M3 model to assess the maturity of PMOs in Kazakhstan's central and regional agencies. By doing so, it provides a rare comparative lens on the alignment between global maturity frameworks and the operational realities of governance in an evolving public sector landscape.

METHODOLOGY

This study employed a *sequential explanatory mixed-methods design*, integrating structured quantitative self-assessment with qualitative insights to evaluate the maturity of PMOs in Kazakhstan's public sector. This design enabled both a broad measurement of maturity levels and an in-depth exploration of institutional factors influencing PMO development. The research was structured around the following research questions:

- **RQ1:** What is the current maturity level of PMOs in Kazakhstan's government agencies, as assessed using the adapted P3M3 framework?
- **RQ2:** What do project management practitioners identify as key barriers to advancing maturity, opportunities for improvement, and factors explaining interagency differences?

Participants and Sampling. The survey was conducted in October–November 2024 and targeted 58 government bodies of the Republic of Kazakhstan, including 21 ministries, 17 other central government agencies (CGAs), and 20 regional executive agencies (REAs). These institutions represent a comprehensive cross section of Kazakhstan's public administration system, providing sufficient coverage for assessing nationwide trends.

Respondents were senior project management professionals, primarily heads of PMOs located within strategic planning or digitalization departments. The selection was facilitated by NPO, ensuring that participants had relevant operational knowledge. This sampling approach ensured both relevance and reliability of self-assessments, while reflecting organizational diversity. Where feasible, responses from multiple representatives per agency were collected to increase reliability.

Measures. To assess the maturity of project management capabilities, the study used P3M3 as a standardized evaluation tool. The questionnaire consisted of nine structured items, each corresponding to key maturity domains such as governance, risk management, stakeholder engagement, and performance measurement (*Appendix 1*).

Responses were scored on a five-level scale, from Level 1 (A) indicating low maturity to Level 5 (E) reflecting high institutionalization and optimization. Each item was mapped to a numerical scale (1–5) for quantitative analysis. The ninth item served as a cross-validation question to check internal consistency and assess overall organizational maturity.

This self-assessment method aligns with established practices in maturity modeling literature (e.g., Crawford & Pollack, 2004; Cooke-Davies, 2004), which emphasize internal knowledge and organizational context as critical inputs for accurate maturity diagnostics.

Data Collection Procedure. The survey was distributed via Google Forms with the assistance of the NPO which maintains working relationships with PMO leaders. Respondents received standardized instructions and definitions to minimize ambiguity and increase interagency comparability.

To promote honest reporting, confidentiality was ensured, and responses were anonymized. In addition to survey data, where possible, maturity ratings were cross-validated using publicly available *secondary sources* such as institutional policies, organizational charts, and annual reports. These materials provided context and validation, but were not used as standalone data sources.

Data Analysis. To classify agencies and explore patterns in maturity levels, the study applied the following analytical techniques:

1. *cluster analysis*: used to identify groups of agencies with similar maturity profiles across the nine P3M3 indicators;
2. *analysis of variance (ANOVA)*: employed to test for statistically significant differences in maturity across institutional types (e.g., ministries, CGAs, REAs); and
3. paired *t*-tests: conducted to compare specific maturity dimensions within the same agencies, identifying internal inconsistencies or priority gaps.

This multimethod approach enhances validity through *triangulation*, allowing robust examination of both between-group differences and within-organization maturity patterns (Carter et al., 2014).

Focus Group. To supplement the quantitative findings and deepen understanding of barriers and improvement strategies (RQ2), a semi-structured focus group was designed with six PMO leaders from the participating agencies (*Appendix 2*).

The participants included four central government representatives (two from ministries and two from other CGAs) and two from regional agencies. All participants had previously completed the quantitative survey, ensuring continuity and depth in responses.

The discussion was organized around the following six thematic areas:

1. interpretation of self-assessment results,
2. explanations for interagency maturity differences,
3. internal institutional barriers,
4. external constraints (e.g., policy, funding),
5. enabling conditions and good practices, and
6. recommendations for institutional improvement.

The session was conducted online in a confidential, moderated format and documented through detailed note-taking. Data were analyzed thematically to extract cross-cutting insights aligned with the research questions.

This qualitative component served as an *explanatory extension*, allowing practitioners to contextualize survey results and articulate reform priorities grounded in field experience.

RESULTS

This section presents the results of the study in direct response to the two research questions. In relation to RQ1, the majority of Kazakhstan's government agencies demonstrated low to transitional levels of project management maturity, with only a few reaching defined process levels. In response to RQ2, the focus group identified leadership engagement, institutional culture, and professional capacity as key drivers of maturity, while bureaucratic and regulatory fragmentation were seen as major barriers.

Table 1 summarizes average maturity scores across nine P3M3 indicators for ministries, other CGAs, and REAs.

The results of the maturity analysis of PMOs in government agencies indicate that the average maturity level of project management is 2.2 in ministries, 1.9 in CGAs, and 2.7 in REAs. These values suggest that, while project management maturity varies across different types of government institutions, most organizations remain within the initial to transitional stages (levels 1 and 2 according to the P3M3 model). This reflects the need for further development and standardization of project management processes to enhance efficiency and consistency across government agencies.

To examine variations in project management maturity across government agencies, a *comparative analysis* of key indicators – including risk management, resource management, benefits management, and *stakeholder engagement* – was conducted. The findings indicated that *average maturity levels* ranged from 1.3 (Overall OPM3) to 3.2 (Benefits Management and Stakeholder Engagement).

Tab. 1: Average Maturity Level of PMOs by Indicator and Agency Type (see Appendix 3 for detailed data).

Indicator	Mean (Ministries)	Mean (CGA)	Mean (REA)	Standard deviation (Ministries)	Standard deviation (CGA)	Standard deviation (REA)	Minimum (Ministries)	Minimum (CGA)	Minimum (REA)	Maximum (Ministries)	Maximum (CGA)	Maximum (REA)
General description	2.1	1.6	2.0	1.18	0.80	0.69	1	1	1	5	3	3
Management control	2.4	1.7	2.8	1.24	0.99	1.15	1	1	1	4	4	5
Benefits management	2.7	2.2	3.2	0.91	0.97	0.81	1	1	2	4	4	4
Financial management	2.9	2.3	3.1	1.24	0.92	1.12	1	1	1	5	4	5
Stakeholder engagement	2.4	2.1	3.2	1.36	1.34	1.27	1	1	1	5	5	5
Risk management	2.0	1.8	2.8	1.00	0.66	0.91	1	1	2	4	3	5
Organizational governance	2.1	1.7	2.8	1.04	0.69	0.83	1	1	2	5	3	4
Resource management	2.1	1.9	2.5	0.94	0.99	0.83	1	1	1	3	3	4
Overall organizational project management maturity	1.3	1.4	1.8	0.66	0.49	0.89	1	1	1	3	2	4
The average value for government agencies	2.2	1.9	2.7	-	-	-	-	-	-	-	-	-

The lowest maturity level was recorded in Overall Organizational Project Management Maturity (1.3), highlighting the limited integration of project management practices into the strategic processes of government agencies. This suggests that project management remains largely operational, rather than being embedded within broader institutional frameworks.

Conversely, the highest levels of maturity were observed in Benefits Management and Stakeholder Engagement (3.2). The relatively high maturity in Benefits Management may be attributed to established regulatory frameworks and structured implementation processes that ensure project outcomes are measured and aligned with strategic goals. Similarly, Stakeholder Engagement demonstrates a high degree of institutionalization, reflecting the emphasis placed on collaborative decision-making and interagency coordination in public sector project management.

Cluster analysis

A cluster analysis categorized agencies into five P3M3 maturity levels. No agency was found at Level 4 (Managed) or Level 5 (Optimizing), indicating that no institution had achieved full process optimization or strategic integration.

The distribution of government agencies by cluster is shown in Table 2.

An analysis of the maturity distribution reveals that a significant number of government agencies fall within the *Transitional maturity* category. This suggests that project management is actively being implemented and institutionalized across government institutions, reflecting ongoing efforts to standardize practices and improve efficiency.

The presence of government agencies in the *Advanced maturity* category demonstrates that a structured and well-documented approach to project management is being adopted in some organizations. These institutions consistently apply defined processes,

Tab. 2: Distribution of government agencies by maturity categories.

P3M3 Level	Maturity Score Range	Cluster Category	Key Characteristics	Number (Ministries)	Number (CGA)	Number (REA)
Level 1: Awareness of Process	1.0–1.9	Initial maturity	Basic understanding of project management, but processes are applied inconsistently or reactively	8	10	3
Level 2: Repeatable Process	2.0–2.9	Transitional maturity	Standardized processes exist, but they are not consistently applied or enforced across projects/agencies	8	5	8
Level 3: Defined Process	3.0–3.9	Advanced maturity	Well-documented, formalized project management frameworks that are consistently followed across projects	5	2	9
Level 4: Managed Process*	4.0–4.5	Optimized maturity	Project management processes are quantitatively measured and continuously improved	0	0	0
Level 5: Optimizing Process*	4.6–5.0	Strategic maturity	Project management is fully embedded in governance structures, driving continuous innovation	0	0	0

ensuring predictable and efficient project outcomes. However, their number remains relatively small, highlighting the need for further scaling and institutional strengthening of PMOs.

The low number of agencies in the *Initial maturity* category suggests that even at the early stages of project management implementation, basic project management structures are in place across most organizations. This provides a solid foundation for further development, as agencies in this category have at least some awareness of project management principles, even if application remains inconsistent.

No government agencies were found in the *Optimized (Level 4)* or *Strategic (Level 5)* maturity categories, indicating that Kazakhstan's public sector has not yet reached the stage of fully managed or continuously improving project management practices. These levels represent a long-term goal, where project management is deeply integrated into governance structures and is guided by performance metrics, strategic alignment, and adaptive learning.

Despite the positive trajectory, continued efforts are required to transition more organizations from *Transitional maturity* to *Advanced maturity* by the following:

1. *enhancing standardization*, that is, ensuring that defined project management methodologies are consistently followed across all agencies;
2. *strengthening governance structures*, that is, improving oversight, accountability, and performance measurement; and
3. *capacity-building initiatives*, that is, increasing training and competency development among project management personnel.

The results indicate Kazakhstan's public administration is progressing toward a more structured approach to project management, with most organizations beyond the ad hoc stage. However, further efforts are needed to institutionalize best practices and strengthen regulatory mechanisms across all government levels.

Analysis of variance

A one-factor ANOVA was conducted to assess the differences in the maturity levels of PMOs between ministries, CGAs, and REAs. This method enables the identification of statistically significant differences in PMO maturity levels across different types of government institutions (Creswell & Creswell, 2018).

The results of ANOVA indicate that several indicators show significant differences ($p < 0.05$), including Management Control ($p = 0.0191$), Benefits Management ($p = 0.0119$), Stakeholder Engagement ($p = 0.0444$), and Risk Management ($p = 0.0029$). This suggests that these aspects of project management maturity vary significantly between different government agencies, potentially reflecting disparities in the adoption, implementation, and institutionalization of project management practices.

Tab. 3. Variance analysis of maturity of project management offices.

Indicator	F-statistics	p-Value
General description of the government agency	1.4679	0.2393
Management control	4.2561	0.0191
Benefits management	4.8085	0.0119
Financial management	2.5051	0.0909
Stakeholder engagement	3.2983	0.0444
Risk management	6.4913	0.0029
Organizational governance	7.4649	0.0014
Resource management	2.1856	0.1221
Overall organizational project management maturity	2.7263	0.0743

Financial Management ($p = 0.0909$) does not show statistically significant differences, suggesting that budgetary and financial oversight practices are more standardized across government agencies, possibly due to centralized regulations. The significant differences in key indicators imply that while project management practices are being implemented, some institutions have further formalized these processes. This variation may stem from differences in organizational culture, resources, leadership, or exposure to project management methodologies. These findings emphasize the need for targeted interventions, particularly in stakeholder engagement, benefits realization, and risk management, to bridge gaps between agencies. Strengthening capacity-building and promoting knowledge-sharing initiatives could help standardize project management practices.

Statistical analysis (t-test) of differences between government agencies

A t -test was conducted to assess differences between specific pairs of government agency groups. This method is widely used in statistical analysis as it allows for the identification of significant differences between groups, even in cases where sample sizes are relatively small (Creswell & Creswell, 2018). The test was applied to compare the maturity levels of PMOs between ministries and CGAs, as well as between ministries and REAs.

The results of the t -test partially confirm the conclusions of the ANOVA analysis. While most maturity indicators do not exhibit statistically significant differences ($p > 0.05$), some key aspects, including Management Control, Benefits Management, and Stakeholder Engagement, demonstrate statistically significant variations between certain agency types ($p < 0.05$). These findings indicate that, while the overall maturity levels of PMOs remain relatively uniform across different government agencies, some specific aspects of project management implementation differ. This may be due to variations in project governance structures, resource allocation strategies, or organizational mandates between ministries, CGAs, and REAs.

Focus group

The focus group was designed to deepen the understanding of differences identified through the quantitative analysis and to explore the underlying institutional and contextual factors affecting project management maturity in Kazakhstan's public sector. The qualitative findings offered a deeper probe into the reasoning behind observed maturity levels – revealing perceptions, structural constraints, and practitioner experiences that are not readily captured through survey data alone.

Theme #1: Perceptions of maturity assessment

Participants generally agreed that the self-assessment provided a reasonable reflection of their agency's maturity. However, some emphasized that maturity is not a fixed state, but a dynamic process shaped by evolving practices, leadership priorities, and structural

Tab. 4: Results of the project management office maturity *t*-test.

Indicator	t-Statistics (Min vs CGA)	p-Value (Min vs CGA)	t-Statistics (Min vs REA)	p-Value (Min vs REA)
General description of the government agency	1.5766	0.1239	0.4848	0.6311
Management control	1.8666	0.0701	−1.1199	0.2696
Benefits management	1.3992	0.171	−1.7925	0.0809
Financial management	1.6084	0.1165	−0.6599	0.5132
Stakeholder engagement	0.8377	0.408	−1.7558	0.087
Risk management	0.8675	0.3916	−2.5131	0.0162
Organizational governance	1.38	0.1764	−2.394	0.0217
Resource management	0.672	0.5062	−1.4623	0.1517
Overall organizational project management maturity	−0.1049	0.917	−1.8952	0.0664

reforms. One respondent noted that the tool required periodic revision to reflect institutional progress, while another viewed the assessment as an important step in building internal awareness, even if it underestimated certain efforts. There was shared recognition that maturity is an evolving process, and periodic reassessment is necessary to reflect institutional shifts.

Theme #2: Institutional factors shaping maturity differences

When discussing variation in maturity across agencies, participants pointed to several influencing factors. Central agencies were perceived to have stronger institutional mandates and more developed digital infrastructure, while regional agencies often demonstrated greater operational engagement, especially in implementing national projects. Differences in staff qualifications, leadership support, access to certification, and financial resourcing were frequently cited as underlying causes of disparity. Notably, both regional and central representatives agreed that leadership involvement was a key determinant of maturity, regardless of the agency's position in the hierarchy. These qualitative insights provide deeper context for the statistically significant differences observed in the survey data, particularly in areas such as Management Control, Benefits Management, Stakeholder Engagement, and Risk Management. While maturity levels vary across agencies, the focus group findings suggest these disparities are closely tied to institutional capacity, culture, and strategic commitment to project-based governance.

Theme #3: Barriers to advancing maturity

Participants highlighted a range of systemic and organizational barriers that constrain the advancement of project management maturity in government institutions. These barriers were both external, rooted in governance and regulatory frameworks, and internal, tied to operational and administrative practices.

Externally, several respondents emphasized the important coordinating role of the NPO and acknowledged its existing mandate within the current institutional framework as an interagency forum. However, they noted that its authority could be further strengthened to support the enforcement of common standards and the consistent implementation of project management practices across government bodies. The lack of regulatory mechanisms – such as mandatory certification, minimum professional experience requirements for project leadership roles, and defined career path trajectories for project professionals in the public sector – was also cited as a limiting factor for the professionalization and long-term institutionalization of project-based governance.

Internally, recurring constraints included bureaucratic duplication, fragmented reporting channels, and a lack of clarity in the distribution of project-related roles and responsibilities. Some participants also pointed to inefficiencies in administrative routines, where overlapping reporting requirements contribute to unnecessary workload. More broadly, the institutional culture surrounding project-based governance was identified as a barrier in some agencies. Project management is still occasionally perceived as an additional

administrative burden rather than as a strategic tool, which limits its adoption and undermines commitment at both operational and leadership levels. In a few cases, respondents noted that the functional nature of their agency presents structural constraints to applying standard project management models. In addition, insufficient institutional incentives for project offices and limited leadership engagement were perceived as factors that inhibit progress. Several participants underscored that capacity-building remains inconsistent, and that more systematic efforts are needed to strengthen project management competencies across the public sector.

Theme #4: Enabling practices and local innovations

Despite institutional challenges, participants shared a range of encouraging practices that have supported the development of project management within their agencies. Several respondents emphasized their agencies' active participation in nationally coordinated initiatives which fostered interdepartmental collaboration and underscored the strategic importance of project-based approaches in achieving national priorities. Leadership engagement was also identified as a key enabling factor, especially in the context of high-profile national projects. In regional administrations, the direct involvement of deputy-level officials was instrumental in elevating the visibility and perceived value of project management efforts, thereby encouraging broader institutional support. Participants noted that the way agencies organize internal processes, engage leadership, and coordinate across departments can significantly influence implementation outcomes. In many cases, active support from PMO teams and senior officials helped translate strategic goals into practical results. These examples underscore the importance of internal ownership and initiative in strengthening a project-oriented culture.

Theme #5: Recommendations for systemic support

Participants proposed a range of measures to support the advancement of project management maturity in the public sector. These included embedding project performance indicators into executive evaluations, recognizing certified staff through career incentives, and integrating digital dashboards into decision-making processes. Respondents also emphasized the importance of reducing bureaucratic duplication, institutionalizing regular peer-learning forums and interagency exchange, and strengthening the role and mandate of NPO to ensure coordination and methodological consistency. In addition, several participants noted the need to formally acknowledge the strategic role of PMOs within government agencies and to elevate their institutional status to ensure continuity, authority, and cross-functional influence. There was broad agreement that sustainable progress depends not only on tools and frameworks but also on leadership commitment, professional development, and coordinated governance.

DISCUSSION

The study's findings reveal that the maturity level of project management across most government agencies in Kazakhstan is situated at the first and second levels of development. To foster effective collaboration and sustainable growth in project management practices, it is essential that the maturity level of a PMO aligns closely with that of its parent organization, ideally matching it or exceeding it by no more than one level. When such an alignment is achieved, both the PMO and the agency can evolve in tandem, incrementally refining and institutionalizing management processes.

However, a significant disparity in maturity levels (a gap of more than one level) can lead to organizational imbalances, including increased tension, reduced staff adaptability, and professional burnout. In an environment where the PMO has a higher level of maturity than the organization, it can initiate the introduction of advanced methodologies and practices to which the government agency is not yet ready to adapt. This, in turn, can lead to resistance to change, inefficiency of implemented processes, and difficulty in implementing project management at the system level.

Quantitative analysis using ANOVA and *t*-tests confirmed the presence of statistically significant maturity gaps across different government structures. These findings underscore the need for targeted interventions aimed at harmonizing project management frameworks within and across institutions. Strengthening management controls, enhancing stakeholder engagement, and promoting standardized methodologies are key to narrowing these gaps. The overall trend suggests that PMOs within Kazakhstan's public

sector are moving toward more structured and consistent practices, driven by regulatory reforms, capacity-building initiatives, and knowledge dissemination.

Furthermore, the study indicates that most PMOs have progressed beyond the initial phase and now occupy a transitional stage of maturity. This suggests a growing institutional commitment to project management, as evidenced by the adoption of structured, repeatable processes across CGAs, ministries, and REAs. The increasing presence of PMOs in higher maturity categories signals the positive impact of recent reforms and policy enhancements.

To support continued progress, it is essential to reinforce regulatory and institutional frameworks. Developing human capital through targeted training and certification programs – aligned with international best practices – is critical to improving competency across the project management workforce. A valuable model for Kazakhstan is the U.S. Federal Acquisition Certification for Program and Project Managers (FAC-P/PM), which establishes standardized requirements and ensures personnel readiness. Implementing a similar system domestically would accelerate PMO development, enhance project delivery, and facilitate integration into national governance structures.

To complement these findings and deepen interpretation, a qualitative focus group was formed with project management practitioners from central and regional government agencies. This phase provided contextual insights into maturity variations, institutional constraints, and internal dynamics that cannot be fully captured through self-assessment tools. While the survey revealed measurable gaps – especially in management control, stakeholder engagement, and benefits realization – the focus group helped explain the institutional and cultural factors behind these patterns. Participants emphasized the importance of leadership support, internal ownership, and capacity-building as key drivers of progress. They also noted that limited incentives for PMOs, government project professionals in general, fragmented accountability, and the perception of project management as an administrative burden still hinders its integration into core governance. Conversely, enabling practices such as digital innovation, proactive engagement by senior-level, increased interagency collaboration, and alignment of agency programs to national priorities were viewed as a gradual shift toward more embedded, performance-focused project management cultures. These insights reinforce the need for a combined focus on structural reform and institutional culture to support systemic progress.

Given that the study relies on self-assessment data, the potential for subjective bias must be acknowledged. Although self-assessment is a widely accepted approach for evaluating project management maturity, it is susceptible to over- or underestimation due to individual perceptions, varying organizational cultures, and differing levels of project management literacy among respondents. To mitigate these risks, measures were implemented, such as providing clear assessment guidelines, ensuring respondent anonymity, and validating responses against policy documents where available. Nonetheless, future studies would benefit from triangulating self-assessment data with external evaluations to enhance objectivity and credibility.

Measures were taken to enhance the reliability of responses, including providing clear evaluation guidelines, ensuring anonymity to reduce social desirability bias, and cross-validating responses against documented policies where possible. Despite these safeguards, self-evaluation results should be interpreted with an awareness of potential subjectivity. Future studies could benefit from complementary external assessments to further validate the findings.

According to the Law on the Civil Service of Kazakhstan (2015), heads of government agencies are crucial in forming and operating PMOs, providing strategic guidance and relevant competencies. The National Standard of Kazakhstan (2022) outlines key competencies for project management managers, ensuring consistency, promoting professional development, and aligning with international standards (Table 5).

A comparative analysis shows that heads of government agencies lack some technical competencies in project management as outlined by the National Standard of Kazakhstan. This gap can limit project management effectiveness, reducing the maturity of PMOs and hindering the adoption of project-based approaches in the public sector. Amendments to legislation are needed to mandate competencies for managing project content, risks, and quality.

CONCLUSIONS

This study confirms that Kazakhstan has already established a foundational methodological framework for the institutionalization of project management in the public sector. Regulatory documents, national standards, and procedural guidelines provide the structural basis for further advancement. However, the effectiveness of these instruments remains limited without comprehensive and coordinated reforms across legal, institutional, and human capital dimensions.

Tab. 5: Comparative characteristics of the competence of the manager and the chief of staff of the government agency of the Republic of Kazakhstan.

Nº	Competencies according to the national standard	Competencies according to the law
1	Integration management	Integration management
2	Stakeholder engagement	Stakeholder engagement
3	Content management	<i>Absent</i>
4	Resource management	Resource management
5	Managing deadlines	Managing deadlines
6	Cost management	Cost management
7	Risk management	<i>Absent</i>
8	Quality management	<i>Absent</i>
9	Procurement management	Procurement management
10	Communications management	Communications management

First, legislative amendments are needed to create the legal conditions necessary for the full institutionalization of project management within government agencies. In particular, introducing mandatory certification requirements for heads of departments and structural units will help ensure that those in leadership roles possess the requisite project management competencies. This will significantly enhance the quality and consistency of public project implementation.

Second, the training and professional development systems for civil servants must be modernized. Educational programs aligned with international project management standards, combined with career incentives for certified personnel, will improve both individual competencies and organizational capacity. A structured approach to professional development will play a critical role in embedding project management practices within the public sector.

Third, it is recommended that government agencies leverage external expertise by engaging experienced project managers from the corporate and private sectors. Entering into civil law contracts with these professionals will enhance the technical and managerial capabilities of PMOs, while fostering knowledge exchange between sectors. This collaboration can strengthen public sector project execution and accelerate institutional learning.

To ensure the systematic development of project management across government agencies, a performance evaluation system for PMOs should be introduced, supported by a maturity rating mechanism. Regular assessments will not only track progress, but also identify weaknesses and guide strategic interventions. The use of systems engineering principles will facilitate ongoing monitoring, adjustment, and optimization of project management practices. Such a dynamic management model will promote transparency, predictability, and efficiency in public project execution.

The proposed rating system can also serve as a motivational tool, encouraging agencies to adopt higher standards of project management. Over time, this will contribute to more effective implementation of national strategies, stronger institutional capacity, and the achievement of long-term socioeconomic development goals.

This study contributes to addressing a critical gap in the literature on the maturity of government PMOs by offering a detailed analysis of their current status, key challenges, and developmental prospects. It provides valuable insights for both scholars and practitioners engaged in the modernization of public administration in Kazakhstan and in other contexts with similar institutional conditions.

Future research should build on these findings by developing a national framework for evaluating and benchmarking PMOs. This next phase in the evolution of public project management in Kazakhstan will support broader institutional reforms and enhance the professional capabilities of civil servants. In doing so, it will provide a foundation for sustained improvement in governance, project performance, and policy delivery.

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APPENDIX 1

Tab. 1: A self-assessment survey tool used for assessing the maturity of project management offices of a government agency.

Nº	Indicator	Answer choices
1	General description of the government agency	a) Management processes are usually not documented or absent; they can be managed according to individual management preferences b) GA has key employees with specialized knowledge, thanks to which the authority is able to repeat past achievements. However, there may be an unclear distribution of responsibilities, uncertainty, and inconsistency in the objectives of the activity c) Management and technical processes are documented, standardized, and integrated with other management processes of GA. The top management is involved in the management and actively supports it d) The activities of GA are controlled using quantitative management methods. The authority sets quantitative goals in the field of quality and productivity e) GA is mainly focused on optimizing processes that are managed using quantitative methods
2	Management control	a) Projects are implemented and managed according to the individual preferences of the management b) The GA staff understands the concept of project management; the authority has its own experts, experienced project managers working on key projects c) GA has a centralized and documented approach to the project management lifecycle, which is applied to all projects by specially trained staff d) Project management is a key change management tool in GA. The project focuses on improving the implementation process by measuring and analyzing performance e) To achieve the goals of GA, a project approach is applied, which is generally accepted and considered optimal for implementing changes in the body
3	Benefits management	a) GA is somewhat aware that the concept of economic benefits is different from the concept of project outputs b) Economic benefits are a necessary element of the implementation of projects in GA c) There is a permanent structure in GA to identify the economic benefits resulting from the project and monitor their implementation. This structure is managed centrally d) Economic benefits management is integrated into the project management system. Much attention is paid to the effectiveness of GA, which is determined by the results of projects e) Economic benefits management is integrated into the organizational approach to change management and is part of the organizational strategy
4	Financial management	a) There is little or no financial management at the project level, reporting on project expenditures and monitoring them b) The total cost of the project is not tracked, and there is no reporting on it c) GA has centrally established standards for financial management of the project lifecycle d) GA is able to effectively prioritize investment opportunities, taking into account the availability of financial resources f) The financial control of an individual project is fully integrated into the financial control of GA
5	Stakeholder engagement	a) Involvement of stakeholders and communication with them is rarely carried out b) Some projects take into account the interests of stakeholders, but this is due more to the personal initiative of project managers than to the structural approach used in GA c) GA uses a centralized and structured approach to involve stakeholders in the project and communicate with them. This approach is used in the implementation of all projects d) Special methodologies are used to analyze and effectively involve stakeholders in the project. Quantitative methods serve as the basis for evaluating the achieved effectiveness e) Communication with stakeholders is optimized due to extensive knowledge about them, which contributes to the achievement of project objectives. Actions are being taken to continuously improve the processes of involving stakeholders in the project and working with them

Continued **Tab. 1:** A self-assessment survey tool used for assessing the maturity of project management offices of a government agency.

Nº	Indicator	Answer choices
6	Risk management	a) It is carried out minimally. The risks are documented, but there is no active management of them b) It is used in projects, but there is variability in approaches to risk management, which leads to different levels of its effectiveness c) It is based on a centralized process that is related to the organizational risk management policy and is applied continuously d) It is effectively used and implemented in the GA management system f) It is embedded in the organizational culture and underlies decision-making within the framework of projects. In GA, actions are being taken to continuously improve risk management processes
7	Organizational governance	a) Informal project management is carried out, but there is no clear formal definition of roles in the project b) From an organizational point of view, project management is beginning to take shape. Roles and responsibilities are fickle, as are lines of responsibility c) Centralized organizational control applies to all projects d) There are transparent decision-making processes within the project, which are implemented in organizational governance. Project management responsibilities are included in the role descriptions f) The lines of responsibility are clearly traced to the level of senior management, and the responsibilities of employees are clearly defined
8	Resource management	a) The need for effective resource management for the successful implementation of projects is formally recognized b) The allocation of resources in GA is carried out according to the appropriate approach to their planning and management. However, there is a lack of consistency when using this approach c) GA has a centrally established set of procedures and management processes for allocating, planning, and managing resources d) Resource management is considered at the strategic level of GA f) Resources are optimally allocated. Actions are being taken to continuously improve resource management processes
9	Overall organizational project management maturity	a) GA recognizes the difference between a project and a day-to-day activity. Projects can be implemented informally, without specific standards, processes, and control systems b) Each project is implemented using procedures that meet a certain standard c) There are in-house project management processes that are centrally controlled d) Data on the effectiveness of project management is documented and used to improve its quality, as well as to predict future results f) Continuous improvement of project management processes, as well as proactive management of problems and technologies are carried out to measure the effectiveness of projects and optimize processes

APPENDIX 2

Tab. 2: A semi-structured focus group outline.

Nº	Question Theme	Guiding Questions
1	Accuracy of self-assessment results	Do you feel that the self-assessment results accurately reflect the current level of project management maturity in your agency? Probes: Were there any indicators that felt over- or underestimated? Which dimension seemed most accurate or most debatable?
2	Factors explaining maturity differences	What factors, in your opinion, explain the differences in maturity levels between regional and central agencies? Probes: Are they related to leadership, structure, resources, or something else? Do regional agencies face different challenges than central?
3	Barriers to advancing maturity	What are the key internal or external barriers that hinder your agency's ability to advance to a higher maturity level? Probes: Is it about institutional resistance, lack of tools, or unclear roles? Are there systemic or legal limitations?

Continued **Tab. 2:** A semi-structured focus group outline.

Nº	Question Theme	Guiding Questions
4	Enablers and success practices	Can you share any practices or decisions that helped strengthen project management in your agency? <i>Probes: Have specific methodologies, leadership, or collaboration contributed? What worked well?</i>
5	Recommendations for improvement	What actions or support measures would help improve project management maturity in the public sector? <i>Probes: Should there be centralized standards, capacity-building programs, or digital tools? What is the most urgent step?</i>
6	Feedback on the assessment tool (optional)	Do you think the survey tool captured the reality of project management in your agency? <i>Were the questions clear and relevant?</i> <i>Would you suggest any changes?</i>

APPENDIX 3

Tab. 3: Current maturity level of project management offices in the ministries of Kazakhstan.

Ministry Code	General description of the government agency	Management control	Benefits management	Financial management	Stakeholder engagement	Risk management	Organizational governance	Resource management	Overall organizational project management maturity	Average maturity level
Ministry 1	4	4	3	5	3	3	2	2	1	3.0
Ministry 2	2	3	3	2	3	2	2	3	2	2.4
Ministry 3	2	1	1	2	1	1	1	2	1	1.3
Ministry 4	3	3	4	3	1	4	2	3	1	2.7
Ministry 5	1	1	2	2	1	1	2	1	1	1.3
Ministry 6	2	2	2	1	1	3	3	1	1	1.8
Ministry 7	3	4	3	5	4	2	3	3	1	3.1
Ministry 8	1	2	3	3	2	2	3	3	1	2.2
Ministry 9	1	1	2	2	3	2	1	1	1	1.6
Ministry 10	1	1	1	2	2	1	1	1	1	1.2
Ministry 11	2	4	3	5	2	1	1	2	3	2.6
Ministry 12	1	1	2	2	3	3	2	3	1	2.0
Ministry 13	4	4	3	3	5	4	5	3	3	3.8
Ministry 14	3	3	4	4	5	2	3	3	2	3.2
Ministry 15	1	1	2	2	1	1	1	1	1	1.2
Ministry 16	2	3	4	2	4	1	3	3	1	2.6
Ministry 17	5	4	4	5	4	3	3	1	1	3.3
Ministry 18	2	3	3	3	2	2	2	3	1	2.3
Ministry 19	2	3	3	3	2	2	2	3	1	2.3
Ministry 20	1	1	2	2	1	1	1	1	1	1.2
Ministry 21	1	1	2	2	1	1	1	1	2	1.3

Tab. 4: Current maturity level of project management offices in the central government agencies of Kazakhstan.

Central government agency code	General description of the government agency	Management control	Benefits management	Financial management	Stakeholder engagement	Risk management	Organizational governance	Resource management	Overall organizational project management maturity	Average maturity level
CGA 1	1	1	2	3	1	2	2	1	1	1.6
CGA 2	2	3	3	2	3	2	2	3	2	2.4
CGA 3	2	1	1	2	1	1	1	2	1	1.3
CGA 4	1	1	2	3	1	2	2	1	2	1.7
CGA 5	1	1	2	2	1	1	2	1	2	1.4
CGA 6	2	2	2	1	1	3	3	1	1	1.8
CGA 7	3	2	3	2	2	2	1	3	1	2.1
CGA 8	1	2	3	3	2	2	3	3	2	2.3
CGA 9	1	1	2	2	3	2	1	1	1	1.6
CGA 10	1	1	1	2	2	1	1	1	1	1.2
CGA 11	1	1	1	1	1	1	1	1	2	1.1
CGA 12	1	1	2	2	3	3	2	3	1	2.0
CGA 13	2	3	3	3	2	2	2	3	1	2.3
CGA 14	3	3	4	4	5	2	2	3	1	3.0
CGA 15	1	1	2	2	1	1	1	1	2	1.3
CGA 16	1	1	1	1	1	1	1	1	1	1.0
CGA 17	3	4	4	4	5	2	2	3	1	3.1

Tab. 5: Current maturity level of project management offices in the regional executive agencies of Kazakhstan.

Regional executive agency code	General description of the government agency	Management control	Benefits management	Financial management	Stakeholder engagement	Risk management	Organizational governance	Resource management	Overall organizational project management maturity	Average maturity level
REA 1	1	1	2	3	1	2	2	1	1	1.6
REA 2	2	3	3	2	3	2	2	3	2	2.4
REA 3	2	3	3	4	5	3	3	2	2	3.0
REA 4	2	4	4	4	3	5	4	4	4	3.8
REA 5	2	3	4	2	3	3	4	1	2	2.7
REA 6	2	2	2	1	1	3	3	1	1	1.8
REA 7	3	2	3	5	4	3	4	3	2	3.2
REA 8	1	2	3	3	2	2	3	3	1	2.2
REA 9	2	4	4	5	3	3	2	3	2	3.1
REA 10	2	5	3	4	4	3	2	2	2	3.0
REA 11	2	3	2	2	2	3	4	2	2	2.4
REA 12	1	1	2	2	3	3	2	3	1	2.0
REA 13	2	4	4	3	5	5	3	3	3	3.6
REA 14	3	3	4	4	5	2	2	3	1	3.0

Continued **Tab. 5:** Current maturity level of project management offices in the regional executive agencies of Kazakhstan.

Regional executive agency code	General description of the government agency	Management control	Benefits management	Financial management	Stakeholder engagement	Risk management	Organizational governance	Resource management	Overall organizational project management maturity	Average maturity level
REA 15	1	1	2	2	3	2	2	2	1	1.8
REA 16	1	2	4	2	4	3	3	2	1	2.4
REA 17	3	4	4	4	5	2	2	3	1	3.1
REA 18	2	3	3	3	2	2	2	3	1	2.3
REA 19	2	4	3	3	2	2	4	3	3	2.9
REA 20	3	2	4	4	3	2	3	3	3	3.0