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**Assessing the Level of Project Management  
Maturity in Real Estate Development Companies in  
Nepal**

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**ABSTRACT:**

This study is aimed at assessing the level of project management maturity of real estate development companies in Nepal. Real estate sector in Nepal has increasingly been facing problems related to delays in project schedule, overruns of cost and issues with quality. So, for improving project outcomes it is necessary to understand the current levels of project management maturity in real estate development companies in Nepal. Despite these problems there are few empirical contributions regarding organizational maturity in real estate sector. Thus, to address this gap this research is focused on evaluating companies' maturity level based on the ten domains of project management body of knowledge areas according to PMBOK. These ten knowledge areas offer an extensive way to identify the organizational key strengths and areas for improvement of the project.

This research was conducted using the quantitative research approach. Using structured Likert-scale questionnaires, primary data was collected from professionals such as project managers, engineers and senior management personnel from eight real estate companies. Geographically, the research primarily covers real estate development activities in major urban areas of Nepal like Kathmandu, Lalitpur, Pokhara and Chitwan where real estate development is concentrated. PMMM was selected for this study among other alternatives such as CMMI, OPM3, K-PMMM and P3M3. A five-level maturity model adapted from established PMMM has been used to evaluate organizational maturity. The data acquired from the Likert-scale survey questionnaire were analysed using the software named Jeffreys's Amazing Statistics Program (JASP). For the statistical analysis the mean for specific knowledge areas were calculated by averaging the mean scores of ten domains of knowledge areas according to PMBOK. Then the standard deviation was calculated to understand the variability or the consistency of the respondents' answers. To confirm the reliability of this research the reliability test was conducted using Cronbach's alpha.

The findings from the data analysis have revealed the achieved score of 3.44 indicating that the real estate construction companies of Nepal are at the upper end of Level 3 which is 'Defined'. This means real estate companies in Nepal have generally established standardized project management processes that are documented and followed across most projects. However, the score is still significantly below Level 4 quantitatively managed. So, the recommendations have been made for the improvement of risk management procedures, the introduction of formal scope change control, and for the development of sector specific project management guidance. This research is beneficial for academic literature as well as construction sector. It offers practical survey insights to policymakers that support their project to achieve more predictable and sustainable project outcomes.

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**KEYWORDS:** Project Management, Project management maturity, Real estate development, Project management knowledge areas, Nepal

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## Abbreviations

<b>AFP:</b>	Agence France-Presse
<b>CMM:</b>	Capability Maturity Model
<b>CMMI:</b>	Capability Maturity Model Integration
<b>CPM:</b>	Critical Path Method
<b>HRM:</b>	Human Resource Management
<b>IPMA:</b>	International Project Management Association
<b>JASP:</b>	Jeffreys's Amazing Statistics Program
<b>K-PMMM:</b>	Kerzner Project Management Maturity Model
<b>MoUD:</b>	Ministry of Urban Development (Nepal)
<b>NASA:</b>	National Aeronautics and Space Administration
<b>NLHDA</b>	Nepal Land and Housing Developers' Association
<b>OGC:</b>	Office of Government Commerce (UK)
<b>OPM3:</b>	Organizational Project Management Maturity Model
<b>P3M3:</b>	Portfolio, Programme, and Project Management Maturity Model
<b>PERT:</b>	Program Evaluation and Review Technique
<b>PhD:</b>	Doctor of Philosophy
<b>PM:</b>	Project Management
<b>PMBOK:</b>	Project Management Body of Knowledge
<b>PMI:</b>	Project Management Institute
<b>RII:</b>	Relative Importance Index
<b>SD:</b>	Standard Deviation
<b>SEI:</b>	Software Engineering Institute
<b>TQM:</b>	Total Quality Management

## 1 Introduction

Real estate and construction sector is a prime contributor to the growth and development of cities and economy of Nepal. The real estate construction sector worldwide is known as the prominent sector with large contributions to GDP and creation of employment opportunities especially for developing countries (World Bank, 2020). With rapidly increasing urbanization, population growth and more investment in residential and commercial projects, the dimensions and complexity of development projects have increased dramatically in Nepal (United Nations, 2019). Hence, efficient management of the project became one of the key success factors to deliver the projects in time and cost within quality standards. Despite this reality, most real estate development companies in Nepal have a very traditional and informal system of management with limited adoption of standardized project management methodologies.

This gap in growing complexity of projects vs management maturity can create risks for industry. International best practices focus on clear project governance, measurement of performance and learning by well-defined frameworks such as developed by the Project Management Institute (PMI, 2017). Despite this, the use of such frameworks in developing countries is still not consistent due to the existing lack of institutional and financial knowledge (Ofori, 2013). Therefore, the construction and real estate projects are often subject to time and cost overruns and inefficiencies which are the widely documented challenges in project-based sectors (Flyvbjerg, 2014). This chapter sets out the foundation for this research. The chapter starts with the background of the study, followed by the statement of the problem on which the research is based. It further elaborates the research questions and objectives of this study along with the significance and limitation of the research.

A key step towards improving the organization's performance is a maturity assessment of the organization using project management maturity level. Through maturity models the organizations are provided with frameworks from which they can analyze their capabilities, identify shortcomings and continuously improve their project management

practices (Kerzner, 2019). Without a clear and systematic understanding of current practices, strengths, and weakness, efforts to enhance project outcomes remain fragmented and reactive. Hence this study tries to measure real estate development company's project management maturity in Nepal, so that a basis diagnostic can be made for future strategic improvement in the real estate sector's sustainable development.

## **1.1 Background of Study**

Project management, in present context, has become an essential discipline for the organizations to gain strategic objectives and deliver value to their stakeholders. According to the PMI (2017), PM refers to the application of skills, knowledge, tools and techniques to project and plan the activities of the personnel and resources as per time, cost and quality that enables to meet requirements and deliver desired outcomes within the constraints. Kerzner (2009) more clearly states that maturity in PM is the state where a methodology has been standardized and the related processes have been set to such an extent that multiple successes become a high probability. A key concept for evaluating any organizational project management capability is their project management maturity. Rather than relying on individual efforts or ad hoc approaches, the well-planned organizations possess the institutionalized systems that enable predictable and successful project delivery (Cusick, 2019).

The concept of maturity originates from quality management pioneers such as Shewhart, Deming and Juran. They introduced systematic approaches to process, control and improve continuously (Cusick, 2019). Based on these foundations, the Software Engineering Institute developed the CMM which served as the framework for improving the work process through five levels (Paulk et al., 1993). This structure later became the blueprint for PM maturity models (Farrokh & Mansur, 2013). Even for the project-based sector like construction industry this framework was a boon for effective project management. In construction industry this framework helped to address the complex coordination between multiple stakeholders like developers, contractors, engineers and the regulatory authorities (Ackah, 2025).

Regarding the developing countries, the construction projects are highly affected by the lack of proper project management. These projects faced difficulties such as time delay, more cost hike than pre-estimation and use of unstandardized quality materials (Ackah, 2025). In Nepal, real estate development projects encounter problems like inadequate planning, weak coordination and limited use of formal PM methodologies (Niroula, 2025). Much research has been conducted internationally regarding the relation between PM maturity and success of the project (Cooke-Davies, 2002). But very little empirical research exists in the context of Nepal. So, this research aims to evaluate the PM maturity level of real estate development companies in Nepal.

## **1.2 Statement of the Problem**

PM maturity models provide organizations with systematic frameworks for evaluating their PM practices and facilitates to improve (Kerzner, 2009). These models allow the organizations to analyze their capabilities, improve their PM processes and enhance their overall project performance (Farrokh & Mansur, 2013). However, the effective application of maturity models require realistic assessment within specific organizations and related industries. In Nepal, rapid urbanization and demand for residential and commercial properties have fueled the growth of real estate development sector (Panthi, 2019). Despite the sector's economic significance, real estate development projects in Nepal faced difficulties such as time delay, more cost hike than pre-estimation and use of unstandardized quality materials. These challenges show that there are possible flaws in PM practices within this sector.

The PM activities of most real estate development companies in Nepal are carried out using informal methods based on personal experience rather than going through the well-defined processes owned by the organization (Niroula, 2025). As project complexity gradually increases, unsystematic and unstructured PM systems negatively affect project results. Research on construction projects in developing countries particularly in areas such as risk management, quality management and stakeholder coordination

demonstrates that companies frequently operate at low levels of process and practice maturity rarely (Ackah, 2025).

Although several research have examined PM maturity in different countries, but Nepal has very few studies on PM maturity. Most of the existing studies in Nepal have focused on construction delays, infrastructure governance, and risk management factors that are not entirely focusing on organizational wide PM maturity assessment. Without such assessment and research many organizations lack consistent information about their ongoing current capabilities and areas the need to be improved. Therefore, the central problem addressed in this research is the absence of empirical evidence regarding the PM maturity levels of real estate development companies in Nepal. Without understanding the current maturity level of PM practices, it is difficult for organizations, industry stakeholders and policymakers to implement effective strategies to improve project performance.

### **1.3 Research Questions and Objectives**

As determined from above research gaps, the need for assessing the levels of PM maturity in real estate development companies in Nepal is very important. To address these gaps, this research has following primary research questions.

1. What is the current level of PM maturity in real estate development companies in Nepal?
2. Which PM knowledge areas exhibit lower maturity levels?
3. To what extend are the PM knowledge areas applied in real estate development companies in Nepal?

Answering these questions is significant because this will provide an in-depth understanding of assessing the levels of PM maturity in real estate development companies in Nepal. To answer the above questions analytically following research objectives have been outlined:

1. To identify current PM practices adopted by real estate construction companies in Nepal.
2. To identify major improvement areas in PM practices.
3. To evaluate the extent to which PM knowledge areas are applied in real estate development companies in Nepal.

This research aims to address these questions from empirical as well as theoretical perspectives. Theoretically, this paper is grounded in underlining key concepts of various models and its theoretical foundations. The empirical research consists of the previous studies that are related to PM maturity and PM practices in Nepal in the field of construction and development sectors.

#### **1.4 Significance of the Study**

This research can be valuable for many stakeholders engaged in the real estate development of Nepal. First, this research contributes by establishing baseline information regarding PM maturity levels of real estate development companies in Nepal. This information can help companies discover their current situations and areas of improvement. Secondly, this paper contributes to academic literature on the PM maturity topic, especially regarding developing countries. As Nepal has very few studies on PM maturity, this research paper will increase the level of knowledge in this field. Finally, the research may also be of great help to industry stakeholders and policymakers as it would give them a clear picture of the PM abilities of the real estate sector and point out the areas where training, standards, or regulatory enhancements may be needed.

#### **1.5 Scope of the Study**

The scope of this research is categorized in terms of sector, geographical area and methodology. This research specifically concentrates on real estate development companies in Nepal engaged in residential and commercial construction. This research does not

cover other construction subsectors like infrastructure, hydropower and industrial construction.

Geographically, the research primarily covers real estate development activities in major urban areas of Nepal like Kathmandu, Lalitpur, Pokhara and Chitwan where real estate development is concentrated.

In terms of methodology, the research utilizes both quantitative approaches along with structured questionnaires among project managers, senior engineers as well as personnel in upper management in real estate development companies. They are subjected to statistical analysis using frequency distribution, percentage, mean value and SD methods to extract a maturity level of PM practices in the organization.

## **1.6 Limitations of the Study**

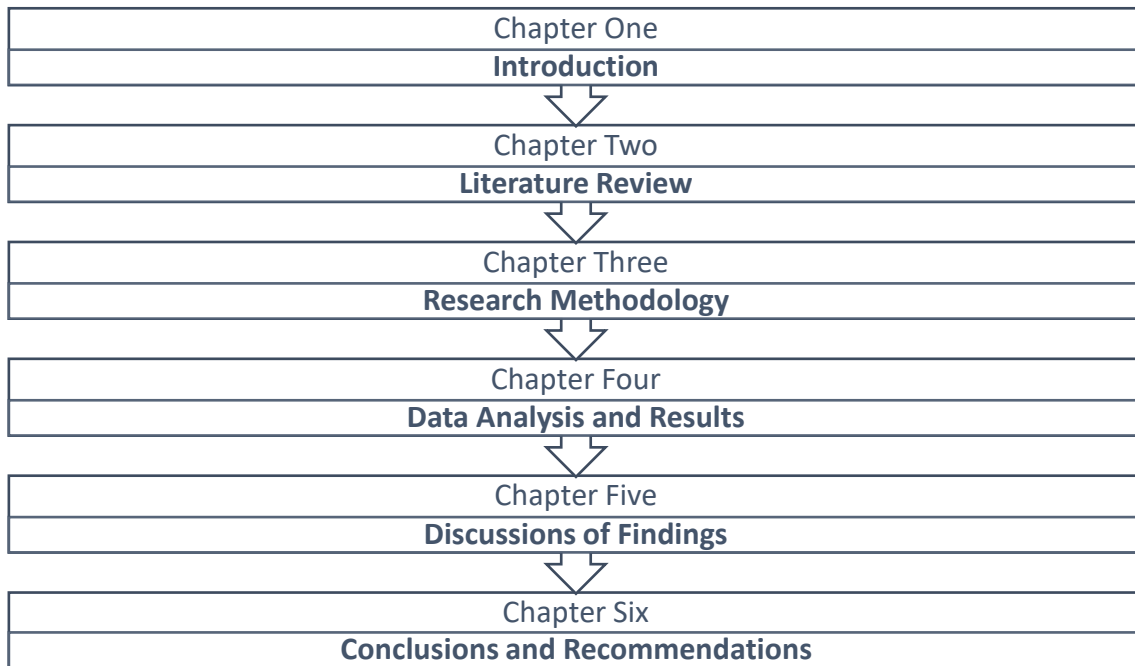
This research has considered following limitations when interpreting the results.

First, the scope of research only concentrates on real estate development sector therefore the findings may not be applicable to other construction sectors like infrastructure or hydropower. Second, the research relies on self-reported data which are obtained through questionnaires. The responses are the perceptions of respondents regarding their organizational practices the possibility of response bias may occur. Third, the sample of this study is small that is 77 respondents which may not reflect all real estate development companies of Nepal. Fourth, the research is based on a cross-sectional research design. So, the maturity level is measured at a single point in time and does not portray changes in PM practices over time. Finally, PM maturity models were originally developed in Western contexts and certain cultural or organizational characteristics specific to Nepal may not be fully captured by these frameworks.

## **1.7 Structure of the thesis**

Chapter one defines the overall purpose of the research. It provides a background of the study and the study gaps. The second chapter explores the literature that is correlated

to this research. The third chapter provides insights into the research methodology. The fourth chapter shows the data analysis and results. The fifth chapter shows the discussion based on the findings. Finally, the sixth chapter gives conclusions, limitations, recommendations and suggestions for future research.



**Figure 1.** Structure of thesis

## **2 Literature Review**

According to Kerzner (2009), PM maturity has become a key concept for organizations to enhance their project delivery capabilities and achieve results effectively and consistently. So, maturity models are the structured frameworks that empower organizations with practical means to assess current capabilities, identify gaps, and implement systematic improvements towards effective PM practices. These models explain how organizations mature from ad-hoc and reactive processes to defined, quantifiable and continuously improving management systems.

This chapter is divided into three sections that is theoretical review, empirical review and conceptual framework. The theoretical section highlights key concepts of various models and its theoretical foundations. The empirical section reviews the previous studies that are related to PM maturity and PM practices of real estate companies in Nepal. Finally, the conceptual framework explains the various variables used in this research.

### **2.1 Theoretical Review**

#### **2.1.1 Concept and Evolution of Project Management**

Today's modern PM concept has evolved through several stages influenced by developments in management, systematic thinking and organizational theory. According to Kerzner (2009), the origin of PM can be drawn back to the mid-twentieth century. To explain this clearly, during the 1950s and 1960s, PM techniques emerged in large engineering and defence programs. During that time large scale engineering and defence projects required structured coordination among multiple functional departments for their efficient functioning. Government agencies such as the United States Department of Defence and NASA adopted structured management methods to coordinate complex projects involving multiple contractors and technical disciplines.

So, at that time systems theory played an important role in shaping early PM practices. This theory is highlighted in considering the organizations as interlinked systems. Different sub-systems like finance, engineering and operations need to work with each other toward shared goals within this system. Other scheduling tools were also developed around this time like CPM and PERT.

PM expanded beyond defence and aerospace from the 1970s. It expanded into construction, information technology and manufacturing. Companies began to view PM as a competency, rather than just another technical discipline. By the early 2000s, PM was extremely closely associated with organizational strategy and competitive advantage. Standard frameworks and maturity models have been progressively adopted by most firms. These led to better project outcomes and more predictable success. Project success was no longer a matter of luck. (Kerzner, 2009).

### **2.1.2 Concept of Project Management Maturity**

The PM maturity is commonly understood as an indicator of how well an organization has developed its project-related capabilities. It reflects the degree to which processes, practices, and managerial approaches are formalized and consistently applied (Pasian, 2015; Grant & Pennypacker, 2006). Maturity means the extent of capability to control projects in an organization by a formal and repeatable processes (Pasian, 2015). Cooke-Davies and Arzymanow (2003) also define PM maturity as the capability of the organization to provide projects on time and budget by utilizing established processes and learning processes.

PM maturity is also defined as a measure of an organization's reliance upon processes, tools and methods of decision-making. Higher maturity levels will embrace integrated processes and standardized methods that provide for consistency and a greater probability of success of projects (Kerzner,2022). The level of maturity reflects not just the

existence of a process but its effectiveness and its contribution to organizational objectives. According to Grant and Pennypacker (2006), mature organizations outperform others because of the structure applied in their PM and the capability for continual improvement. In terms of an organization, maturity enables planning, implementing and controlling projects effectively. An organization functioning in a more predictable and controllable way, leads to the attainment of an organization's strategic goals. According to Jugdev and Thomas (2002) maturity frameworks show where an organization stands at present and guide towards the future to improve capabilities. It is not a point state, but rather a state of progress and betterment.

The level of maturity of the PM system within the organizations is an important contributor to its overall success. More mature organizations are more likely to possess clear procedures and definitions of roles and responsibilities, as well as efficient communication channels. Kwak and Ibbs (2002) believe that the development of an organization's PM capacity provides clear benefits of improved cost, schedule, and quality performance. Maturity models are tools to provide an organization with an assessment of their strengths and weaknesses and areas for improvement (Grant & Pennypacker, 2006).

The emergence of PM maturity models is from the early 1990's when the notion of maturity was established within process improvement frameworks like the Capability Maturity Model. In the years after, several maturity models have been published to assess organizational performance in projects within organizations across diverse fields. Maturity models provide framework to help organizations measure their capabilities. According to Backlund et al. (2013), the majority of the recent PM maturity models originate from earlier concepts of process maturity models and have been further adjusted to take into account the modern project environment. There are many various kinds of PM maturity models currently available each with different perspectives on how organizational capability should be measured and developed. Some models target process standards while others focus on strategic positioning or competence development. Yet all maturity models have one primary objective, to improve organizational performance through PM processes.

### **2.1.3 Project Management Maturity Models**

PM maturity models can be outlined as the systematic framework aimed at identifying a specific organization's advancement in terms of its management of its projects. PM maturity models are derived from theories of process improvement like Total Quality Management (TQM) and Capability Maturity, which focused on progression and progressive improvement through certain levels of maturity. Pasian (2015) describes maturity models not only as a measurement tool but more as change facilitators that takes an organization from ad-hoc messy practice towards consistently good practice. In a project-based industry such as construction, the application of maturity models may be beneficial due to following reasons.

1. Reduce project uncertainty
2. Improve cost and schedule performance
3. Enhance governance and decision-making
4. Standardize processes across projects

In modern literature, maturity models are generally categorized into:

1. Process-based models (CMMI, PMMM)
2. Organizational governance models (P3M3, OPM3)
3. Competency based models (IPMA Delta)

The following section provides a detailed review of the mostly used PM maturity models.

#### **2.1.3.1 Capability Maturity Model Integration (CMMI)**

One of the more significant and recognized maturity frameworks is CMMI developed at Carnegie Mellon University. Initially focused on software engineering it has been applied widely to engineering, manufacturing and project-oriented companies (Chrissis et al.,

2011). The CMMI uses the concept that organizational capability increases with both standardized and improvement of structure processes (Chrissis et al., 2011).

### **Working Principle of CMMI**

CMMI measures maturity by way of five evolutionary levels in which each level corresponds to an increased level of process discipline (Chrissis et al., 2011):

1. Initial –Procedures are unpredictable
2. Managed.– Basic PM discipline exists
3. Defined. – Methods are standardized through the organization
4. Quantitatively Managed. – Performance is measured using metrics
5. Optimizing. – Constant process enhancement is institutionalized

The stages are successive, so the organization cannot jump stages. Each level builds upon the previous one, meaning organizations cannot skip levels (Paulk et al., 1993).

### **Output of CMMI Model**

The model provides following outputs (Chrissis et al., 2011):

1. Process capability rating
2. Standardization level assessment
3. Organizational improvement roadmap

### **Strengths and Limitations**

Strengths:

1. Strong process discipline
2. Globally recognized framework
3. High reliability in technical industries (Chrissis et al., 2011)

Limitations:

1. Not specific to PM

2. Requires complex assessment
3. Requires expert-level evaluation (Khoshgoftar & Osman, 2009)

## CMMI MATURITY LEVELS

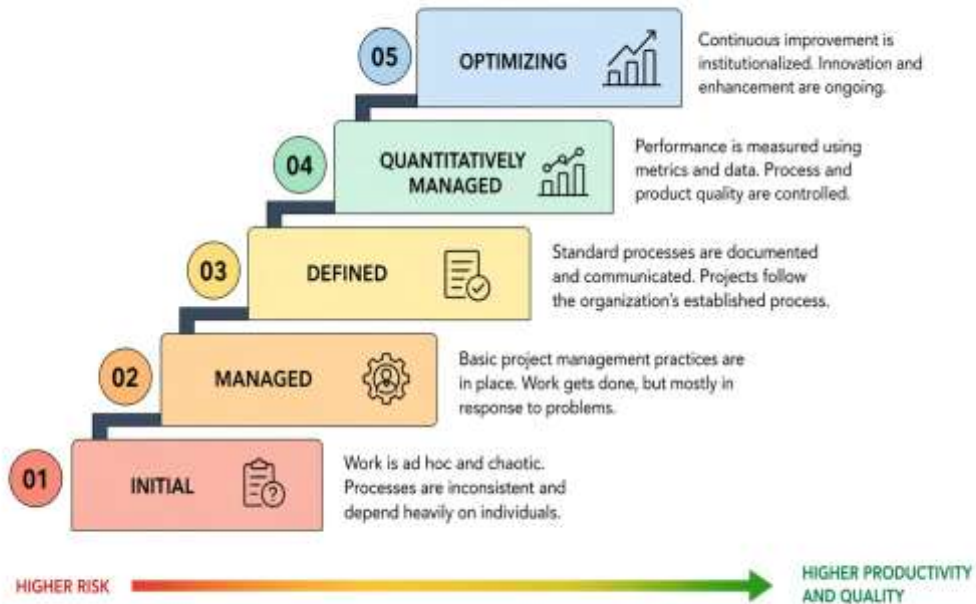


Figure 2. CMMI Maturity Levels (Godfrey, 2004)

TABLE 1. CMMI (PMI, 2017)

CMMI Level	Level Name	Description	Key Focus Areas
Level 1	Initial	Processes are random and reactive	Ad hoc PM practices
Level 2	Managed	Processes are designed and operate in compliance with policy	PM processes. and control
Level 3	Defined	Standardized procedures are organizationally instituted	Process documentation and organizational standards
Level 4	Quantitatively Managed	Processes are determined and controlled through quantitative techniques	Performance metrics and data analysis
Level 5	Optimizing	Emphasize ongoing process development and enhancement	Process improvement initiatives and best practices

### **2.1.3.2 Organizational Project Management Maturity Model (OPM3)**

The OPM3 was developed by the PMI. OPM3 takes a broader, multi-dimensional view of an organization's ability to achieve its strategic goals through projects. Farrokh and Mansur (2013) describe OPM3 as a morphological evaluation of maturity models that it is uniquely positioned to provide a competitive advantage due to its comprehensive approach. It is unique because, according to the framework, it connects three domains:

1. Project Management.
2. Program Management
3. Portfolio Management

with organizational strategy (PMI, 2013).

OPM3 uses a continuous approach, unlike many other models that are focused on the CMM's staged representation, OPM3 does not have a definite number of KPAs. OPM3 is structured around the three domains of program, project and portfolio management. (Farrokh & Mansur, 2013).

#### **Working Principle of OPM3**

OPM3 operates through a three-stage cycle (PMI, 2013):

1. Knowledge – Identification of best practices
2. Assessment – Evaluation of current capability
3. Improvement – Implementation of improvement actions

It uses a structured database of best practices mapped to organizational performance outcomes (PMI, 2013).



**Figure 3.** OPM3 Dimensions (PMI, 2013)

### **Output of OPM3**

1. Strategic alignment score
2. Organizational maturity index
3. Capability gap identification (PMI, 2013)



**Figure 4.** OPM3 Improvement Process (PMI, 2013)

### Strengths and Limitations

#### Strengths:

1. Very comprehensive
2. Strong strategic alignment
3. Globally standardized (PMI, 2013)

#### Limitations:

1. Extremely complex
2. Requires extensive data collection
3. Not suitable for simple surveys (Khoshgoftar & Osman, 2009)

### 2.1.3.3 Portfolio, Programme, and Project Management Maturity Model (P3M3)

Similar to OPM3, the P3M3 from the UK's OGC provides a framework for measuring an organization's capabilities across its portfolios, programs, and projects. P3M3 is built on a five-level maturity ladder Level 1: Awareness to Level 5: Optimized. P3M3 assesses seven process perspectives for each of its three models Portfolio, Programme and Project (Office of Government Commerce [OGC], 2010).

#### Working Principle of P3M3

P3M3 assesses maturity using five levels of progression similar to CMMI (Axelos, 2015) that are awareness, repeatable, defined, managed and optimized. Each level is evaluated across multiple perspectives such as governance, risk, financial control, resource management, and stakeholder engagement (Axelos, 2015).

**TABLE 2.** P3M3 (PMI, 2017)

<b>P3M3 Level</b>	<b>Level Name</b>	<b>Description</b>	<b>Key Focus Areas</b>
Level 1	Awareness	Processes involved are ad hoc and informal; no guaranteed outcomes.	No formal PM processes
Level 2	Repeatable	Establish and perform basic project management processes	PM processes and documentation
Level 3	Defined	Standardized procedures are defined and put in practice throughout the organization	Integration of project, program, and portfolio management
Level 4	Managed	Processes are monitored and controlled. using quantitative measures.	Measurement of performance and assessment of risk
Level 5	Optimized	Continual improvement and innovation in PM practices.	Best practices implementation and knowledge sharing

#### Output of P3M3

1. Multi-layer maturity score
2. Governance capability index
3. Organizational readiness assessment (Axelos, 2015)

### **Strengths and Limitations**

Strengths:

1. Strong governance orientation
2. Multi-level analysis
3. Suitable for large organizations (Axelos, 2015)

Limitations:

1. Complex structure
2. Difficult for survey-based studies
3. Heavy data requirements (Khoshgoftar & Osman, 2009)

#### **2.1.3.4 Kerzner Project Management Maturity Model (K-PMMM)**

K-PMMM developed by Harold Kerzner, is used to evaluate the organizational project management maturity. This model, particularly, pays more attention on how PM processes, tools and methods are integrated into organizations (Kerzner, 2009). It is also considered to be closely integrated with PMBOK and actual PM practices as it provides an institutional approach for their formalization and performance enhancement (Kerzner, 2009). It emphasizes the importance of organizational learning, standardization, and continuous improvement in achieving higher levels of PM maturity (Kerzner, 2009).

#### **Working Principle of K-PMMM**

K-PMMM identifies five maturity stages, which describe the progression of organizations from basic awareness of PM concepts to a stage of continuous improvement.

1. **Level 1: Common Language** – Organizations highlight the need for PM and share similar vocabulary with regards to project managing practices. Yet processes are informal, and not yet standardized.
2. **Level 2: Common Processes** – Basic PM processes are established and used across projects. Organizations begin to recognize the benefits of consistent processes and attempt to repeat successful practices.

3. **Level 3: Singular Methodology** – Organizational PM refers to a single type of PM methodology that encompasses all differing types of management processes in one unified system.
4. **Level 4: Benchmarking** – Organizations assess their practices of PM with leading organizations for optimization.
5. **Level 5: Continuous Improvement** – Organizations review lessons learned and benchmarking outputs for their projects to continuously improve the PM processes (Kerzner, 2009).

**Table 3.** K-PMMM (Kerzner, 2009; Kerzner, 2022)

K-PMMM Level	Level Name	Description	Key Focus Areas
Level 1	Common Language	Awareness of project management, informal practices.	Basic PM awareness and terminology
Level 2	Common Processes	Basic processes are established and repeatable.	Process standardization and consistency
Level 3	Singular Methodology	One standardized PM methodology is used.	Organizational integration of PM practices
Level 4	Benchmarking	Practices are compared with industry best practices.	Performance comparison and improvement identification
Level 5	Continuous improvement	Continuous improvement through lessons learned and feedback.	Optimization and organizational learning

### Output of K-PMMM

1. Organizational PM adoption level
2. Process integration level
3. Benchmarking capability (Kerzner, 2022)

### Strengths and Limitations

#### Strengths:

1. Easy to understand
2. Strong PMBOK alignment

3. Practical application (Kerzner, 2022)

Limitations:

1. Less analytical depth
2. Limited quantitative structure (Khoshgoftar & Osman, 2009)

### **2.1.3.5 IPMA Delta Maturity Model**

The IPMA Delta model developed by International Project Management Association is a holistic model for assessment of maturity, which analyzes the PM capability of an organization based on competencies. As opposed to the traditional maturity models that were mainly about standardization of processes, IPMA Delta covers competence development on individual, project and organization levels (IPMA, 2016). The model is based on the belief that success of the projects depends on structured processes but also the individuals with necessary skills and their work culture. Thus, it is a complete evaluation of maturity as it takes into account the behavioral, organizational and performance related issues.

#### **Working Principle of IPMA Delta**

The IPMA Delta model assesses maturity through a three-dimensional framework that evaluates PM capability at different levels of analysis. These dimensions include individual competence, project competence, and organizational competence (IPMA, 2016).

The model is structured around the following key components:

1. Individual Competence (I): It evaluates the knowledge, skills, and behaviors of project managers and team members
2. Project Competence (P): It assesses the ability to deliver projects successfully based on performance, methods, and governance
3. Organizational Competence (O): It evaluates the organizational environment, including culture, structures, and systems that support PM

Self-assessment, external assessment, and evidence validation are all employed as part of the assessment procedure to identify maturity levels on the dimensions. The qualitative and competent nature of this model is distinct to process centric models.

### **Output of IPMA Delta Model**

The IPMA Delta model provides a multidimensional maturity profile that includes:

1. Organizational project competence maturity level
2. Assessment of individual and team capability
3. Evaluation of organizational project environment
4. Competence gap identification across project stakeholders
5. Overall maturity index based on integrated assessment dimensions (IPMA, 2016)

These outputs aid the organization in understanding the success of the execution of the process, the success of the system and people aspects of projects.

**Table 4.** IPMA Delta (IPMA, 2015)

<b>Dimension</b>	<b>Level / Area</b>	<b>Description</b>	<b>Key Focus Areas</b>
Individual	Competence (I)	Assess skills and capabilities of individuals	Project manager and team competence
Project	Performance (P)	Evaluates success of individual projects	Project delivery and outcomes
Organization	Competence (O)	Assess organizational systems and governance.	Structures, processes, and culture

### **Strengths and Limitations**

Strengths:

1. Provides a holistic view of maturity, integrating people, processes, and organizational systems.
2. Strong focus on competence development and behavioral factors, which are often ignored in process-based models.

3. Aligns with real world project success factors not just formal methodologies (Müller & Turner, 2010).
4. Facilitates continuous improvement at individual and organizational level.

Limitations:

1. Requires extensive expert evaluation and qualitative judgment, making it less suitable for simple survey-based studies
2. More complex and resource-intensive compared to traditional maturity models
3. Difficult to quantify using standard Likert-scale questionnaires without simplification (Khoshgoftar & Osman, 2009)

#### **2.1.3.6 Project Management Maturity Model (PMMM by PM Solutions)**

The PMMM by PM Solutions provides a structured framework which enables corporations to measure and develop their PM capabilities. The model is designed to:

1. To upsurge the success rate of projects by taking the organizations through 5 step process to achieve higher level of maturity with varying degree of standardization, control and continual improvement on the PM activities (Pennypacker & Grant, 2003; Thomas & Mullaly, 2008).
2. To assist organizations in maturing along the ten areas as identified by the PMI's Guide to the PMBOK (Fabbro & Tonchia, 2022).

As stated in PMMM, organization's maturity grows in steps instead of at a single stage. As an organization matures to each level of maturity, it will have a structured process, better governance, projects will be more synchronized with the strategy and the project results are more predictable (Grant & Pennypacker, 2006).

#### **Working Principle of PMMM**

PMMM evaluates organizational maturity by assessing the degree to which PM practices are defined, standardized, measured, and continuously improved. The model progresses through structured maturity stages, where each stage reflects a higher level of process discipline and organizational capability (PM Solutions, 2007). The general progression includes the Initial (Ad-hoc), repeatable, defined, managed and optimized. Practices of PM are informal and inconsistent in the low level and become more formal, measured and organizationally learned in high level (Ibbs & Kwak, 2000).

### **Output of PMMM**

The PMMM framework produces several important outputs that support both assessment and improvement of organizational capabilities:

- Overall organizational PM maturity level
- Identification of strengths and weaknesses in PM practices
- Knowledge area-wise maturity profile
- Basis for benchmarking and continuous improvement initiatives
- Alignment of project performance with strategic objectives (Pennypacker & Grant, 2003)

These outputs allow organizations to systematically understand their current position and identify areas requiring improvement.

### **Link of PMMM with PMBOK Knowledge Areas**

The key benefits of PMMM in this research is that it links directly to the ten PMBOK knowledge areas of the PMI. This linkage helps evaluate maturity in a multi-dimensional and orderly way (PMI, 2017). Each of the PMBOK knowledge areas reflects a distinct PM performance dimension and these dimensions are used to measure the level of maturity of integration management, scope management, schedule management, cost management, quality management, resource management, communications management, risk management, procurement Management and stakeholder management. By overlaying PMMM maturity levels on to these ten knowledge areas, organizations can achieve a

comprehensive maturity profile of their organization. This will also provide overall maturity level and function-specific areas of both strength and weakness. (Thomas & Mulaly, 2008).

### **Significance of PMMM in This Study**

The alignment between PMMM and PMBOK knowledge areas makes it particularly suited to quantitative research which employs the survey methodology. As each knowledge area is capable of being quantified by using a Likert scale, qualitative mature concepts may be converted into quantifiable quantities (Grant & Pennypacker, 2006).

This approach allows:

1. Structured assessment of organizational maturity
2. Comparative analysis across companies
3. Identification of area-specific maturity gaps
4. Development of a comprehensive maturity index

#### **2.1.4 Comparison of Project Management Maturity Models and Justification of PMMM Selection**

PM maturity models have been developed and defined in organizations as a tool to measure and to improve PM capability. All the maturity models aim at the enhancement of the performance of the projects; however, they vary with the difference in the structure, the complexity of the model, the assessment methodology and also their application. This requires the selection of a suitable model with reference to the objectives and research methodology. In this section a review and comparison of some major PM maturity models is done and the selection of PMMM for the research is justified. The table below compares the main maturity models discussed including a summary of their structure, emphasis and the theory upon which they are based.

### 2.1.4.1 Comparative Overview of Maturity Models Discussed

**TABLE 5.** Comparative Summary of Maturity Models (PMI, 2017)

Model	Focus	Structure	Strengths	Limitations	Suitability for Survey Research
CMMI	Process capability improvement	5-level staged model	Strong process discipline, globally recognized	Not project-specific, complex assessment	Low
OPM3	Strategic alignment of projects	Knowledge-assessment-improvement cycle	Strong alignment with strategy, comprehensive	Very complex, data intensive	Low
P3M3	Portfolio, programme, project governance	5 maturity levels across 3 domains	Strong governance focus	Difficult to apply in small samples	Medium
K-PMMM	PM adoption	5 stage organizational progression	Simple, PMBOK aligned	Limited quantitative structure	Medium
IPMA Delta	Competence based maturity	3-dimensional competence model	Holistic (people + process + context)	Requires expert assessment	Low
PMMM	PM process maturity	5-level maturity model	Simple, measurable, survey-friendly	Less behavioral depth	High

### 2.1.4.2 Critical Comparison of Maturity Models

From this comparison it can be deduced that the early maturity models like CMMI and OPM3 have a structured and thorough framework, but it is largely based on organizational maturity assessments in a large organization and requires a huge amount of qualitative and quantitative data to conduct. Hence, they are less likely to be used in questionnaire-based research.

Similarly, P3M3 presents a multi-level governance-centric framework. However, this can only be useful for governmental bodies and large enterprises with already established and mature project governance system. The multi-domain assessment makes the model more complicated and thus less practical for individual survey research.

The K-PMMM is a more familiar approach to PM and is conceptually easier to grasp. Yet, the lack of a strong quantitative measurement tool makes statistical tests difficult to perform. IPMA Delta is an extremely detailed competency-based system that is very reliant on expert opinion and descriptive ratings, making it ineffective for structured Likert scales.

In contrast, the PMMM model offers a mature yet simplified, quantifiable, framework which evaluates maturity across standard levels and integrates well with the quantifiable survey instruments.

#### **2.1.4.3 Justification for Selecting PMMM**

This research uses the PMMM as the model that is best suited for this investigation based on the research design, method of data collection and analysis used. The justification is listed below.

The justification is based on the following reasons:

1. **Compatibility with Survey-based Research:** PMMM is a model compatible with survey-based research as its maturity level can easily be mapped to LIKERT scale responses and suitable for standardized questionnaire based on 10 PMBOK knowledge areas.
2. **Alignment with PMBOK Framework:** The model aligns to the PMBOK of the PMI enabling each area of knowledge to be evaluated in a consistent manner.
3. **Simplicity and Practicality:** PMMM is easier to evaluate and understand compared to other models. It does not involve any need for the involvement of

domain experts and has no need for massive quantities of company data. These reasons help make the model suitable for construction industry respondents.

4. **Quantitative Measurability:** The maturity levels in PMMM can be rated numerically, allowing for statistical analysis to be performed, i.e. Mean score computation, rankings, and comparison between different organizations.
5. **Industry Relevance:** The use of PMMM in project-orientated industries like building construction for the real estate sector provides an applicable way to evaluate process maturity that does not involve too much theory.

In conclusion, although there are number of maturity models available with different purposes and emphasis. PMMM model suits the purpose of the research better due to its simplicity, measurability, and adaptability to quantitative study by survey. It also closely relates to the PM knowledge areas, so this model fits well to measure the PM maturity for construction companies in real estate in Nepal.

### **2.1.5 Project Management Body of Knowledge (PMBOK)**

PM is organized into various related knowledge areas that act as critical areas of expertise necessary to deliver projects efficiently. PMI defines PMBOK to have ten knowledge areas providing a complete approach to managing a project throughout its lifecycle (PMI, 2017). Every knowledge area has a set of process, techniques and tools, required for successful accomplishment of a project and knowledge areas work in aggregation with five process groups which are initiating, preparation, executing, supervising and controlling, and closing which enable management of projects.

#### **2.1.5.1 Project Integration Management**

Project integration management is the processes and activities required to identify, define, blend, unify and bring together the different components of the project, so that all project elements work effectively as one. This includes managing trade-offs between competing goals of the project. Integration management is crucial in bringing the project

together to be consistent with the business strategy of the organization and with the stakeholder expectations (PMI, 2017). The key processes in project integration management include develop project charter, develop the PM plan, direct and manage the project work, manages the project knowledge, monitors and controls project work, performing integrated control and close project.

#### **2.1.5.2 Project Scope Management**

Project scope management is the process of defining and controlling what is and is not included in the project and performing only that work required. This will allow the clear scope of the project to be maintained and to avoid scope creep. The management process ensures stakeholders are content with the project output through project deliverables (PMI, 2017). The processes involved in project scope management include:

1. Plan scope management
2. Collect requirements
3. Define scope
4. Create Work Breakdown Structure (WBS)
5. Validate scope
6. Control scope

#### **2.1.5.3 Project Schedule Management**

Project schedule management is the process of planning, directing, and controlling the scheduling activities to make sure the project is completed on time. Schedule management is part of planning and includes defining activities, ordering activities, estimating the required resources and time durations for activities, developing, and controlling the project schedule to minimize schedule delays (PMI, 2017). The processes are developing schedule management, classify activities, sequence activities, estimate activity intervals, develop timetable and supervise schedule.

#### **2.1.5.4 Project Cost Management**

Cost management is aimed at delivering the project within the agreed budget. Cost management includes projecting cost management, approximating costs, determining the budget and controlling cost. Cost management contributes to financial discipline and aid decision making throughout the projects (PMI, 2017).

#### **2.1.5.5 Project Quality Management**

Project Quality management ensures that the project as well as deliverables conform to the standards and fulfill stakeholder expectations. It comprises both quality of end products and the process by which these are produced. Improved performance and customer satisfaction result from consistently managing quality across project life (PMI, 2017). The processes included are planning quality administration, administering quality and directing the quality.

#### **2.1.5.6 Project Resource Management**

Project resource management is concerned with the identifying, acquisition and control of project resources. The resources include human resources, material, equipments and other facilities needed. Efficient resource management may improve the efficiency of work and the performance of work group (PMI, 2017). The processes involved in project resource management include:

1. Plan resource management
2. Estimate activity resources
3. Acquire resources
4. Develop team
5. Manage team
6. Control resources

### **2.1.5.7 Project Communications Management**

Concluding complex project effectively requires teamwork, and teamwork requires effective communication among team members. Good communication enables diverse stakeholders who may come from different cultures, different institutions and even different kinds of expertise to identify the key issues which affect their project, or solutions that might be possible to these problems (PMI, 2017). The Project Communications Management processes are plan, manage and monitor the communications.

### **2.1.5.8 Project Risk Management**

Throughout the stages of the project risk management process involves identifying, analyzing and responding to potential problems. All project team members should promptly identify risks. Detecting risks early makes it easier to do and to plan the risk response. The purpose of PM is to achieve beneficial results. To help that happen, project managers try to increase the chances and consequences of positive events and decrease the chances and results of negative events. (PMI, 2017). The processes involved in project risk management include the plan, identify, perform qualitative and quantitative risk analysis, plan responses, implement and monitor the risks.

### **2.1.5.9 Project Procurement Management**

Procurement management of the project includes the processes that are required to obtain goods and services on which a project scope depends on outside performing organization. It also includes contract management and changes control processes that are needed for developing, administering through the contracts or purchase orders that are authorized by the project's members (PMI, 2017). The Project Procurement Management processes are to plan, conduct, control and close the procurements.

#### **2.1.5.10 Project Stakeholder Management**

Project stakeholder management denotes the processes involved in defining who can affect or be affected by a project (or are affected by it), analysing the expectations of the individuals involved and their effects on what happens within that particular undertaking; and devising appropriate strategies to ensure that all these stakeholders are successfully brought into decision-making processes, participating at each stage for maximum effectiveness (PMI, 2017). The Project Stakeholder Management processes are to identify, plan management, manage and control the engagement.

## **2.2 Empirical Review: Project Management Practices in Nepal**

The construction industry of Nepal played a crucial role in fueling the economic growth of the country. With an estimated sectoral total value-added growth rate by 9.1 percent, attributed through infrastructure development to higher import of construction materials as well as domestic production (National Statistical Office, 2025). The devastating 7.8 magnitude earthquake of April 2015 which destroyed over 800,000 homes, triggered substantial reconstruction initiatives in Nepal. This highlights both the importance and challenges of effective PM in Nepal (AFP, 2025; World Bank, 2018). Partnerships at an international level like World Bank (Earthquake Housing Reconstruction Project) and multi donor funded Nepal Rural Housing Reconstruction which focused on recovery projects have enabled effective implementation of proper PM practices in Nepal. Despite these efforts, construction projects in Nepal continued to face serious challenges.

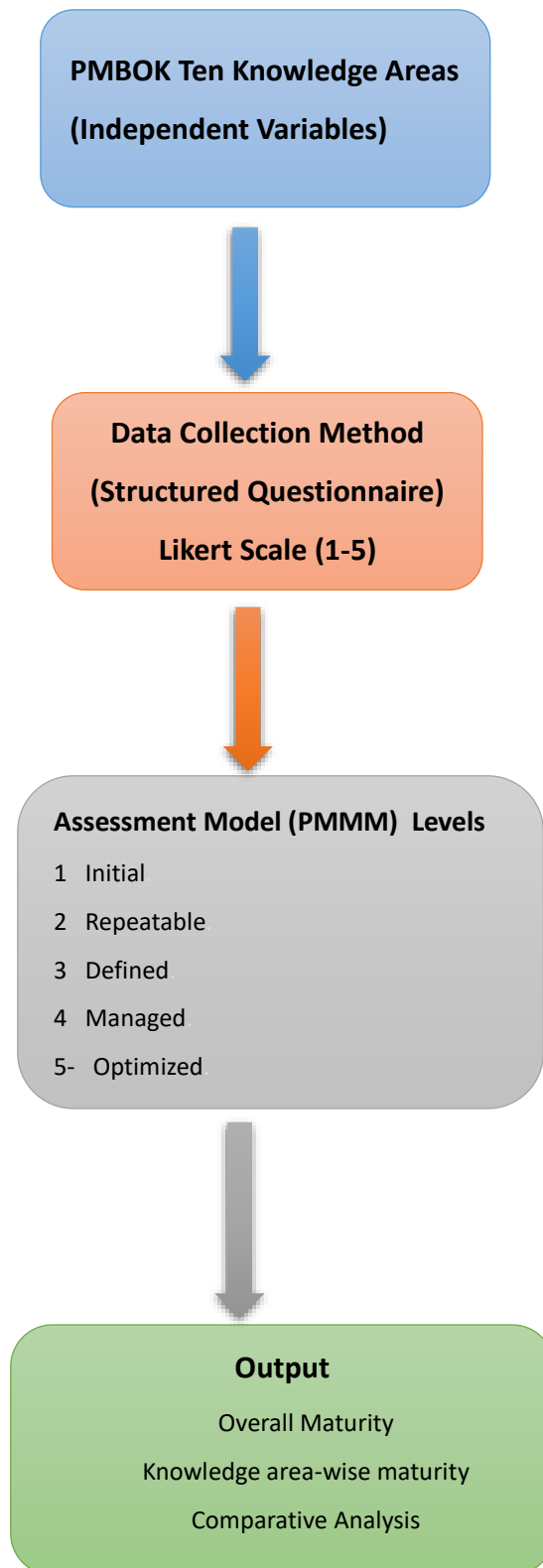
Research studying small road & bridge construction projects accounted under Nepal's Department of Roads analysed 395 roads and 248 bridges construction contracts. The findings found that project delays significantly reduce estimated future benefits, showing statistically significant relationship between delay period in months and percentage loss of estimated benefit (Paudel & Henry, 2024). The study demonstrates that delay not

only affects short term over run cost but also affects the achievement of long-term development objectives. The factors contributing to delay in construction projects are identified by a mixed-methods study on private residential construction projects in the Pokhara Valley typified as production, internal, and external environments (Giri et al., 2025). This research demonstrated that multidimensional delays affecting developers, contractors, homeowners and the community stem from socio-economic, regulatory, environmental and technical issues where poor planning practices in combination with labor shortages; bureaucratic barriers; weather situations and supply chain disruptions led to effective delays of firms using Relative Importance Index (RII) analysis. Several studies, including one focusing on rural road construction projects in Karnali Province, have identified variations in scope of work as the leading cause for the failure and disruption of projects (Koirala et al., 2025).

Various stakeholder perspectives (clients and contractors) attribute one of the biggest secondary causes to be "change in design and drawings by consultant," whilst consultants themselves, as well as contractors, list "errors and omissions in design" as major contributing factors. Other causes are lack of proper site investigation, bad site conditions, government intervention and directive changes from the client. In a study conducted to investigate the implementation of TQM practices in building construction projects in Kathmandu, it was observed that traditional quality control methods are dominated in most construction projects (Dahal, 2024). As further explained by Dahal (2024), specifically, there exist four major challenges to the implementation of TQM. They are managerial resistance towards TQM implementation, knowledge and competency gaps, administrative burden and human capital deficiency. The research suggests that collaboration is key for construction professionals and highlights the importance of commitment from senior management, continuous improvement, training and capacity development. Despite using tools such as the Balanced Scorecard to link project goals with organizational strategies, insufficient coordination, skill shortages, financial constraints and regulatory obstacles often lead to delays and cost overages in strategic PM within Nepalese design-build companies. (Rajbahak, 2025).

### **2.3 Conceptual Framework of the study**

Project management is the use of processes, methods, skills and knowledge to accomplish specific project goals within a specified time. It conceptualizes complex ideas into actionable plans that take the form of delivering specific outcomes using a structured approach. The conceptual framework of this research establishes the relationship between PM knowledge areas and organizational PM maturity. PM knowledge areas including scope, time, cost, quality, risk, and stakeholder management serve as independent variables. Since, existing literature clearly states that maturity models are the emergency tools to rescue the failing projects, but they are a gradual measurement like a scale describing the weaknesses and strengths of an organization. Given that the PMBOK Guide (2017) provides a comprehensive and widely accepted framework for evaluating these capabilities, this research adopts a five-level maturity from PMMM model originally derived from Project Management Solutions. This model encompasses all ten PM knowledge areas as defined in PMBOK framework.



**Figure 5.** Conceptual Framework

### **3 Research Methodology**

#### **3.1 Introduction**

This chapter presents the research methodology which are used to measure the PM maturity levels of real estate development companies in Nepal. This chapter describes the research approach, research design, target population, sampling techniques, data collection methods, measurement of variables, data analysis procedures, reliability and validity considerations and the ethical considerations. The methodology used in this research is designed systematically to evaluate the current state of PM practices in Nepal. And, to determine the maturity level of real estate development companies in Nepal by using the structured maturity assessment framework.

#### **3.2 Research Approach**

According to Saunders et al. (2019), quantitative research approach is suitable to measure the required variables and conclude a finding from selected sample population. The quantitative research approach is also the systematic ways of collecting data through structured questionnaires. The data achieved through the questionnaire enables the researchers to do statistical analysis and determine maturity level of selected companies. The qualitative approach is suitable for this research because it enables statistical evaluations to calculate mean maturity and highlight the variances from collected data. And it also allows for comparison among different areas of knowledge and real estate development companies.

#### **3.3 Research Design**

The research employs a descriptive research design aimed at outlining and understanding existing conditions. Descriptive research focuses on examining individuals, groups, and institutions to provide insights into current practices without manipulating variables.

This design is suitable for assessing PM maturity as it captures the current state of PM practices within real estate development companies.

### **3.4 Study Area and Target Population**

This research is primarily aimed towards the main urban areas of Kathmandu, Lalitpur, Pokhara and Chitwan because currently maximum number of constructions is taking place in those areas. Non-probability purposive sampling technique is used for this study, so that the respondent will have good experience in project management.

The data collection is directed at the individuals employed within Nepalese real estate companies. For example, project managers, senior engineers, project coordinators, senior management who are knowledgeable about this area. The sample size for this research is 50-75 respondents. This size of sample is considered acceptable in terms of quantity based on descriptive statistical methods for quantitative studies and comparable to similar studies concerning the development of PM maturity in a developing country. The sample comprises of 8 real estate development companies from Nepal.

### **3.5 Data Collection Methods and Procedure**

The data collection method for this research was primary data collection. Structured questionnaire the major tool for data collection which is intended to measure the PM maturity level of real estate development companies. The questionnaire was prepared based on real world problems and validated through established PM maturity models listed in the literature review. Then the prepared questionnaires were distributed through webropol survey. To encourage participation of the respondents follow-up phone calls were also made. The total data collection period was approximately between 2 to 4 weeks. These questionnaires were further divided into two sections which are as follows.

### 3.5.1 Section A: Demographic Information

This section collects background information about respondents like Gender, Age, Educational qualification, Department, Position/role in the organization and years of experience in project management.

### 3.5.2 Section B: Project Management Knowledge Areas Assessment

This section assesses the questions based on the application of the ten project management knowledge areas integration, scope, time, cost, quality, resource, communication, risk, procurement and stakeholder. For each knowledge area, respondents are asked to rate their organization's practices using a 5-point Likert scale:

Scale Value Interpretation	
Strongly Disagree	Very Low Maturity
Disagree	Low Maturity
Neutral	Moderate Maturity
Agree	High Maturity
Strongly Agree	Very High Maturity

The questionnaire items are adapted from validated instruments aligned with the PMBOK guide processes for each knowledge area.

## 3.6 Data Analysis Procedure

Quantitative research approach is used to analyze the data systematically to understand the maturity level of PM of the companies. The process includes initial data coding, reliability analysis and descriptive statistical stages to analyze the data achieved. The data achieved from the Likert-scale questionnaires were analyzed using the software named

Jeffreys's Amazing Statistics Program (JASP). Key ideas, concepts, and recurring phrases were identified from the data and were labelled with a short code. In JASP each column is represented as a variable, and each row is represented as a respondent's answers. The Likert scale responses were classified as 1 signifies Strongly Disagree, 2 signifies Disagree, 3 signifies Neutral, 4 signifies Agree and 5 signifies Strongly Agree which were subsequently used in the calculation of mean and standard deviations.

### 3.6.1 Reliability and Validity Analysis

To ensure the internal consistency and reliability of the questionnaire reliability test was also conducted. The Cronbach's Alpha ( $\alpha$ ) coefficient is used in this research for the reliability test (Cronbach, 1951). The Cronbach's Alpha ( $\alpha$ ) coefficient measured how closely a subset of questionnaire was related in a group. The formula for Cronbach's Alpha is (Cronbach, 1951):

$$\alpha = \frac{k}{k - 1} \left( 1 - \frac{\sum_{i=1}^k \sigma_{Y_i}^2}{\sigma_X^2} \right)$$

Where:

- $k$  = number of items (questions) in the scale.
- $\sigma_{Y_i}^2$  = variance of the  $i$ th item.
- $\sigma_X^2$  = variance of the total score of the scale.

As a rule of thumb, during the data analysis Cronbach's Alpha value of 0.7 or higher indicates a good level of internal consistency is considered acceptable. In this study, a cumulative Cronbach's Alpha of 0.863 was achieved. This value confirms that the questionnaire was a reliable tool for measuring the levels of PM maturity.

**TABLE 6.** The Outcome of Reliability Test (Source: Own survey results, 2026)

	Management maturity level	No of items	Cronbach's Alpha
1.	Scope	5	0.872
2.	Time	5	0.854
3.	Cost	5	0.857
4.	Quality	5	0.860
5.	Integration	5	0.842
6.	Communication	5	0.861
7.	HRM	5	0.873
8.	Procurement	5	0.884
9.	Risk	5	0.862
10.	Stakeholder's	5	0.869
	Cumulative Cronbach's Alpha	50	0.863

For further validity the questionnaire was ensured through content and face validity. The questions were developed based on existing literature and selected PM maturity model, and content validity was further established through expert review for relevance and coverage. Face validity was ensured through a pilot test to check clarity and ease of understanding.

### 3.6.2 Descriptive Statistical Analysis

Descriptive statistics were used to provide a summary of ten PM knowledge areas in this research. Then the frequency and percentage of total respondents on the Likert scale were calculated. After that the Mean was calculated. The formula for the Mean is (Field, 2018):

$$\bar{x} = \frac{\sum_{i=1}^n x_i}{n}$$

Where:

- $\bar{x}$  = the sample mean
- $x_i$  = the value of each individual response (from 1 to 5)
- $n$  = the total number of responses

The Mean for specific knowledge areas were calculated by averaging the mean scores of all its constituent items. For example, the maturity level for Project Scope Management was calculated as:

$$\text{Scope Maturity Level} = \frac{(\text{Mean of item 1}) + (\text{Mean of item 2}) + \dots + (\text{Mean of item } n)}{n}$$

Where 'n' denotes the number of items measuring scope management.

### 3.6.3 Measures of Dispersion

After the Mean, the SD was calculated to recognize the variability or consistency of the respondents' answers. A low SD indicates that the responses were grouped closely around the Mean. The formula for the SD is (Field, 2018):

$$s = \sqrt{\frac{\sum_{i=1}^n (x_i - \bar{x})^2}{n - 1}}$$

Where:

$s$  = sample SD

$x_i$  = respondents' responses

$\bar{x}$  = the sample Mean

$n$  = the total number of responses

### 3.6.4 Determining the Maturity Level

The mean score for each knowledge area was calculated in the five-level maturity. It is classified as scale 1 signifies Initial, 2 signifies Managed, 3 signifies Defined, 4 signifies Quantitatively Managed and 5 signifies Optimizing. A mean score of 1.00 to 1.49 was interpreted as Level 1, 1.50 to 2.49 as Level 2, 2.50 to 3.49 as Level 3, 3.50 to 4.49 as Level 4, and 4.50 to 5.00 as Level 5.

Finally, the average mean of all ten PM knowledge areas were calculated and the overall maturity level of real estate development companies was calculated by taking the mean maturity level of knowledge of each area.

### **3.7 Ethical Considerations**

This research follows all the fundamental principles of research ethics. The ethical considerations considered during this research are given below.

1. Respondents were well informed about the objective of this research and how their data will be used. All the respondents were voluntary, and they were provided with the right to discard as their will. No incentives were provided to the participants as encouragement.
2. Confidentiality and Anonymity: All the responses collected during this research are kept confidential. Personal identifiers of the researchers are not collected to ensure their anonymity. All the data is stored securely and is accessible only to the researcher. These data are used solely for academic purposes.

## 4 Data Presentation, Analysis and Interpretation

### 4.1 Introduction

This chapter presents data analysis results and interpretation of primary data collected from seventy-seven respondents through questioning on various research topics. The questionnaires had been answered thoroughly, which helped this research for analyzing the current PM maturity level of real estate development companies of Nepal. Assessment of PM maturity level has been carried out based on the evaluation of ten construction PM body of knowledge areas covered by this research.

### 4.2 Response rate and Demographic data

#### 4.2.1 Response rate

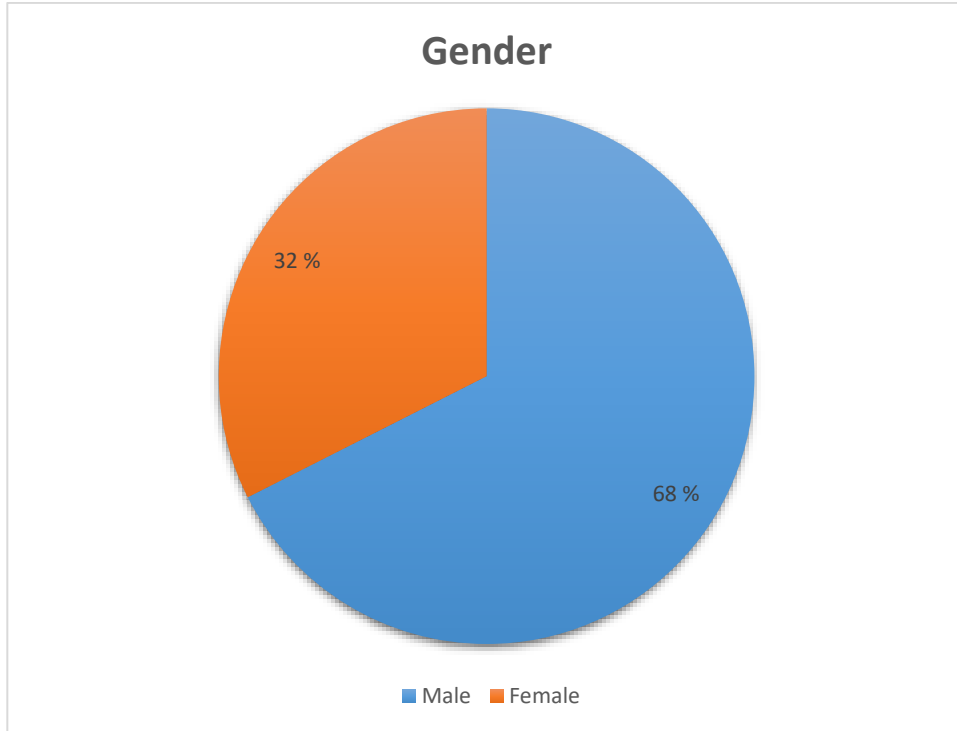
All the respondents followed the instructions on the cover page and fully responded to the questions. This helped the research to extract the necessary data required for adequate analysis and reporting.

#### 4.2.2 Demographic data

The statistics regarding Gender, Education Level, Age, department, position/role, and Work experience are as shown in tables below.

**TABLE 7.** Statistics (Own survey results, 2026)

Statistics						
	Gender	Education	Age	Department	Position of your role in the project	Work Experience (in years)
Valid	77	77	77	77	77	77
Missing	0	0	0	0	0	0



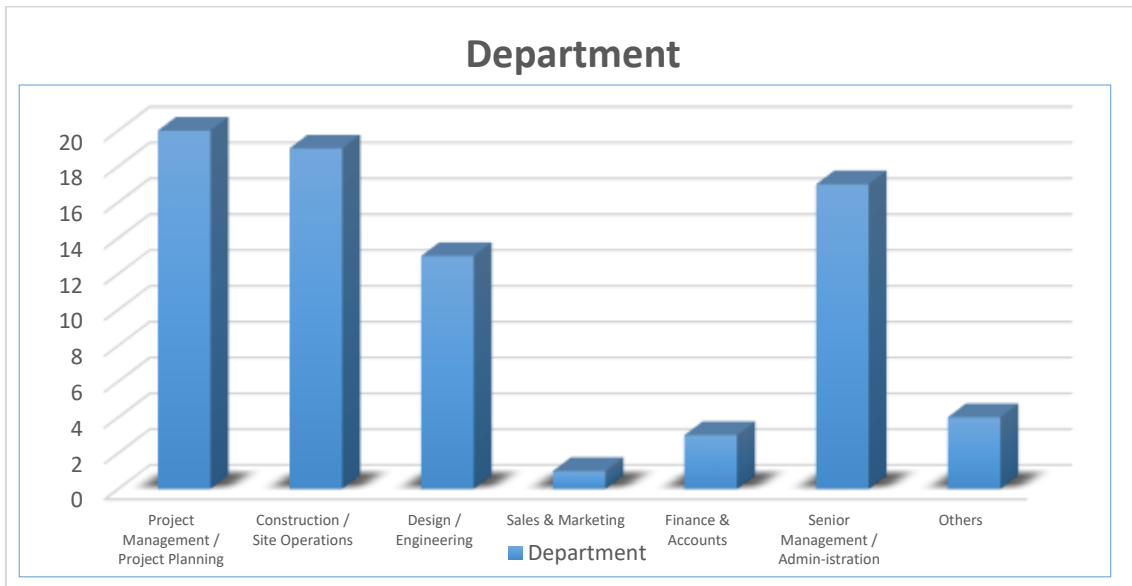
**Figure 6.** Gender data analysis (Own survey results, 2026)

**TABLE 8.** Age of respondents (Own survey results, 2026)

Age of respondent				
Age	Frequency	Percent	Valid Percent	Cumulative Percent
20-30	24	31.2	31.2	31.2
31-40	41	53.2	53.2	84.4
41-50	10	13.0	13.0	97.4
51-60	2	2.6	2.6	100.0
Missing	0	0.0		
Total	77	100.0		

#### 4.2.2.1 Department and Current Position of Respondents

The respondents are from various departments in the corporation. From the total of 77 respondents given in table below, 20% are from Project management/planning, 19% are construction team, 13% are design team, 3% are from finance and 17% are senior management/administration team.



**Figure 7.** Department (Own survey results, 2026)

**TABLE 9.** Role in the project (Own survey results, 2026)

Role in the project				
Position of your role in the project	Frequency	Percent	Valid Percent	Cumulative Percent
Project Coordinator	8	10.4	10.4	10.4
Project Manager	19	24.7	24.7	35.1
Site Engineer / supervisor	9	11.7	11.7	46.8
Senior Engineer	12	15.6	15.6	62.3
Managing Director / Senior Executive	15	19.5	19.5	81.8
Contract Administrator	4	5.2	5.2	87.0
Consultant	4	5.2	5.2	92.2
Other	6	7.8	7.8	100.0
Missing	0	0.0		
Total	77	100.0		

#### 4.2.2.2 Education level and working experience of respondent's

From the table below, 24.7% of the respondents are bachelor's degree holders, 67.5% are master's degree holders and 7.8% have completed their PHD.

**TABLE 10.** Education (Own survey results, 2026)

Education				
Education	Frequency	Percent	Valid Percent	Cumulative Percent
Bachelor's	19	24.7	24.7	24.7
Master's	52	67.5	67.5	92.2
PHD	6	7.8	7.8	100.0
Missing	0	0.0		
Total	77	100.0		

**TABLE 11.** Work Experience (in years) (Own survey results, 2026)

Experience of Work				
Experience of Work	Frequency	Percent	Valid Percent	Cumulative Percent
0-3 years	16	20.8	20.8	20.8
4-6 years	19	24.7	24.7	45.5
7-10 years	27	35.1	35.1	80.5
Over 10 years	15	19.5	19.5	100.0
Missing	0	0.0		
Total	77	100.0		

### 4.3 Results and analysis of the research

This section presents the data analysis results achieved from the provided research questions by using JASP software. The outputs of the analysis are mentioned below.

#### 4.3.1 Project Management maturity level of body of knowledge areas

The PM maturity level of organizations was analyzed and is shown in tables. The mean score for each knowledge area was calculated in the five-level maturity. It is classified as scale 1 denotes Initial, 2 denotes Managed, 3 denotes Defined, 4 denotes Quantitatively Managed, 5 denotes Optimizing. A mean score of 1.00 to 1.49 was interpreted as Level 1, 1.50 to 2.49 as Level 2, 2.50 to 3.49 as Level 3, 3.50 to 4.49 as Level 4, and 4.50 to 5.00 as Level 5. The maturity level of every knowledge area in the project department of the company is estimated by adding the mean value of each sub-element of the knowledge

area. Finally, the average mean scores of all ten PM knowledge areas were calculated and the overall maturity level of real estate development companies was calculated. And the mean score for ten knowledge areas was used to evaluate the maturity level.

#### 4.3.1.1 Scope Management maturity level

The maturity level of scope management of the real estate development companies of Nepal is estimated by adding the mean value of each sub-element of the respective knowledge area which is 3.379. The standard deviation of the variables of the project scope management ranges from 0.922 to 1.179. The total standard deviation of scope management is 1.079. This indicates a moderate spread. The responses are not tightly clustered, but they are not extremely spread out as well. Some respondents had noticeable differences in opinions, but most responses are reasonably close to the mean. Overall, the levels of project scope management maturity level in real estate development companies in Nepal is at 3.379.

**TABLE 12.** Scope Management maturity level (Own survey results, 2026)

PM body of Knowledge area	Frequency					Mean	SD
	1	2	3	4	5		
Project scope is clearly defined and documented from the beginning.	1.3	22.1	27.3	29.9	19.5	3.442	1.082
There is a formal process for managing scope changes (scope creep is controlled).	11.7	20.8	26	32.5	9.1	3.065	1.174
Scope validation and control activities are conducted regularly to ensure the project stays on track.	10.4	9.1	40.3	22.1	18.2	3.286	1.179
There is a formal process for scope verification and acceptance with the client/stakeholders.	3.9	19.5	29.9	35.1	11.7	3.312	1.042
Lessons learned from previous projects are collected and applied to		9.1	27.3	39	24	3.792	0.922

scope management for new projects.							
<b>Project Scope Management maturity level</b>						<b>3.379</b>	<b>1.079</b>

#### 4.3.1.2 Time Management maturity level

The maturity level of time management of the real estate development companies of Nepal is estimated by adding the mean value of each sub-element of the respective knowledge area which is 3.41. The standard deviation of the variables of the project time management ranges from 0.966 to 1.134. The total standard deviation of time management is 1.062. This indicates a moderate spread. The responses are not tightly clustered, but they are not extremely spread out as well. Some respondents had noticeable differences in opinions, but most responses are reasonably close to the mean. Overall, the levels of project time management maturity level in real estate development companies in Nepal is at 3.41.

**TABLE 13.** Time management maturity level (Own survey results, 2026)

PM body of Knowledge area	Frequency					Mean	SD
	1	2	3	4	5		
Project timelines are accurately estimated using reliable techniques and past data.	1.3	36.4	26	23.4	13	3.104	1.083
Schedules are effectively developed, monitored, and controlled.	5.2	16.9	33.8	24.7	19.5	3.364	1.134
Delays in project timelines are identified early and managed effectively with corrective actions.	6.5	15.6	28.6	36.4	13	3.338	1.096
Resources (labor, materials, equipment) are allocated effectively to meet the project timelines.		14.3	33.8	32.5	19.5	3.571	0.966
Key milestones are clearly defined and communicated to all team members and stakeholders.	2.6	11.7	23.4	40.3	22.1	3.675	1.032

<b>Project Time Management maturity level</b>	<b>3.410</b>	<b>1.062</b>
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#### 4.3.1.3 Cost Management maturity level

The maturity level of cost management of the real estate development companies of Nepal is estimated by adding the mean value of each sub-element of the respective knowledge area which is 3.393. The SD of the variables of the project cost management ranges from 0.972 to 1.099. The total SD of cost management is 1.047. This indicates a moderate spread. The responses are not tightly clustered, but they are not extremely spread out as well. Some respondents had noticeable differences in opinions, but most responses are reasonably close to the mean. Overall, the levels of project cost management maturity level in real estate development companies in Nepal is at 3.493.

**TABLE 14.** Cost management maturity level (Own survey results, 2026)

PM body of Knowledge area	Frequency					Mean	SD
	1	2	3	4	5		
The budgeting process for projects is effective and based on detailed estimates.		28.6	18.2	39	14.3	3.390	1.053
Project costs are tracked accurately against the approved budget throughout the project lifecycle.	2.6	22.1	29.9	27.3	18.2	3.364	1.099
Cost overruns are identified early, effectively managed, and communicated to relevant parties.	5.2	18.2	33.8	31.2	11.7	3.260	1.056
Financial reports are generated regularly to track and monitor project expenses and profitability.	1.3	14.3	36.4	31.2	15.6	3.461	0.972
Cost estimates are based on historical data from past projects and industry best practices.	3.9	15.6	23.4	41.6	15.6	3.494	1.059
<b>Project Cost Management maturity level</b>						<b>3.393</b>	<b>1.047</b>

#### 4.3.1.4 Quality Management maturity level

The maturity level of quality management of the real estate development companies of Nepal is estimated by adding the mean value of each sub-element of the respective knowledge area which is 3.478. The SD of the variables of the project quality management ranges from 0.951 to 1.095. The total SD of quality management is 1.013. This indicates a moderate spread. The responses are not tightly clustered, but they are not extremely spread out as well. Some respondents had noticeable differences in opinions, but most responses are reasonably close to the mean. Overall, the levels of project quality management maturity level in real estate development companies in Nepal is at 3.478.

**TABLE 15.** Quality management maturity level (Own survey results, 2026)

PM body of Knowledge area	Frequency					Mean	SD
	1	2	3	4	5		
Quality standards (e.g., for materials, workmanship) are consistently applied to projects.		27.3	18.2	35.1	19.5	3.468	1.095
Quality assurance processes (e.g., inspections, audits) are integrated into the project lifecycle.		23.4	27.3	32.5	16.9	3.429	1.031
Quality issues (defects, non-conformance) are identified and addressed promptly.		20.8	28.6	39	11.7	3.416	0.951
There are formal continuous improvement processes in place to enhance project quality.	1.3	14.3	36.4	33.8	14.3	3.455	0.953
Feedback from clients and stakeholders is actively sought and utilized to improve quality management.	1.3	13	32.5	28.6	24.7	3.623	1.039
<b>Project Quality Management maturity level</b>						<b>3.478</b>	<b>1.013</b>

#### 4.3.1.5 Integration Management maturity level

The maturity level of integration management of the real estate development companies of Nepal is estimated by adding the mean value of each sub-element of the respective knowledge area which is 3.46. The SD of the variables of the project integration management ranges from 0.925 to 1.056. The total SD of integration management is 0.971. This indicates a moderate spread. The responses are not tightly clustered, but they are not extremely spread out as well. Some respondents had noticeable differences in opinions, but most responses are reasonably close to the mean. Overall, the levels of project integration management maturity level in real estate development companies in Nepal is at 3.46.

**TABLE 16.** Integration management maturity level (Own survey results, 2026)

PM body of Knowledge area	Frequency					Mean	SD
	1	2	3	4	5		
Project objectives are well-aligned with the organization's strategic goals.		16.9	35.1	35.1	13	3.442	0.925
The project charter or project initiation document is developed and communicated effectively for all projects.		16.9	29.9	39	14.3	3.506	0.941
PM plans are regularly reviewed, updated, and followed.	2.6	19.5	27.3	35.1	15.6	3.416	1.056
Key stakeholders are actively involved in the project integration and coordination process.		16.9	33.8	36.4	13	3.455	0.925
Changes to project scope, schedule, or budget are systematically documented and communicated.		19.5	31.2	31.2	18.2	3.481	1.008
<b>Project Integration management maturity level</b>						<b>3.46</b>	<b>0.971</b>

#### 4.3.1.6 Communication Management maturity level

The maturity level of communication management of the real estate development companies of Nepal is estimated by adding the mean value of each sub-element of the respective knowledge area which is 3.499. The SD of the variables of the project communication management ranges from 0.94 to 1.016. The total SD of communication management is 0.982. This indicates a moderate spread. The responses are not tightly clustered, but they are not extremely spread out as well. Some respondents had noticeable differences in opinions, but most responses are reasonably close to the mean. Overall, the levels of project communication management maturity level in real estate development companies in Nepal is at 3.499.

**TABLE 17.** Communication management maturity level (Own survey results, 2026)

PM body of Knowledge area	Frequency					Mean	SD
	1	2	3	4	5		
Communication among project stakeholders (clients, contractors, engineers) is structured, clear, and timely.		16.9	32.5	36.4	14.3	3.481	0.940
Effective tools (e.g., meetings, reports, software) are used for project communication and reporting.	1.3	16.9	32.5	32.5	16.9	3.468	1.008
Status updates (progress reports) are provided regularly to all stakeholders.	1.3	16.9	27.3	40.3	14.3	3.494	0.982
A formal communication plan is developed for each major project.	1.3	13	32.5	31.2	22.1	3.597	1.016
There is a clear process for escalating issues and communication problems to the appropriate level.	1.3	15.6	33.8	35.1	14.3	3.455	0.967
<b>Project Communication Management maturity level</b>						<b>3.499</b>	<b>0.982</b>

#### 4.3.1.7 Resource Management maturity level

The maturity level of resource management of the real estate development companies of Nepal is estimated by adding the mean value of each sub-element of the respective knowledge area which is 3.527. The SD of the variables of the project human resource management ranges from 0.912 to 1.042. The total SD of human resource management is 0.978. This indicates a moderate spread. The responses are not tightly clustered, but they are not extremely spread out as well. Some respondents had noticeable differences in opinions, but most responses are reasonably close to the mean. Overall, the levels of project human resource management maturity level in real estate development companies in Nepal is at 3.527.

**TABLE 18.** Resource management maturity level (Own survey results, 2026)

PM body of Knowledge area	Frequency					Mean	SD
	1	2	3	4	5		
Project teams are formed based on the appropriate skills and criteria for the project.		19.5	23.4	36.4	20.8	3.584	1.030
Training and development programs are available to improve the skills of project staff.		15.6	42.9	26	15.6	3.416	0.937
Team member performance is regularly evaluated, and feedback is provided.		24.7	27.3	31.2	16.9	3.403	1.042
Roles and responsibilities for project team members are clearly defined and documented.		13	26	37.7	23.4	3.714	0.971
There are effective processes for resolving conflicts and issues within project teams.		14.3	33.8	37.7	14.3	3.519	0.912
<b>Project Human Resource Management maturity level</b>						<b>3.527</b>	<b>0.978</b>

#### 4.3.1.8 Procurement Management maturity level

The maturity level of procurement management of the real estate development companies of Nepal is estimated by adding the mean value of each sub-element of the respective knowledge area which is 3.423. The SD of the variables of the project procurement management ranges from 0.995 to 1.165. The total SD of procurement management is 1.077. This indicates a moderate spread. The responses are not tightly clustered, but they are not extremely spread out as well. Some respondents had noticeable differences in opinions, but most responses are reasonably close to the mean. Overall, the levels of project procurement management maturity level in real estate development companies in Nepal is at 3.423.

**TABLE 19.** Procurement management maturity level (Own survey results, 2026)

PM body of Knowledge area	Frequency					Mean	SD
	1	2	3	4	5		
The procurement process for materials, equipment, and subcontractors is effective in meeting project needs.	1.3	24.7	27.3	31.2	15.6	3.351	1.061
Procurement activities align well with the project requirements and schedule.	2.6	20.8	31.2	28.6	16.9	3.364	1.075
Suppliers, vendors, and subcontractors are selected based on clear, transparent, and fair criteria.	3.9	16.9	28.6	24.7	26	3.519	1.165
The procurement process (tendering, contracting) is transparent and fair.	3.9	16.9	33.8	27.3	18.2	3.39	1.09
Supplier and contractor performance is regularly evaluated and managed.		15.6	40.3	23.4	20.8	3.494	0.995
<b>Project Procurement Management maturity level</b>						<b>3.423</b>	<b>1.077</b>

#### 4.3.1.9 Risk Management maturity level

The maturity level of risk management of the real estate development companies of Nepal is estimated by adding the mean value of each sub-element of the respective knowledge area which is 3.371. The SD of the variables of project risk management ranges from 0.979 to 1.136. The total SD of risk management is 1.094. This indicates a moderate spread. The responses are not tightly clustered, but they are not extremely spread out as well. Some respondents had noticeable differences in opinions, but most responses are reasonably close to the mean. Overall, the project risk management maturity level in real estate development companies in Nepal is at 3.371.

**TABLE 20.** Risk management maturity level (Own survey results, 2026)

PM body of Knowledge area	Frequency					Mean	SD
	1	2	3	4	5		
Potential risks (eg, regulatory, financial, site-related) are identified and assessed proactively for projects.	2.6	26	29.9	22.1	19.5	3.299	1.136
Mitigation strategies are developed and implemented for the identified key risks.	3.9	23.4	22.1	31.2	19.5	3.39	1.160
Risk management plans are regularly reviewed and updated as the project progresses.	5.2	18.2	32.5	28.6	15.6	3.312	1.103
Risk management practices are integrated into the project planning and execution processes.	2.6	22.1	22.1	36.4	16.9	3.429	1.093
There is a culture of risk awareness among the project team members and management.	1.3	16.9	33.8	33.8	14.3	3.429	0.979
<b>Project Risk Management maturity level</b>						<b>3.371</b>	<b>1.094</b>

#### 4.3.1.10 Stakeholder Management maturity level

The maturity level of stakeholder management of the real estate development companies of Nepal is estimated by adding the mean value of each sub-element of the respective knowledge area which is 3.465. The SD of the variables of the project stakeholder management ranges from 0.981 to 1.07. The total SD of stakeholder management is 1.007. This indicates a moderate spread. The responses are not tightly clustered, but they are not extremely spread out as well. Some respondents had noticeable differences in opinions, but most responses are reasonably close to the mean. Overall, the levels of project stakeholder management maturity level in real estate development companies in Nepal is at 3.465.

**TABLE 21.** Stakeholder management maturity level (Own survey results, 2026)

PM body of Knowledge area	Frequency					Mean	SD
	1	2	3	4	5		
Key stakeholders (clients, investors, local authorities, community) are identified and analyzed effectively.	1.3	14.3	39	28.6	16.9	3.455	0.981
Stakeholder engagement is actively maintained and managed throughout the project lifecycle.	2.6	20.8	33.8	32.5	10.4	3.273	0.995
Stakeholder expectations are managed and communicated effectively to avoid conflicts.	2.6	19.5	24.7	36.4	16.9	3.455	1.07
Stakeholder feedback is actively sought and incorporated into project decisions.		16.9	36.4	28.6	18.2	3.481	0.982
Stakeholder relationships are nurtured and maintained, even after project completion.		16.9	22.1	39	22.1	3.662	1.008
<b>Project Stakeholder Management maturity level</b>						<b>3.465</b>	<b>1.007</b>

### 4.3.2 Overall real estate companies' maturity level

**TABLE 22.** PM maturity levels of the survey companies (Own survey results, 2026)

<b>PM body of knowledge area</b>	<b>Mean maturity level</b>	<b>SD</b>
Scope	3.379	1.079
Time	3.410	1.062
Cost	3.393	1.047
Quality	3.478	1.013
Integration	3.46	0.971
Communication	3.499	0.982
HR	3.527	0.978
Procurement	3.423	1.077
Risk	3.371	1.094
Stakeholders	3.465	1.007
<b>Real Estate companies' maturity level</b>	<b>3.44</b>	<b>1.031</b>

The above data presents maturity levels of each PM knowledge area. From this, the overall PM maturity level of the real estate development companies, that is the average Mean of all the knowledge areas concluded under the research is at maturity level of 3.44. This indicates that the maturity level is between level 3 and level 4. At this level, the process of the company is integrated with the corporate process, and management makes organizational decisions based on data. According to the mean result of all the variables of the research are 3.44 or near it. This implies that the respondents consider that companies have a good maturity level in all aspects of project management.

## **5 Discussion of Findings**

This chapter highlights the discussions and key findings identified from the data analysis. It interprets the findings presented in the previous section. It discusses the PM maturity level for each of the ten PMBOK knowledge areas within the real estate development companies of Nepal, followed by an interpretation of the overall maturity level of real estate development companies.

### **5.1 Integration Management Maturity Level**

As per the results in Table 16, Integration management, which coordinates all other knowledge areas has achieved a maturity level of 3.46. This indicates that project plans are generally aligned with strategic goals which have mean of 3.442 and that stakeholders are involved in integration (mean 3.455). The highest maturity level is of project charter or project initiation document is developed and communicated for each project is 3.506. This indicates the integration level is moderately good compared to other knowledge areas. Along with this the consistent standard deviations around 0.97 point to a reasonable level of standardization. However, the fact that this score is not higher, for example, above 4.0 suggests that integration is often informal or project-specific, rather than being driven by a centralized and company-wide PM methodology.

### **5.2 Scope Management Maturity Level**

The data in Table 12 shows an overall maturity level of 3.38 for scope management. In other words, scope management of real estate companies in Nepal is at a moderate level of maturity. As per SEI, CMM and CMMI has labeled "Defined" (Level 3), which means the processes are generally standardized but not yet quantitatively managed. The highest-rated individual practice within this area was "lessons learned from previous projects

are applied to scope management" with an average score of 3.79, indicating that companies give effort to apply past experiences and tried to avoid the mistakes again. However, the lowest-scoring practice was "formal process for managing scope changes" which has Mean of 3.065, and its SD was relatively high at 1.174. This finding is significant because it shows that in various companies the issue of scope creep is significant and uncontrolled in Nepal.

### **5.3 Time Management Maturity Level**

Project delay is the biggest common construction obstacle in Nepal. Therefore, time management is crucial (Paudel & Henry, 2024). As shown in Table 13, the maturity level for time management has a mean of 3.41(Level 3). The practices with the highest maturity were "key milestones are clearly defined and communicated" which has mean of 3.675 which is at the high end of level 3. This indicates a good awareness of time schedule and understanding. However, the lowest maturity was for "project timelines are accurately estimated using reliable techniques" which has mean 3.10 which is at the lower end. The standard deviation is 1.083. This confirms that inaccurate initial time estimations of the project completion are a primary cause of project delays.

### **5.4 Cost Management Maturity Level**

According to the results of Table 14, the level of cost management maturity is 3.393, which indicates that cost processes are defined and followed but still are not yet managed or optimized numerically. The "Cost estimates are based on historical data from past projects and industry best practices." scored highest mean 3.494, indicating that companies estimate their cost based on past projects and industry best practices. However, "Cost overruns are identified early, effectively managed, and communicated to relevant parties." scored lowest mean 3.26, with a SD of 1.056. Overall, the moderate cost management maturity level suggests that companies have budgeting processes, but they

lack strong forecasting and monitoring mechanisms which is needed to prevent or manage cost deviations effectively.

## **5.5 Quality Management Maturity Level**

As per the results in Table 15, the quality management maturity level of 3.48 higher end of Level 3. This score indicates relatively stronger focus on quality. The practice of seeking and utilizing client feedback scored the highest Mean of 3.623. This indicates that companies are responsive towards the client's needs and take their feedback seriously. Quality assurance processes Mean is 3.429 and addressing quality issues promptly mean is 3.416 with the standard deviations are relatively low ranging from 0.951 to 1.095. This suggests there is consistent practice across companies. Since the maturity level is moderate this indicates the uses of some unstandardized quality materials during construction suggesting that formal quality policies may exist but are not always enforced on the ground.

## **5.6 Communication Management Maturity Level**

As shown in Table 17, communication management achieved the maturity level of 3.499. The practice of "A formal communication plan is developed for each major project." scored highest mean 3.597. This is a positive finding because effective communication is critical in the multi-stakeholder environment. This helps with good communication and coordination of real estate development entities like clients, contractors, local authorities. The relatively low standard deviations around 0.98 suggest that communication practices are consistent. This strength in communication can be helpful to improve weaker areas like risk and scope management.

## 5.7 Human Resource Management Maturity Level

Table 18 indicates that HR management has a maturity level at 3.527. The practice “Role and responsibilities for project team members are clearly defined and documented” which has scored particularly high Mean of 3.714. This suggests that project teams in Nepal's real estate sector are well-structured, and the individuals knows about their duties and responsibilities. However, “Training and development programs are available to improve the skills of project staff” has the mean of 3.416 and “Team member performance is regularly evaluated, and feedback is provided” has the comparatively low mean of 3.403 with higher standard deviations of 1.042. This implies that even the roles are clear but the effort for team training and team capability development varies significantly between companies.

## 5.8 Procurement Management Maturity Level

As shown in Table 19, Procurement management maturity is 3.423. The practice of “Suppliers, vendors, and subcontractors are selected based on clear, transparent, and fair criteria” has scored comparatively the highest mean 3.519. While the “The procurement process for materials, equipment, and subcontractors is effective in meeting project needs.” scored lowest mean of 3.351. The collective standard deviations were relatively high 1.077. This indicates an issue of proper procurement practices in different real estate companies of Nepal. These issues lead to lower material quality, untimely supply of materials and supply chain disruptions during the construction. Unpredictable material quality and supply chain disruptions is a common problem in the Nepali construction (Paudel & Henry, 2024).

## 5.9 Risk Management Maturity Level

As shown in Table 20, that risk management has the lowest maturity level of all ten knowledge areas at 3.37. This is a critical finding. While there is a moderate culture of risk awareness because both “Risk management practices are integrated into the project planning and execution processes” and “There is a culture of risk awareness among the project team member and management” has the mean of 3.429. But the “Potential risks (e.g., regulatory, financial, site-related) are identified and assessed proactively for projects” has the comparatively lowest mean of 3.299 with along with the standard deviation of 1.136. This low maturity directly indicates the frequent project disruptions, delays and budget overruns described in the literature review for developing countries like Nepal.

## 5.10 Stakeholder Management Maturity Level

As shown in Table 21, Stakeholder management achieved a maturity level of 3.465. “Stakeholder relationships are nurtured and maintained, even after project completion” received the comparatively highest mean of 3.662, which is a good sign for long-term business sustainability. However, “Stakeholder engagement is actively maintained and managed throughout the project lifecycle” scored lowest mean of 3.272, with a SD of 0.995. This indicates that companies are good at initial and post-project engagement and have good communication and coordination. But the companies struggle with continuous communication and expectations of stakeholders during the project execution phase. This can lead to conflicts during the project.

### **5.11 Overall Project Management Maturity Level**

As summarized in Table 22, the overall PM maturity level for real estate development companies in Nepal is 3.44. This is calculated as the average Mean of all ten knowledge areas. According to the 5-level maturity scale defined in this research where 1 is equal to Initial, 2 is equal to Managed, 3 is equal to Defined, 4 is equal to Quantitatively Managed and 5 is equal to Optimizing. The achieved score of 3.44 indicates that the real estate construction companies of Nepal are at the upper end of Level 3 which is 'Defined'. This means that real estate companies in Nepal have generally established standardized PM processes that are documented and followed across most projects. Processes are no longer entirely at initial as level 1 or just repeatable as level 2.

However, the score is still significantly below Level 4 quantitatively managed. To be quantitatively managed, proper metrics and data to control the process and performance are needed. The findings shows that while basic processes exist especially in HR with maturity level 3.527 and Communication 3.499. But companies are not yet managed, particularly in critical areas like Risk management with the mean of 3.371 and Scope Management with the mean of 3.379. The average sum of all ten knowledge areas maturity levels is 3.44, so the average maturity level is 3.44. This means that the real estate companies of Nepal have, upgraded from state of chaotic and individual-dependent project management. Even though they are still failing to possess mature, data-driven, and integrated systems adequately to avoid consistent delays, cost over runs, and quality issues. A low variation of 1.031, on average, in all areas indicates that this is ongoing common experience throughout the real estate development sector in Nepal.

### **5.12 Summary of Findings**

Based on the analysis, data collected from 77 respondents across eight real estate development companies in Nepal's major urban areas which are Kathmandu valley, Lalitpur, Pokhara and Chitwan, the following summary of findings is presented.

**TABLE 23.** Summary of Findings

<b>PM body of knowledge area</b>	<b>Maturity level</b>	<b>Level</b>	<b>Findings</b>
Project Integration Management maturity level	3.46	Defined	Project charters are developed but alignment with strategic goals could be stronger (3.44).
Project Scope Management maturity level	3.379	Defined	Lessons learned are applied, but formal scope change control is weak
Project Time Management maturity level	3.410	Defined	Milestones are clearly communicated (3.68), but timeline estimation techniques are unreliable
Project Cost Management maturity level	3.393	Defined	Cost estimates use historical data, but early identification of cost overruns is poor
Project Quality Management maturity level	3.478	Defined	Client feedback is utilized well, but quality assurance processes are only moderate.
Project Communication Management maturity level	3.499	Defined	Approaching quantitatively managed. Formal communication plans exist and stakeholder communication is structured.
Project HR Management maturity level	3.527	Defined	The highest among all areas. Roles and responsibilities are clearly defined, but training and performance evaluation lag.
Project Procurement Management maturity level	3.423	Defined	Supplier selection criteria are relatively transparent, but procurement effectiveness in meeting project needs is lower.
Project Risk Management maturity level	3.371	Defined	The lowest maturity level. Risk awareness culture exists but proactive risk identification and mitigation planning are weak.
Project Stakeholders Management maturity level	3.465	Defined	Post-project relationship nurturing is strong, but continuous engagement during project execution is weaker.

## **6 Conclusions and Recommendations**

This chapter provides the conclusion, limitations and recommendations for the entire research. The performances of real estate development companies in Nepal were evaluated based on the ten PMBOK knowledge areas to understand their PM maturity levels with respect to each of them from PMMM by PM Solutions. This highlights the current maturity level (3.44), which still leaves room for improvement. This chapter also elaborates the strengths as well as weaknesses in companies along with practical steps for improvement. Finally, this chapter suggests further research to enhance the knowledge and understanding of PM maturity in real estate development in Nepal.

### **6.1 Conclusion**

The overall PM maturity level for real estate development companies in Nepal is 3.44 with the SD of 1.031. The lowest mean maturity level is Project risk management maturity level with 3.371 and with SD of 1.094, which shows high potential area for improvement. The highest mean maturity level is Project human resource management maturity level with 3.527 and with SD of 0.978.

The SDs across maturity levels are moderate, indicating lack of consistent perceptions of maturity among stakeholders. This means that real estate companies in Nepal have established standardized PM processes that are documented and followed across most projects. However, the score is still significantly below Level 4 quantitatively managed. Real estate development companies in Nepal will continue experiencing foreseen project failures if the poorer knowledge areas, particularly scope management and risk management are not enhanced. The current maturity level is insufficient to guarantee consistent project success.

## 6.2 Recommendations

Based on the conclusions, the following recommendations are proposed in order to increase maturity for real estate development companies in Nepal, various industry stakeholders and policymakers of Nepal.

1. **Strengthen Project Risk Management (priority – lowest maturity):** It is necessary to develop and mandate a standardized risk management process for every project. There is a necessity for risk identification workshops and risk response planning. A specific person should be assigned to monitor each major risk, and he should conduct monthly risk register updates. Companies should provide short training sessions for project managers and site engineers on proactive risk identification like e.g., regulatory changes, financial risks and site conditions.
2. **Improve Scope Change Control:** To reduce the scope creep implementation of a formal change request procedure. This procedure should require documented approval from the client and project sponsor before any scope change is executed. A concept of change log should be implemented, and companies should communicate all approved changes to the entire project team. Companies should conduct weekly scope validation meetings with stakeholders to ensure alignment and early detection of potential creep.
3. **Conduct Regular Maturity Assessments:** There is also the need to perform a bi/annual self-assessment using a similar questionnaire as in this research to track progress of the company. This can be used with maturity scores as a key performance indicator for the project. And the obtained self-assessment results should be used as a benchmark against regional real estate developers to identify competitive gaps.
4. **Policy and Industry-Level Recommendations:** Nepal Land and Housing Developers' Association (NLHDA) should develop a sector-specific PM guideline based on PMBOK.

These guidelines should be made with specific needs as per local regulatory and cultural contexts. The government Ministry of Urban Development (MoUD) should mandate minimum PM standards for large-scale real estate projects, like quality and safety regulations. It is also seen that the encouragement should be in university-industry partnerships programs. This program can offer short certificate courses in PM for various levels of construction professionals.

### 6.3 Limitations and Suggestions for Future Research

Although this research has highlighted the levels of PM maturity in real estate development companies in Nepal in detail but there are few limitations of this research. This research is focused only in real estate sector of Nepal. Specifically, real estate development companies which are based only in Kathmandu, Lalitpur, Pokhara and Chitwan. These urban centers have the most numbers of real estate constructions, but this may not accurately reflect the condition of companies operating in other urban centers and rural areas. This research has relied on 77 respondents for the data, if a survey is conducted with many numbers of respondents, then the results may become more accurate. The main data for this research is based on structured questionnaires using respondents' self-reported perceptions of their organizations' PM practices which may result in possibility of self-biasedness.

For enhancing the levels of PM maturity in real estate development companies in Nepal, various practical methodologies can be used for future research.

1. **Barriers to Risk Management:** Conduct interviews in depth with project managers and senior engineers to find the reasons why risk management practices are still reactive while people know about it. barriers related to culture, organization and resources

2. **Longitudinal Study on Maturity Improvement:** Create a controlled study design in which one group gets formal PM training, and another does not and measure maturity changes after 1 year. Follow up with the same organizations 2–3 years later after they've utilized suggested changes to see where change has occurred on-time, on-budget, quality.
3. **Stakeholder Perception Study:** Explore how the maturity of PM is perceived by stakeholders such as clients, contractors and regulators also whether these perceptions are in line with internal evaluation.
4. **Maturity Models Integration with Nepali Context:** Propose a contextualized maturity model that lists out practice challenges typical to Nepal (like material supply disruptions, labor migration & bureaucratic delays) not fully reflected in western models.

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## Appendices

### Appendix 1. Survey Questionnaire

Dear respondents,

My name is Ankita Makaju, a master's degree student at the University of Vaasa in the School of Technology and Innovations, department of Industrial Engineering, major in Strategic Project Management. I am conducting research to assess levels of project management maturity in real estate development companies in Nepal. You are kindly requested to respond to the statements which describe a specific situation. You are to decide the extent to which you agree that the statement is typical of your organization's practices. To do so, select one descriptor for each statement.

The research is anonymous and stored on secure University servers. The information you provide will be used completely for academic purposes and will be kept confidential. Participation in this study is absolutely voluntary. It will take approximately 10-15 min of your time to complete the questionnaires.

I thank you in advance for offering your valuable time and if you have any questions.

Please contact me by:

Email: x8421202@student.uwasa.

#### Part I: Biographical Information

##### 1. Gender

- Male
- Female

##### 2. Age

- 0- 30
- 31 -40
- 41 -50
- 51 -60
- 61-70

### **3. Education**

- Diploma
- Bachelors
- Masters
- PHD

### **4. Department**

- Project Management / Project Planning
- Construction / Site Operations
- Design / Engineering
- Sales & Marketing
- Finance & Accounts
- Senior Management / Administration
- Others

### **5. Position of your role in project**

- Project Coordinator
- Project Manager
- Site Engineer / supervisor
- Senior Engineer
- Managing Director / Senior Executive
- Contract Administrator
- Consultant
- Other

## 6. Work Experience (in years)

- 0- 3 years
- 4- 6 years
- 7 -10 years
- Over 10 years

## Part II: Assessment of Project Management Maturity

Instruction: For each of the statements below, please rate the project management maturity level in your organization. Think overall project management practices of your real estate development company and choose the number that best describes your agreement with the statement.

Scale:

- 1 = Strongly Disagree (The practice is not followed or is very poor)
- 2 = Disagree (The practice is followed rarely or is not effective)
- 3 = Neutral (The practice is sometimes followed, or I am unsure)
- 4 = Agree (The practice is consistently followed and is effective)
- 5 = Strongly Agree (The practice is a standardized, highly effective part of the organization)

## 7. Project Integration Management

	1	2	3	4	5
Project objectives are well-aligned with the organization's strategic goals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The project charter or project initiation document is developed and	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

communicated effectively for all projects.

Project management plans are regularly reviewed, updated, and followed.

Key stakeholder are actively involved in the project integration and coordination process

Changes to project scope, schedule, or budget are systematically documented and communicated.

## 8. Project Scope Management

	1	2	3	4	5
Project scope is clearly defined and documented from the beginning.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

There is a formal process for managing scope changes (scope creep is controlled).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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Scope validation and control activities are conducted regularly to ensure project stays on track.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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There is a formal process for scope	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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verification and acceptance with the client/stakeholders.

Lessons learn from previous projects are collected and applied to scope management for new projects.

○ ○ ○ ○ ○

### 9. Project Time (Schedule) Management

	1	2	3	4	5
Project timelines are accurately estimated using reliable techniques and past data.	○	○	○	○	○
Schedules (e.g., Gantt charts, work breakdown structures) are effectively developed, monitored, and controlled.	○	○	○	○	○
Delays in project timelines are identified early and managed effectively with corrective actions.	○	○	○	○	○
Resources (labour, materials, equipment) are allocated effectively to meet the project timelines.	○	○	○	○	○
Key milestones are clearly defined and communicated to all team members and stakeholders.	○	○	○	○	○

## 10. Project Cost Management

	1	2	3	4	5
The budgeting process for projects is effective and based on detailed estimates.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Project costs are tracked accurately against the approved budget throughout the project lifecycle.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cost overruns are identified early, effectively managed, and communicated to relevant parties.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Financial reports are generated regularly to track and monitor project expenses and profitability.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cost estimates are based on historical data from past projects and industry best practices.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## 11. Project Quality Management

	1	2	3	4	5
Quality standards (e.g., for materials, workmanship) are consistently applied to projects.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Quality assurance processes (e.g., inspections, audits) are integrated into the project lifecycle.

Quality issues (defects, non conformance) are identified and addressed promptly.

There are formal continuous improvement processes in place to enhance project quality.

Feedback from clients and stakeholders are actively sought and utilized to improve quality management.

## 12. Project Human Resource Management

**1**      **2**      **3**      **4**      **5**

Project teams are formed based on the appropriate skills and criteria for the project.

Training & development programs are available to improve the skills of project staff.

Team member performance is regularly evaluated, and feedback is

provided.

Roles and responsibilities for project team members are clearly defined and documented.

There are effective processes for resolving conflicts and issues within project teams.

### 13. Project Communication Management

	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Communications among project stakeholders (clients, contractors, engineers) is structured, clear, and timely.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Effective tools (e.g., meetings, reports, software) are used for project communication and reporting.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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Status updates (progress reports) are provided regularly to all stakeholders. A formal communication plan is developed for each major project.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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There is a clear process for escalating issues and communication problems to the appropriate level.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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#### 14. Project Risk Management

	1	2	3	4	5
Potential risks (eg, regulatory, financial, site-related) are identified and assessed proactively for projects.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mitigation strategies are developed and implemented for the identified key risks.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Risk management plans are regularly reviewed and updated as the project progresses.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Risk management practices are integrated into the project planning and execution processes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There is a culture of risk awareness among the project team members and management.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

#### 15. Project Procurement Management

	1	2	3	4	5
The procurement process for materials, equipment, and subcontractors are effective in meeting project needs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Procurement activities align well with the project requirements and schedule.

Suppliers, vendors, and subcontractors are selected based on clear, transparent, and fair criteria.

The procurement process (tendering, contracting) is transparent and fair. Supplier and contractor performance is regularly evaluated and managed.

## 16. Project Stakeholder Management

**1**      **2**      **3**      **4**      **5**

Key stakeholders (clients, investors, local authorities, community) are identified and analyzed effectively.

Stakeholder engagement is actively maintained and managed throughout the project lifecycle.

Stakeholder expectations are managed and communicated effectively to avoid conflicts.

Stakeholder feedback is actively sought and incorporated into project

decisions.

Stakeholder relationships are       
nurtured and maintained, even after  
project completion.

## Appendix 2. Ten PM knowledge area's maturity level

Project Integration Management Statistics					
	Project objectives are well-align with organization's strategic goals.	Project charter or project initiation document is developed and communicated effectively for all projects.	PM plans are regularly reviewed, updated, and followed.	Key stakeholders are actively involved in the project integration and coordination process.	Changes to project scope, schedule, or budget are systematically documented and communicated.
Valid	77	77	77	77	77
Missing	-	-	-	-	-
Mean (arithmetic)	3.442	3.506	3.416	3.455	3.481
Std Dev	0.925	0.941	1.056	0.925	1.008
Min	2	2.	1.	2.	2.
Max	5	5	5	5	5

<b>Project Scope Management Statistics</b>					
	Project scope is clearly defined and documented from the beginning.	There is a formal process for managing scope changes (scope creep is controlled).	Scope validation and control activities are conducted regularly to ensure the project stays on track.	There is a formal process for scope verification and acceptance with the client/stakeholders.	Lessons learned from previous projects are collected and applied to scope management for new projects.
Valid	77	77	77	77	77
Missing	0	0	0	0	0
Mean (arithmetic)	3.442	3.065	3.286	3.312	3.792
Std Dev	1.082	1.174	1.179	1.042	0.922
Min.	1	1	1.000	1.000	2
Max.	5	5	5	5	5

<b>Project Time (Schedule) Management Statistics</b>					
	Project timelines are accurately estimated using reliable techniques and past data.	Schedules (e.g., Gantt charts, work breakdown structures) are effectively developed, monitored, and controlled.	Delays in project timelines are identified early and managed effectively with corrective actions.	Resources (labor, materials, equipment) are allocated effectively to meet the project timelines.	Key milestones are clearly defined and communicated to all team members and stakeholders.
Valid	77	77	77	77	77
Missing	-	-	-	-	-
Mean (arithmetic)	3.104	3.364	3.338	3.571	3.675
Std Dev	1.083	1.134	1.096	0.966	1.032
Min.	1	1	1	2	1
Max.	5	5	5	5	5

<b>Project Cost Management Statistics</b>					
	The budgeting process for projects is effective and based on detailed estimates.	Project costs are tracked accurately against the approved budget throughout the project lifecycle.	Cost overruns are identified early, effectively managed, and communicated to relevant parties.	Financial reports are generated regularly to track and monitor project expenses and profitability.	Cost estimates are based on historical data from past projects and industry's best practices.
Valid	77	77	77	77	77
Missing	-	-	-	-	-
Mean (arithmetic)	3.390	3.364	3.260	3.455	3.494
Std Dev	1.053	1.099	1.056	0.967	1.059
Min.	2	1	1	1	1
Max.	5	5	5	5	5

<b>Project Quality Management Statistics</b>					
	The budgeting process for projects is effective and based on detailed estimates.	Project costs are tracked accurately against the approved budget throughout the project lifecycle.	Cost overruns are identified early, effectively managed, and communicated to relevant parties.	Financial reports are generated regularly to track and monitor project expenses and profitability.	Cost estimates are based on historical data from past projects and industry best practices.
Valid	77	77	77	77	77
Missing	-	-	-	-	-
Mean (arithmetic)	3.390	3.364	3.260	3.455	3.494
Std Dev	1.053	1.099	1.056	0.967	1.059
Min.	2	1	1	1	1
Max.	5	5	5	5	5

<b>Project Human Resource's Management Statistics</b>					
	Project teams are formed based on the appropriate skills and criteria for the project.	Training and development programs are available to improve the skills of project staff.	Team member performance is regularly evaluated, and feedback is provided.	Roles and responsibilities for project team members are clearly defined and documented.	There are effective processes for resolving conflicts and issues within project teams.
Valid	77	77	77	77	77
Missing	-	-	-	-	-
Mean (arithmetic)	3.584	3.416	3.403	3.714	3.519
Std Dev	1.030	0.937	1.042	0.971	0.912
Min.	2.	2.	2.	2.	2.
Max.	5	5	5	5	5

<b>Project Communication Management Statistics</b>					
	Communication among project stakeholders (clients, contractors, engineers) is structured, clear, and timely.	Effective tools (e.g., meetings, reports, software) are used for project communication and reporting.	Status updates (progress reports) are provided regularly to all stakeholders.	A formal communication plan is developed for each major project.	There is a clear process for escalating issues and communication problems to the appropriate level.
Valid	77	77	77	77	77
Missing	-	-	-	-	-
Mean (arithmetic)	3.481	3.468	3.494	3.597	3.455
Std Dev	0.940	1.008	0.982	1.016	0.967
Min.	2.	1.	1.	1.	1.
Max.	5	5	5	5	5

<b>Project Risk Management Statistics</b>					
	Potential risks (eg, regulatory, financial, site-related) are identified and assessed proactively for projects.	Mitigation strategies are developed and implemented for the identified key risks.	Risk management plans are regularly reviewed and updated as the project progresses.	Risk management practices are integrated into the project planning and execution processes.	There is a culture of risk awareness among the project team members and management.
Valid	77	77	77	77	77
Missing	-	-	-	-	-
Mean (arithmetic)	3.299	3.390	3.312	3.429	3.429
Std Dev	1.136	1.160	1.103	1.093	0.979
Min.	1	1	1	1	1
Max.	5	5	5	5	5

<b>Project Procurement Management Statistics</b>					
	The procurement process for materials, equipment, and subcontractors is effective in meeting project needs	Procurement activities align well with the project requirements and schedule.	Suppliers, vendors, and subcontractors are selected based on clear, transparent, and fair criteria.	The procurement process (tendering, contracting) is transparent and fair.	Supplier and contractor performance is regularly evaluated and managed.
Valid	77	77	77	77	77
Missing	-	-	-	-	-
Mean (arithmetic)	3.351	3.364	3.519	3.390	3.494
Std Dev	1.061	1.075	1.165	1.090	0.995
Min.	1	1	1	1	2
Max.	5	5	5	5	5

<b>Project Stakeholder's Management Statistics</b>					
	Key stakeholders (clients, investors, local authorities, community) are identified and analyzed effectively.	Stakeholder engagement is actively maintained and managed throughout the project lifecycle.	Stakeholder expectations are managed and communicated effectively to avoid conflicts.	Stakeholder feedback is actively sought and incorporated into project decisions.	Stakeholder relationships are nurtured and maintained, even after project completion.
Valid	77	77	77	77	77
Missing	-	-	-	-	-
Mean (arithmetic)	3.455	3.273	3.455	3.481	3.662
Std Dev	0.981	0.995	1.070	0.982	1.008
Min.	1	1	1	2	2
Max.	5	5	5	5	5