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Evaluation of the role of project management office (PMO) at P.XYZ based on risk to improve project performance

Fadhlillah Akmal Yusron[a*] and Yusuf Latief[a]

[a]*University of Indonesia, Indonesia*

C H R O N I C L E

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A B S T R A C T

The Project Management Office (PMO) has different roles, but if it is concluded that the existence of this PMO will be needed by the project. Factors contributing to project performance include support from the PMO. PMO at PT. XYZ will begin to be implemented starting in 2019. From 2019 to 2022 work on 3 project assignments from the local government. In practice, there were problems where 2 of the three projects experienced delays in completion and 1 other project experienced payment delays, where the risks to the project have not been optimally managed. This study aims to identify the role of the project management office (PMO) owned by PT. XYZ, identify risks in PMO management and identify the role of PMO that has the most influence on risk-based project performance at PT. XYZ. The research method used in this study is a survey method for several respondents where the previous questionnaire was validated by experts and a pilot survey was carried out and the results of the questionnaire will be analyzed using the SEM method. This is to be able to provide results if risk control in PMO management is carried out effectively or on target so that it can improve project performance at PT. XYZ.

1. Introduction

Despite the pandemic, Jakarta is committed to constructing a city that prioritises the well-being of its residents. Undoubtedly, the fulfilment of Jakarta's development requirements cannot just rely on the government. Therefore, it is imperative to garner support and foster collaboration among multiple stakeholders to effectively implement the diverse development plans in place. As part of Jakarta's goal to become a technologically sophisticated, environmentally sustainable, and culturally rich city, there are several infrastructure development initiatives underway. These initiatives focus on enhancing transit facilities, waste management systems, and commercial districts. PT. XYZ mandates the inclusion of an integrator for every project they undertake. This pertains to the implementation of a project that spans multiple years and is funded by various budget sources, including PMD. The duration of the project is determined by Governor's Regulations (PerGub), and effective monitoring is necessary to ensure that the project is executed in line with the set targets. Between 2019 and 2022, multiple construction projects have been underway, including the Jakarta International Stadium, the redevelopment of Taman Ismail Marzuki phases 1 and 2, and the Kampung Bayam HPPO Flats. PT. XYZ has implemented a project to enhance the administration of assignment and commercial projects. They have taken proactive and strategic measures by establishing a Project administration Office (PMO) in 2019. The PMO in the company is located inside the Directorate of Business Development, which oversees project management for projects held by PT. XYZ. The Project Management Office (PMO) operates independently from the project structure and reports directly to the Project Sponsor.

* Corresponding author.

E-mail address: fadhlillah.akmal@ui.ac.id (F. A. Yusron)

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PMOs typically fulfil several tasks, but their necessity for a project is determined based on evaluation. Project success is influenced by various factors, one of which is the support provided by the Project Management Office (PMO) (Rabechini, 2022). A Project Management Office (PMO) is an organisational structure consisting of divisions or departments that are responsible for establishing standardised project procedures related to governance and promoting the exchange of resources, methodologies, tools, and techniques (PMI, 2017). The PMO is a structured framework that establishes standardised governance for project processes and enables the utilisation of diverse resources, methodologies, technologies, and approaches. The responsibilities of a PMO might vary from offering support functions in project management to directly managing one or more projects (PMBOK 6th Edition). The Project Management Office (PMO) at the task provider or project owner is primarily responsible for developing processes and leading projects, managing contracts, implementing and maintaining digital tools for project monitoring, providing advice and forming the project team, and identifying project risks (McKinsey Capital, 2019).

Previous research indicates that there was no substantial input from project management office (PMO) to project performance in terms of time. This lack of contribution resulted in blackouts, leading to large losses (Hutasoit, 2016). In addition, the involvement of the Project Management Office (PMO) in human resources (HR) management can have an impact on project performance and subsequently affect the overall performance of the firm (Baynal et al., 2016). The project process must be meticulously structured to effectively accomplish certain deliverables for customers (Perdana, 2013). In addition to that, the elements that contribute to the lack of effectiveness of the PMO include the organisational structure, an inconsistent disposition matrix, company goals, resources, and organisational culture. These aspects indicate that the PMO has not made a substantial impact on project performance (Hutasoit, 2016). The role of the PMO in HR management has been ineffective in the stages of HR planning, management, and HR development, resulting in a negative influence on project performance (Baynal et al., 2016). Organisations that are driven by projects rely heavily on the success of the projects they undertake. These enterprises engage in several intricate initiatives simultaneously (Perdana, 2013). Salamah and Alnaji (2014) identified several factors that contribute to the ineffectiveness of a Project Management Office (PMO), including limited authority to make critical choices, reliance on a strict project management methodology, a lack of empowerment to take essential actions, and disagreements over resources. Keown and Tuchin (2018) define risk as the possibility of experiencing an unfavourable event, which is measured operationally as standard deviation. Hanafi and Abdul Halim (1995) define risk as the extent of the difference between the anticipated return (ER) and the realised return. Effective risk management minimises the occurrence of events that have the potential to disturb the stability of current operations inside the firm. The PMO is responsible for implementing and overseeing the project management technique or organisational standards. It aligns with the widely utilised Enterprise PMO model (Silvius, 2021). The presence of competent human resources is essential for a Project Management Office (PMO), as the calibre of individuals inside it directly impacts the overall quality of the PMO (PMO Professional Indonesia, 2020). The amount of authority assigned to a PMO also plays a significant effect in enhancing project performance. (Hutasoit, 2016).

2. Literature Study

2.1 Pmo concept

An organizational structure that helps to standardize project-related governance procedures and supports a variety of resources, approaches, tools, and strategies is the Project Management Office (PMO), often termed the Project Management Department. (PMI, 2017). According to Axelos (2013), PMO is an organizational structure that manages portfolios, programs and projects where PMO includes one or several physical/virtual structures, for example permanent or temporary structures. Meanwhile, according to PMO Global Alliance (2017), PMO is a physical entity within an organization that centrally carries out functions related to projects, programs or portfolio management activities, where PMO can be interpreted according to the specific needs of the stakeholders it serves, this makes the structure and configuration PMO is unique to each organization.

2.2. Risks in PMO Management

Risk is defined by Keown and Tuchin (2018) as the possibility of an undesirable result, or standard deviation in operations parlance. When the actual return is significantly different from the anticipated return (ER), we say that there is risk (Hanafi & Abdul Halim (1995)). Hadi and Budiawan (2016) state that risk is:

a. Chance of loss – the chance of loss
b. Possible loss – the possibility of loss
c. Uncertainty - uncertainty
d. Deviation of reality from the results expected – the dispersion of actual from expected results

The definition of risk can be summarized as a state that results from uncertainty, leading to potential negative outcomes. When building and administering the Project Management Office (PMO), there are both external and internal hazards that can impact the PMO organization. In order to ensure that the PMO organization can contribute positively to both the projects

it manages and the wider firm, it is necessary to neutralize negative risks and optimize positive risks. PMMajik (2021) identifies seven key hazards that the Project Management Office (PMO) must comprehend during its implementation: scope, cost, time, technology, staff, communication, and procurement.

2.3. Relationship between Risk in PMO Management and Project Performance

An essential part of project management is identifying and mitigating risks. Negative outcomes from unfavorable practices may slow down progress or even cause the project to fail (PM Majik, 2021). There are a number of benefits to implementing PMO management, especially for companies that take on several large projects of varying degrees of complexity. According to PMO Profesional Indonesia (2020), the Project Management Office (PMO) may improve project governance by keeping an eye on various procedures, changes, disagreements, risks, and decisions to make sure the project runs well. The Project Management Office (PMO) has the important duty of managing risk effectively. Potential hazards are identified and documented in the early phases of a project. Afterwards, the dangers are reported without being assessed. The PMO must continuously monitor and analyze potential threats, both old and new. If this is done, the risk will have a better probability of not becoming an issue and impacting the project's performance (PM Majik, 2022). Improving project performance may be achieved by encouraging project companies to embrace a culture that includes seven essential traits: boldness, stability, creativity, attention to detail, outcomes orientation, people orientation, and team orientation. Fulfilling specific responsibilities is key to successfully establishing organizational culture on the field. This task may be delegated to the Project Management Office (PMO) (Darmanto et al, 2019). The factors of Project Management Office, along with their corresponding indicators, are obtained as follows:

Table 1
Factors of implementations Project Management Office

Variable	Subvariable	Reference
Variable X1 The role of the PMO	Process, methodology and standardization	Hutasoit (2006), Salamah & Alnaji (2014), PMI (2013), Perdana (2013), Hutasoit (2016)
	Knowledge management	
	Human Resources	
	Level of Authority	
Variable X2	Scope	Antony & Gupta (2019), Whitney & Daniels (2013), Asmarantaka (2014), Hadi and Budiawan (2016), Nuswantoro (2020), Brook & Pagnanelli (2014)
	Cost	
	Time	
	Technology	
	Personnel	
	Communications	
	Procurement	
Variable Y	Time performance	PMBOK (2017), Katou (2018)
	Cost performance	

2.4. Development of Hypothesis

Constructing robust models such as Partial Least Squares Structural Equation Modeling (SEM-PLS) depends on carefully formulated hypotheses. Through a thorough examination of current literature and theoretical perspectives, careful hypotheses were formulated to investigate the relationship between relevant components in bridge maintenance performance.

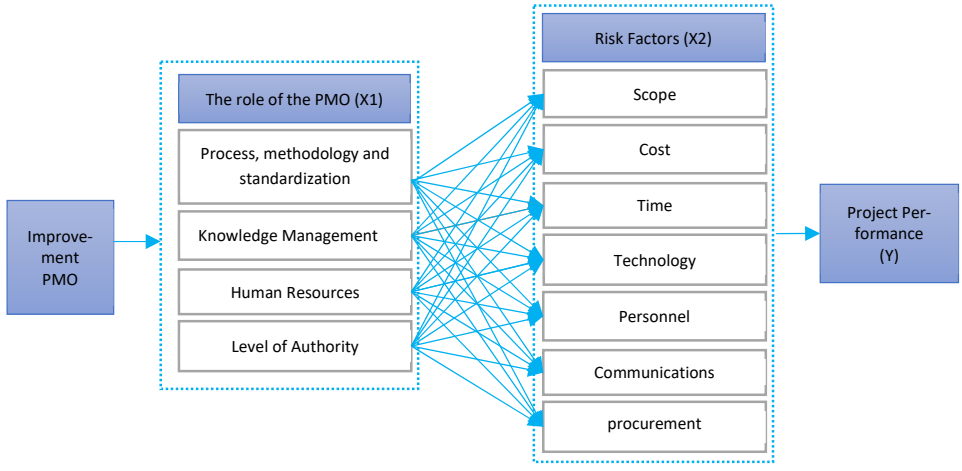

Fig. 1. Conceptual framework

- Hypothesis H1: Process, Methodology and standardization ($X_{1.1}$) positively affected Project Performance (Y).

- Hypothesis H2: Knowledge Management ($X_{1.2}$) positively affected Project Performance (Y).
- Hypothesis H3: Human Resources ($X1._3$) positively affected Project Performance (Y).
- Hypothesis H4: Level of Authority ($X1._4$) positively affected Project Performance (Y).
- Hypothesis H5: Scope ($X_{2.1}$) positively affected Project Performance (Y).
- Hypothesis H6: Cost ($X_{2.2}$) positively affected Project Performance (Y).
- Hypothesis H7: Time ($X_{2.3}$) positively affected Project Performance (Y).
- Hypothesis H8: Technology ($X_{2.4}$) positively affected Project Performance (Y).
- Hypothesis H9: Personnel ($X_{2.5}$) positively affected Project Performance (Y).
- Hypothesis H10: Communications ($X_{2.6}$) positively affected Project Performance (Y).
- Hypothesis H11: Procurement ($X_{2.7}$) positively affected Project Performance (Y).

To assess Project Performance, two distinct parameters or items were defined namely time performance (Y1) and cost performance (Y2). The two parameter addressed the procedural aspects to improve customer contentment and project performance.

3. Method

3.1 Research Method

This study primarily utilized a quantitative approach, integrating data from survey questionnaires with qualitative perspectives from industry professionals to thoroughly examine project management office. The technique of assessing validity and reliability was improved by triangulating the data. The research strategy primarily involved the use of SEM-PLS to address intricate interactions between latent components and capture non-linear patterns. This way of synergy improved the accuracy of the research, allowing for reliable assumptions and recommendations for building a project management office in the organization.

3.2. Research Design and Data Collection Method

Prior to disseminating the questionnaire to participants, a meticulous validation process was conducted by soliciting feedback from domain experts. Furthermore, seasoned professionals with a minimum of 5 years of expertise in project management offer significant perspectives on the operation of project management offices (PMOs). The feedback received was utilized to enhance the stage 1 questionnaire by revising, adding, or reducing factors as necessary. The feedback provided by these seasoned experts served as the foundation for developing the questionnaire, as depicted in Table 2.

Table 2
Experts' Insight for Questionnaire

Expert	Insight (s)
E1 (Managing Director)	The risks faced by the PMO depend on the position in which the PMO is placed. In general, the PMO has a large role in project performance
E2 (General Manager)	PMO will have a good influence when it has good human resources
E3 (General Manager)	PMO must have the right and efficient tools to get significant project performance
E4 (Business Development Manager)	Cost risk is something that must be controlled properly
E5 (General Manager)	PMO is involved in creating the project scope so that monitoring can be carried out optimally

Table 3
Item Proposed for Questionnaire

Code	The role of PMD	Code	PMD role variable indicators
X1.1	Process, methodology and standardization	X1.1.1	Project management methodology instruction
		X1.1.2	Contractor procurement process procedures
		X1.1.3	Project handover process procedures
		X1.1.4	Control procedures for project finance
		X1.1.5	Control procedures for project risk
		X1.1.6	Standardization of project scheduling
		X1.1.7	Standardization of project feasibility
		X1.1.8	Standardization of project evaluation criteria
		X1.1.9	Standardization of project performance measurement
		X1.1.10	Standardization of project reporting mechanisms
		X1.1.11	Involvement in carrying out risk assessments, namely by identifying risks, categorizing them, and creating a probability vs impact matrix with the project manager before the project executed.
		X1.1.12	Capability of having a system to control changes to the scope, finance or project schedule
		X1.1.13	The ability to collect project lesson learned to develop and refine project management methodology
X1.2	Knowledge management	X1.2.1	Evaluation of work on previous development projects based on organizational goals
		X1.2.2	Knowledge transfer sharing on the project
		X1.2.3	Appropriate knowledge sharing on the project
		X1.2.4	Systematic knowledge management in project development

Table 3
Item Proposed for Questionnaire (Continued)

		X1.3.1	Professional career development for project managers and project staff
		X1.3.2	The availability of database about skills of project managers and project staff
		X1.3.3	Availability of project management training for project managers and project staff
X1.3	Human resources	X1.3.4	Ability of guidance or direction in the process of recruiting staff from outside the organization
		X1.3.5	Assist project managers in identifying the right people according to project needs
		X1.4.1	Provides authority based on divisions or individuals in monitoring projects within their domain
X1.4	Level of Authority	X1.4.2	There is a division of levels of responsibility for projects both within divisions and individuals
		X1.4.3	Measuring the performance of each division or individual against those within its domain
		X1.4.4	Intervenes in projects within its domain
Code	Risk Factors	Code	Risk variable indicator
		X2.1.1	Incomplete design
X2.1	Scops	X2.1.2	Project boundaries are unclear
		X2.1.3	Debate due to differences in perception of the content of the contract
		X2.1.4	Design changes
		X2.2.1	Complexity of budget disbursement in the internal environment of the assigner
		X2.2.2	Budget revision in the internal environment
X.2.2	Cost	X2.2.3	The project cost escalation calculation process takes too long
		X2.2.4	Late payment
		X2.2.5	Error estimating project costs
X2.3	Time	X2.3.1	Miscalculation of work duration
		X2.3.2	Late decision making
		X2.4.1	Damage to the device or equipment used
X2.4	Technology	X2.4.2	Lack of necessary devices or equipment
		X2.4.3	Platform dependent applications
		X2.5.1	Low staff motivation
X2.5	Personnel	X2.5.2	Shortage of labor
		X2.5.3	Lack of workforce competency
		X2.6.1	Difficulty of access to decision makers
X2.6	Technology	X2.6.2	The discussion process took too long
X2.7	Procurement of project performance	X2.7.1	The procurement process is constrained by funds
	Code		Project Performance Indicators
Y1	Time Performance		
Y2	Cost Performance		

3.3. Research Flow

The methods used in this research progressed through distinct stages, as shown in Fig. 2.

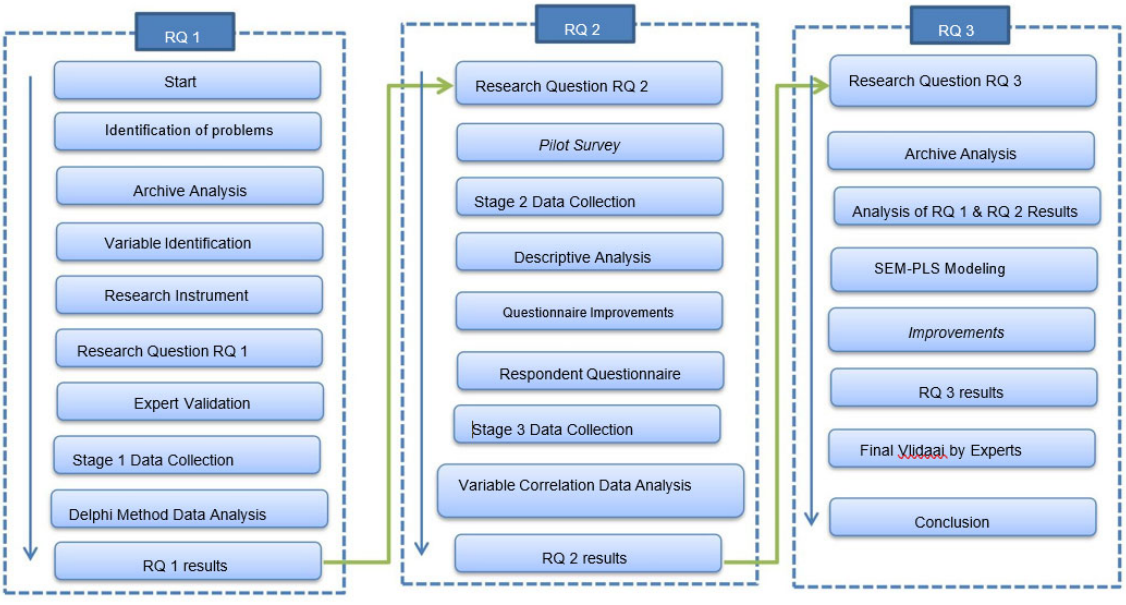

Fig. 2. Research Flow

The research commences by identifying issues pertaining to phenomena that arise within the Project Management Office (PMO) held by PT. XYZ, which serves as the subject of the case study. Next, the process involves preparing research topics and conducting archival studies. Once the research hypothesis was formulated, the next step was defining the variables. The

variables X1, X2, and Y in this study are then transformed into indicators. Subsequently, these indicators must undergo validation by professionals. The purpose of this expert validation stage is to verify the indicators that have been processed by the author before being provided to respondents. Subsequently, it is necessary to conduct an analysis and enhance the questionnaire based on advice provided by specialists. The indicators established by the author can only be modified by professionals, either by reducing or adding them. Once the signs have been checked, go to the next stage. Subsequently, the subsequent course of action entails the development of a preliminary survey questionnaire. The preparation of this pilot survey is a rigorous scientific process designed to assess respondents' comprehension of the produced questionnaire's content. Once the initial stage is completed and the questionnaire is deemed effective as a communication tool between researchers and respondents, the subsequent step involves distributing the questionnaire to the intended recipients. The subsequent phase involves doing data analysis to examine the correlation between the factors under investigation and incorporating input from respondents to enhance the development of the PMO position. After completing the data analysis, the subsequent stage involves utilizing the SEM-PLS method to construct a PMO role that effectively enhances project performance. Subsequently, the conclusive phase of validation is conducted by pertinent specialists in the implemented system development.

3.4. Partial Least Squares – Structural Equation Modeling (SEM-PLS) Analysis

The gathered dataset was subjected to thorough analysis using SEM-PLS with the aid of the SMARTPLS software. SEM-PLS was selected due to the effectiveness in resolving complex relationships among latent variables. Additionally, it is highly versatile, accommodating both reflective and formative constructs, as well as required smaller sample sizes compared to traditional SEM methods.

4. Results and Discussion

4.1 Model Analysis of Critical Success Factors

A structural framework was constructed to evaluate the basic relationships among factors in the hypothetical model. Due to the non-normal distribution, PLS–SEM was favored over covariance-based SEM for the thoroughness of such distributions (Leong, 2019). Smart PLS was used to validate the assumptions of the proposed model.

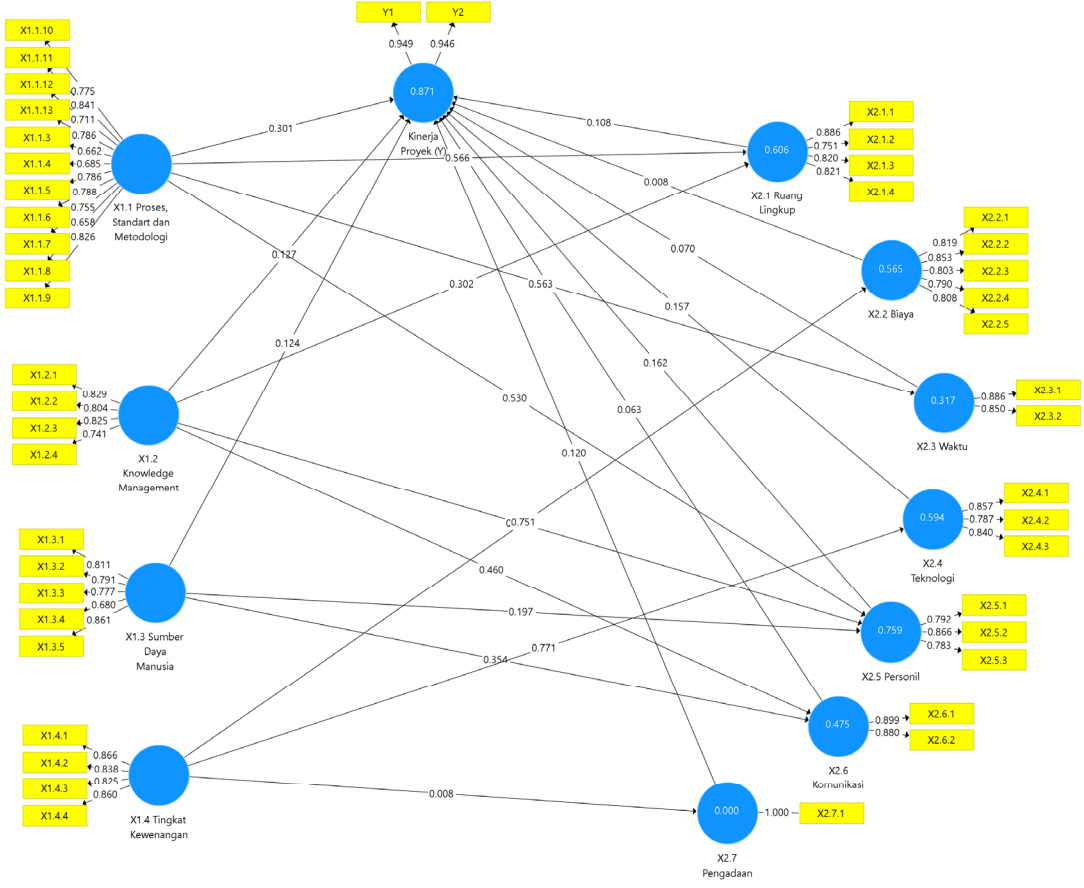

Fig. 3. Result from SMART PLS

R-squared, or the coefficient of assurance result 0.817. R-Square shows an extent of the reliant variable's variety that can be anticipated from the free factor. The outcome demonstrate the way that 81% ward variable variety can be anticipated from the free factor.

Table 6
Composite Reliability and AVE

	Cronbach's Alpha	Rho_A	Composite Reliability	Average Variance Extracted (AVE)
Project Performance	0.886	0.886	0.946	0.898
X1.1	0.923	0.927	0.935	0.569
X1.2	0.813	0.821	0.877	0.641
X1.3	0.845	0.863	0.890	0.618
X.14	0.869	0.869	0.911	0.718
X2.1	0.838	0.846	0.892	0.674
X2.2	0.873	0.876	0.908	0.664
X2.3	0.675	0.862	0.860	0.654
X2.4	0.772	0.781	0.868	0.686
X2.5	0.746	0.758	0.855	0.663
X2.6	0.737	0.740	0.883	0.791
X2.7	1.00	1.00	1.00	1.00

In surveying the primary - estimation model, different tests were directed, including inner dependability, focalized, and discriminant legitimacy standards. Measures, for example, Dijkstra-Henseler rho were utilized to decide the develop dependability. Focalized legitimacy was assessed through thing loadings, composite unwavering quality, and Normal Change Removed (AVE) values. Essentially, discriminant legitimacy was analyzed by evaluating connections between's possibly puzzling factors. As displayed in Table 4, just 3 variable which composite dependability and Rho - A qualities surpassed 0.50, portraying powerful build unwavering quality. AVE values greater than 0.50 supported the convergence of items to respective factors, thereby confirming factor validity. AVE below 0,50 will be eliminated.

4.4. Discussion

The (PMO), likewise called the Venture The executives Division, is an authoritative design that normalizes administration processes connected with projects and works with different assets, approaches, devices and procedures (PMI, 2017). As indicated by Axelos (2013), PMO is an authoritative design that oversees portfolios, projects and activities where PMO incorporates one or a few physical/virtual designs, for instance long-lasting or transitory designs. In the mean time, as per PMO Worldwide Coalition (2017), PMO is an actual element inside an association that halfway does capabilities connected with ventures, projects or portfolio the executives exercises, where PMO can be deciphered by the particular requirements of the partners it serves, this makes the construction and design PMO is exceptional to every association. The principal job of the PMO is as a designer and maintainer of systemic cycles connected with project the executives. The PMO goes about as a focal library for norms and as a specialist in conveying them. PMO likewise joins illustrations gained from a venture into an undertaking the board philosophy. As the designer and maintainer of these guidelines, the PMO likewise keeps up with layouts, structures and agendas that are created to facilitate the responsibility of task directors and groups.

The scope of methods and standards of the PMO performs a continuous development function for project management, because the PMO understands what must be done regarding the methodology and process and audits whether the implementation has been carried out correctly or not and whether the implementation produces a result or not.

Methodology is a system, techniques, procedures and rules used in a job. The approach that is often used is phase-based because this approach is the most general and easy to apply for both small, medium and large scale projects. Based on this approach, there is a sequence that must be followed in project management from the start to finish phase.

5. Conclusion

In conclusion, risk is part of project management, where the risk of having bad habits becomes a problem that impacts project progress and in extreme cases, can cause project failure. PMO management will bring many benefits, especially for organizations that run many large projects with varying levels of complexity. PMO can provide added value to project governance whose aim is to achieve project performance by monitoring various processes, changes, conflicts, risks and decisions taken. Managing risk is a very important task for the PMO. In practice, at the beginning of the project process, potential risks are identified and documented. Then risks are submitted and never reviewed. Meanwhile, what the PMO must do is continuously review risks (both existing and new). Doing this provides the best opportunity to stop the risk becoming a problem and impacting project performance.

Improving task execution should be possible by proceeding to support the execution of hierarchical culture in project associations which has the accompanying 7 (seven) qualities: development and hazard taking, tender loving care, results direction, individuals direction, group direction, forcefulness and dependability. Consequently, executing hierarchical culture in the field requires completing these obligations and obligations. This job can be appointed to the PMO.

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