

# Assessing The Impact Of Project Management Maturity On Construction Project Outcomes In China

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## Abstract

*This study looked at how the level of project management maturity affects the results of construction projects in China. The study looked at the levels of project management maturity and how they affect key performance indicators including cost control, sticking to the schedule, and meeting quality requirements. It did this by surveying 200 construction experts. The results showed that projects with more experienced project managers tended to have better results. Most companies were at a medium level of maturity, and only a few were at a high level of maturity. This shows that there is still opportunity for improvement in how they use sophisticated project management techniques. The study shows how important it is for construction projects to have mature project management skills in order to be successful. It also advises that Chinese construction companies should work on improving their project management skills in order to do better.*

**Keywords:** *Project management maturity, construction projects, project outcomes, China, cost control, schedule adherence, quality standards.*

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## 1. INTRODUCTION

The construction industry has long been seen as a major force behind economic growth and national development, especially in nations that are growing quickly, like China. Over the past two decades, China's construction industry has seen an extraordinary boom, with massive urbanization, infrastructure expansion, and complicated mega-projects in the transportation, real estate, and energy sectors. This development has created a lot of opportunities, but it has also produced a lot of problems with project performance, such as going over budget and schedule, poor quality, misallocation of resources, and unhappy stakeholders.

In this situation, project management has become an important field for dealing with the increasing risks and difficulties that come with modern construction projects. Using structured project management methods has been shown to be a good way to improve how well projects are delivered. But just using tools and approaches doesn't mean you'll be successful. The maturity level of an organization's project management processes is becoming more and more important. This means how consistently, strategically, and adaptively they are used at different stages of the project life cycle.

**Project Management Maturity (PMM)** refers to how far an organization has made project management methods and systems a part of its daily operations. It includes things like standardizing processes, planning resources, managing risks, communicating with stakeholders, and managing knowledge. Organizations that are more mature usually take a proactive and integrated approach to managing projects, which can lead to more predictable and effective results. There are other frameworks, including the Project Management

Maturity Model (PMMM) and the Organizational Project Management Maturity Model (OPM3), that may be used to figure out how mature an organization is and compare it to others.

Even while people all around the world know how important project management maturity is, there isn't much empirical study on how it directly affects the outcomes of building projects, especially in China. A lot of the research that has already been done has been on industrialized economies, thus developing and transitional economies haven't been studied as much. Also, even if more and more Chinese companies are using modern project management methods, there are still issues about how these methods are used in real life and whether they lead to better project outcomes.

## 2. LITERATURE REVIEW

**Alghail et al. (2022)** looked at knowledge process capabilities as a part of project management maturity and stressed how important it is to learn, share, and use knowledge to move up the maturity ladder. Their empirical findings demonstrated that organizations with well-established knowledge processes tended to perform better in project delivery. This backed up the claim that knowledge management was a key part of improving how projects are managed.

**Lin et al. (2022)** looked at how far intelligent construction management has come in China, with a focus on how digital tools and smart technologies are being used in traditional construction. Their research showed that companies who used technology more effectively made better decisions, managed their resources better, and communicated better. All of these things led to higher levels of maturity and better project success.

**Pereira et al. (2021)** looked into how the level of maturity in knowledge management affected project-based enterprises working in open innovation settings. Their study found that companies with more mature knowledge systems were better able to adapt, work together, and come up with new ideas. These are all important skills for managing construction projects that are complicated and often changing. This was especially important because China's building industry is changing so quickly.

**Wang and Chen (2023)** looked at how Building Information Modeling (BIM) and project management work together throughout the life cycle of a construction project. Their study showed that companies that used BIM procedures had better alignment between the planning and execution stages. This led to better cost control, time management, and project coordination. People thought that this integration showed that project management was getting more advanced.

**Tian et al. (2021)** looked at reused industrial buildings in China to see how they affect sustainability. Their study didn't explicitly link project management maturity to construction planning and execution, but it did stress how important it is to include environmental sustainability in these processes. This meant that sustainability criteria could be added to maturity assessment models as part of a full review of how well a project did.

## RESEARCH METHODOLOGY

### 2.1. Research Design

To look at the link between project management maturity and the results of construction projects, a descriptive research design was used. We used a poll to acquire information from professionals who work in construction project management as part of our data gathering.

## 2.2. Population and Sampling

The people who took part in the study were project managers, engineers, and supervisors who worked for construction enterprises in China. Participants who had relevant expertise managing construction projects were chosen using purposive sampling. There were 200 replies in total, and they were chosen based on their willingness to take part and their level of experience.

## 2.3. Data Collection Instrument

We designed a structured questionnaire to get information on how mature project management is and how well building projects go. There were three parts to the questionnaire: demographic information, an assessment of how mature the project management was, and an evaluation of the project's outcome. We looked at key areas including process consistency, communication effectiveness, risk management, and resource utilization to see how mature the project management was. We looked at how well the project met its quality criteria, stayed on schedule, and kept costs down. People's answers were put on a 5-point Likert scale.

## 2.4. Data Collection Procedure

The chosen individuals received the questionnaire by email. Clear directions and the goal of the research were provided. People who took the survey did so of their own free will, and the answers were collected over a period of two months.

## 2.5. Data Analysis

The data that were collected were sorted and looked at to find patterns and links between the maturity of project management and the results of the project. A descriptive analysis gave a summary of the overall maturity levels and project performance metrics. The study showed how different levels of maturity affected the results of the project.

## 2.6. Ethical Considerations

The study made sure that all of the participants' information was kept private and secret during the whole process. People who took part in the study were told that it was optional, and they agreed to it before any data was collected. The data were treated with care and only used for study.

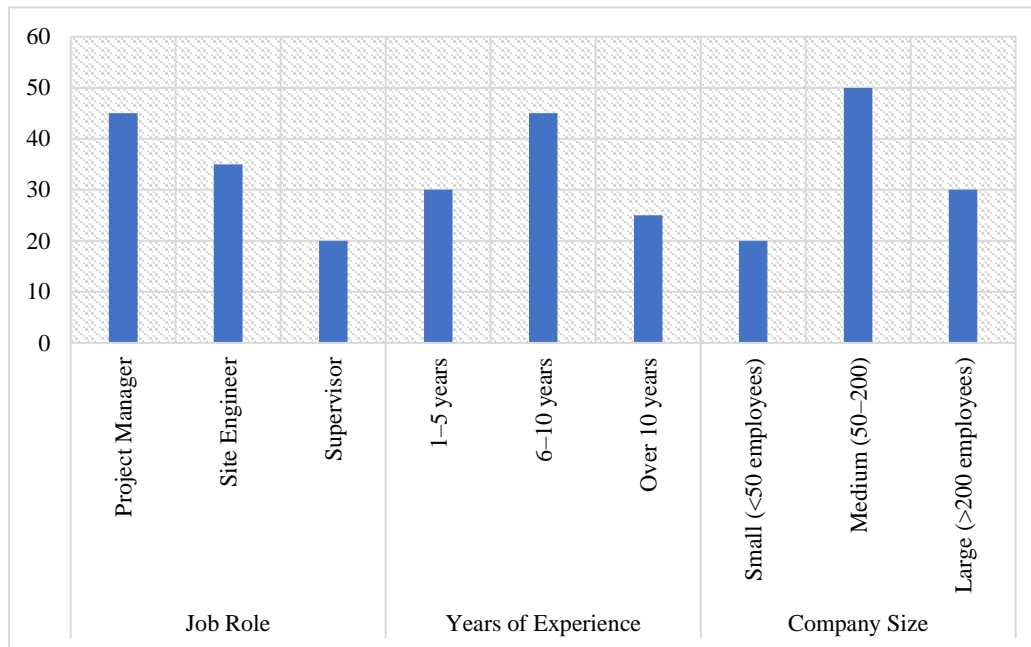
# 3. RESULT AND DISCUSSION

This part shows the results of a study of construction experts in China that looked at how project management maturity affects the results of construction projects. We looked at the answers from 200 people to see how mature their project management skills were and how they related to important project performance metrics like staying on schedule, keeping costs down, and meeting quality requirements. The debate looks at these results in the context of the construction sector in China and points out what they mean for how projects are managed.

**Table 1: Demographic Profile of Respondents**

Demographic Variable	Category	Frequency	Percentage (%)
Job Role	Project Manager	90	45
	Site Engineer	70	35
	Supervisor	40	20
Years of Experience	1–5 years	60	30

	6–10 years	90	45
	Over 10 years	50	25
Company Size	Small (<50 employees)	40	20
	Medium (50–200)	100	50
	Large (>200 employees)	60	30



**Figure 1: Demographic Profile of Respondents**

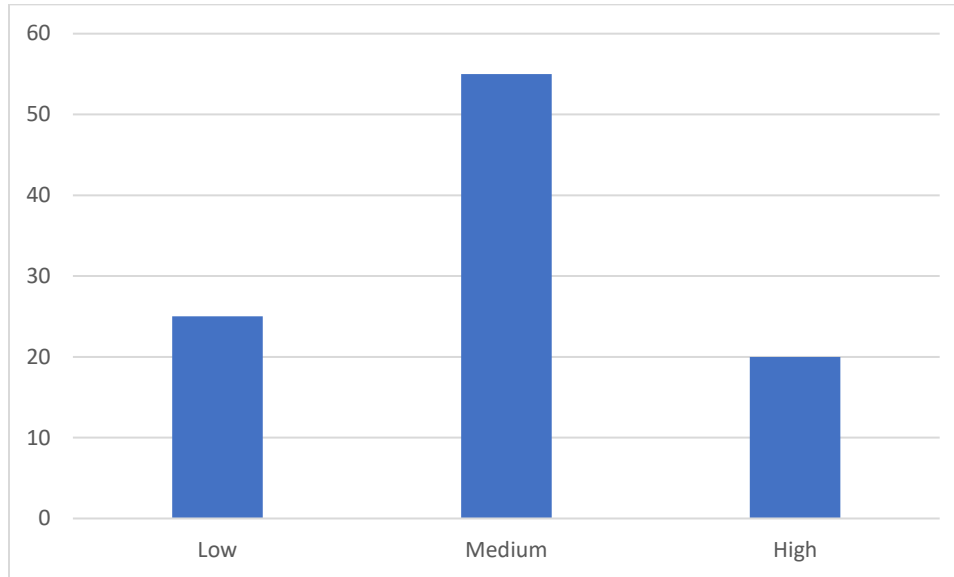
The demographic profile of the respondents showed that they came from a wide range of roles, experience levels, and organization sizes in the Chinese construction business. Most of the people that took part were Project Managers (45%), followed by Site Engineers (35%) and Supervisors (20%). This made sure that both strategic and operational points of view were represented. Most of the people that answered (45%) had 6 to 10 years of professional experience, while 30% had 1 to 5 years and 25% had more than 10 years. This shows that there were both new and experienced professionals. Also, 50% of the people who answered were from medium-sized companies (50–200 employees), 30% were from large companies, and 20% were from small companies. This shows that the survey got opinions from people at companies of different sizes. This demographic distribution made the results about project management maturity and its effect on construction project outcomes more reliable and useful.

We divided the overall project management maturity levels into Low, Medium, and High based on the average scores of the people who answered in key maturity areas such process consistency, communication, risk management, and resource management.

Maturity Level	Frequency	Percentage (%)	Average Score (out of 5)
Low	50	25	2.3

Medium	110	55	3.4
High	40	20	4.5

**Table 2: Level of Project Management Maturity**

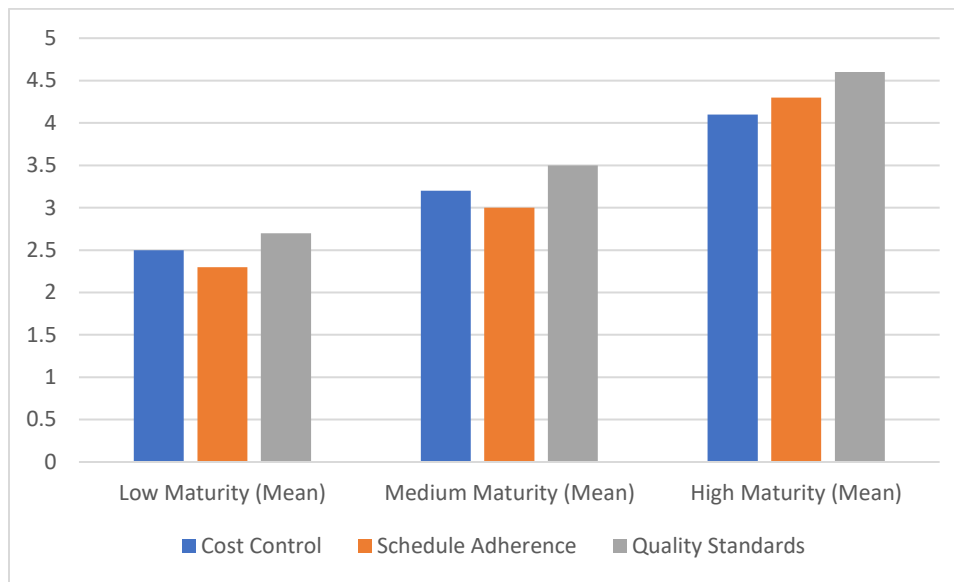


**Figure 2: Level of Project Management Maturity**

Most of the construction companies that were examined (55%) fell into the medium maturity group, with an average score of 3.4 out of 5. This means that most businesses had started to use some standardized project management methods, but they were still working on making sure that best practices were used at all stages of every project. At the same time, 25% of the people who answered were in the "low maturity" group, with an average score of 2.3. This means that they didn't use formal project management methods very often or at all. Only 20% of the people who took part said they were very mature. They had an average score of 4.5, which shows that their project management processes were well-established and optimized. These results show that there is still a lot of opportunity for improvement in raising project management maturity across the construction sector in China, especially for companies that are currently at lower maturity levels.

**Table 3: Construction Project Outcomes**

Outcome Indicator	Low Maturity (Mean)	Medium Maturity (Mean)	High Maturity (Mean)
Cost Control	2.5	3.2	4.1
Schedule Adherence	2.3	3.0	4.3
Quality Standards	2.7	3.5	4.6



**Figure 3: Construction Project Outcomes**

The study of project outcomes in relation to project management maturity levels showed a clear positive link between maturity and performance on key parameters. Organizations with strong project management maturity always did better than others, getting the highest average ratings in cost control (4.1), schedule adherence (4.3), and quality standards (4.6). Companies with medium maturity were likewise somewhat effective, with average scores of 3.2, 3.0, and 3.5 for cost, schedule, and quality, respectively. This means that they had partially implemented organized processes. On the other hand, low-maturity companies had the worst performance results, with scores of 2.5 for cost control, 2.3 for sticking to the schedule, and 2.7 for quality. These results show that as the level of project management maturity rises, the company becomes better at delivering projects on time, within budget, and to higher quality standards. This shows how important it is to raise maturity levels in order to get better results on building projects.

### Discussion

The results showed that project management maturity has a good effect on the outcomes of construction projects in China. Most of the people who answered were in the medium maturity group, which meant that they were only partially using organized project management techniques. Companies with high levels of project management maturity regularly said they were better at managing costs, finishing projects on time, and meeting higher quality requirements.

These data back up the idea that improving project management skills leads to better project results. For instance, having well-established ways to handle risk and talk to each other seemed to help cut down on delays and budget overruns. This is in line with what other researchers around the world have said about how maturity models like OPM3 can help projects be more successful.

But the fact that only 20% of respondents said they were very mature implies that many companies in China still have trouble fully implementing advanced project management methods. This gap is a chance for focused training and process improvement programs to make project results even better.

#### 4. CONCLUSION

The study found that the level of maturity in project management has a big effect on the results of construction projects in China. Companies who were more mature in their project management methods regularly did better at keeping costs down, sticking to schedules, and meeting quality standards. Most organizations had medium maturity levels, which meant they had partially put standardized processes into place. Only a small number of companies had high maturity levels, which shows that there is a lot of room for improvement. These results show how important it is to improve project management skills in the Chinese construction industry in order to improve the performance and success of all projects. Because of this, construction companies should put money into creating structured project management frameworks and methods for continuous improvement to get better results on their projects.

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