Natural Resources for Human Health
eISSN: 2583-1194

Original Research

Received 18 July 2026
Revised 24 Aug 2026
Accepted 10 Sep 2026

Natural Resources for Human Health 2026, Vol.6(21s): 1710–1724

KEYWORDS:
project oversight, project governance, agile practices, lean practices, digital tools integration, stakeholder engagement, project-management effectiveness, industrial projects, China.

Project Oversight in Industrial Settings in Eastern and Western China: A Systems-based Conceptual Framework

Li Cunmung[1*], Dr. Amiya Bhaumik[2]

[1*]PhD Scholar, Lincoln University College. Malaysia, Email: phd.licunming@lincoln.edu.my, ORCID: 0009-0005-3328-7348
[2]President (Chancellor), Lincoln University College, Email– amiya@lincoln.edu.my, ORCID ID- 0000-0002-9188-2269

ABSTRACT: Industrial projects comprise numerous interlocking systems, both within and beyond the project itself. Traditional project management that relies on the checking of schedules and costs as a form of control will inevitably prove ineffective. The paper focuses on project oversight within the context of the managerial dilemmas arising in the course of carrying out large-scale industrial projects in both Eastern and Western China. It adopts the Mother Framework, a competitor analysis framework, to design a conceptual system for project oversight. The framework incorporates three independent variables, namely, the integration of "digital tools, the adoption of lean management practices, and the adoption of agile project management practices, and locations stakeholder participation as a potential mediating variable. The author focuses on a number of project management challenges including visibility, accountability, control, exception management and loss (or variation), and corrective action. The paper adopts an integrative approach to the existing literature, drawing from a number of diverse areas including stakeholder theory, agile project management, lean management, as well as digital and transformational management. Based on the reviewed literature, the author holds that a combination of the aforementioned management practices and digital tools may improve responsiveness and control. However, oversight remains largely dependent on the capabilities and will of the management team. Seven propositions are formulated for empirical testing. The research treats both Eastern and Western China as distinct performance contexts. The framework provides a testable structure to analyze the management practices and digital capabilities of an organization and relate it to oversight-oriented project outcomes. It provides a potential path without supporting evidence.

1. INTRODUCTION AND INDUSTRIAL OVERSIGHT CONTEXT

1.1 Industrial projects and the oversight problem

The successful completion of any industrial project involves the conversion of investments into physical, social and economic infrastructure. The implementation of industrial projects may require the integration of a number of technologies and the expertise to design, construct, commission and operate them. Beyond the activities and decisions within the project, a multitude of other factors may impact the project, including safety, a supplier's default, design changes and stakeholder decisions. Industrial projects are long, complex and difficult to manage. One of the fundamental management challenges in industrial projects is project oversight. Project oversight, however, is often incorrectly defined and perceived as managerial oversight. Project oversight is the system by which management personnel at various levels define, interpret and evaluate the status of project work and take corrective actions.

Although related, project management and project oversight are distinct activities. Project management, in general, deals with the planning, directing, and control of a project. Oversight is concerned with the integrity of the management and the degree to which it provides assurance. This encompasses the reliability of management's assurance of progress, the presence of exceptions and risks, the clarity of management's responsibility and decision-making, and the adequacy of management's responses to protect the project's interests. Other aspects of management concern the control and governance of a project. These aspects are critical to the strategy and business activities of an organization. Research on management and governance of projects has focused on the integration and alignment of the management and governance activities of an organization and the projects it sponsors.

Traditional oversight systems have relied on the presence and completion of project milestones, the variation of project expenses from the approved budget, and the occurrence of management meetings. Restrictive systems of management oversight are more common for large, expensive and hazardous projects. Other controls, such as safety and quality assurance systems and processes, complement management oversight of projects. Many of these assurance and control systems are reactive in nature and cannot be relied upon to reflect real-time operational conditions and status of a project. A project management system should provide a mechanism for effective monitoring of project activities and work. This requires learning and adapting to changing conditions.

Project-control methods generally consist of measuring performance with respect to a baseline and correcting for differences. Earned value management is an example method where scope, schedule and cost are integrated. Other factors such as risk, and the technical and stakeholder aspects of the project require subjective evaluation (Fleming & Koppelman, 2010). A systems approach to project management is concerned with the relationships between and among components of the project management system rather than on project management performance measures in isolation. This paper explores the impact of the use of agile methods and digital tools in project management, and the use of stakeholder engagement in shedding light on this relationship.

1.2 Why an integrated oversight perspective is needed

The projects reviewed in this paper reflect uncertainty in requirements of regulators, stakeholders and the end users, as well as technological and enabling trade and investment policy constraints. With respect to the management of projects, process and digital integration offer a range of opportunities to improve project oversight. Outside of the field of project management, integrating principles of both process and digital management, with a view to improving oversight to manage variability, may hold potential. Interpreting project management oversight as managing project variability without integrating formal controls is misinterpreting the need for project management.

1.3 Problem statement and research gap

Processes that help inform project oversight exist within and across project management domains and disciplines, for example, project controls, project performance and rigor, agile project management, lean process improvement, digital monitoring and surveillance, and stakeholder management. These management processes will likely integrate within the context of an industrial project system, but their integration is often unarticulated and unexplained. Early warning systems will not solve oversight gaps; leak review will not eliminate constraints; and continuous management of project requirements will not always be documented.

Integration gaps, mechanism gaps, and context gaps remain pertinent in this research. The integration gap describes management practices, digital integration, and stakeholder management as concurrently occurring and unintegrated phenomena that need to be differentiated and explained. The context gap refers to varying conditions and situations within the Eastern and Western regions of China. The existing literature does not always differentiate the two, especially with regard to the maturity of oversight and project management in the two regions. Research should evaluate and differentiate these conditions.

There is also the case of differentiating between conceptual and empirical components. This study does not conduct primary research or gauge statistical connections. However, through a particular kind of integrative synthesis, it has generated a framework to which empirical validity can be ascribed, and it articulates various relationships that can be subsequently tested. Therefore, this study has not shown, nor does it claim to have shown, evidence of mediation or causality, or differences in performance within geographical regions.

1.4 Aim, objectives, and research questions

The aim is to propose a systems-based conceptual framework that illustrates potential relationships and associations in the integrative and illustrative use of agile and lean approaches to management and integration of digital tools in project management, especially in the area of project management oversight in industry.

The objectives are:

- integrate in a single framework the existing scholarly work that addresses project oversight, project management, digital stakeholder engagement and performance;
- discern the role of the management practices in project oversight and management;
- discern the organizational and other (technological, project, sectoral, and regional) contexts that shape project oversight; and
- create an integrative framework and propose theories of integrative nature to foster research in project oversight.

The research questions are:

- RQ1: What is the existing literature saying about the role of agile, lean, and digital practices in project oversight and project management?
- RQ2: In what types of relationships and information processing, do stakeholder engagements connect the above mentioned practices?
- RQ3: In what types of situational conditions, do practices and their oversights vary, and in what ways?
- RQ4: How can the above described relationships and their variances be represented in a systems model? And, what kinds of inter-regional variations in Eastern and Western China can be explored through such a model?

1.5 Scope and contribution

The intended level of the unit of analysis of the framework is that of an industrial project or a delineated project management environment. In this study, the term 'industrial settings' encompasses management of project work in, for example, the construction of industrial facilities and infrastructure, manufacturing, refining and other sectors of the economy, as well as projects in the fields of energy and communications. It is not presumed that the validity of the framework is the same for all industries. This paper works at multiple levels of analysis. Individual perspectives, team practices, project results, and organizational digital maturity should not be merged arbitrarily. Administrative project management has usually been the main focus of empirical studies. The focus shifts here to oversight management. This has been defined as the capability to acquire and evaluate project information, identify significant variances, and answer the following questions: Are the concerns raised and the actions taken sufficiently addressed? Are the decision process pathways and the actions taken appropriate? These and similar questions determine the overall effectiveness of project management. The paper retains the other four constructs of the Mother Framework and suggests that future studies could examine whether stakeholder engagement partially bridges or mediates the constructs. Although the focus of the study is primarily conceptual, its impact is likely to be positive, and the extent to which this is the case will depend on future work.

2. THEORETICAL FOUNDATIONS OF PROJECT OVERSIGHT AND SYSTEMS-BASED CONTROL

2.1 Project governance and oversight

Governance of projects includes the systems, processes and relations for the project's management, performance and accountability. Too and Weaver (2014) suggest that project management is a subset of the broader enterprise governance framework and how projects are integrated with the strategy and capability of the organization. Similarly, Biesenthal and Wilden (2014) identify the multiple layers of project governance and the importance of separating project control from other layers of governance. Projects may have prescribed and systematic project management and planning, yet be lacking senior management commitment, sponsorship and endorsement. Oversight is the establishment of adequate and reliable means for decision making and is not the necessity for greater management control and reporting.

In the context of industry, Müller (2009) suggests governance frameworks define how conflicts and disputes are settled and the process for Change and risk management. Project boards and project control systems are two layers of governance. These systems should operate in collaboration, to provide adequate and efficient control of a project.

Working within a governance framework allows us to distinguish assurance from monitoring. Monitoring focuses on the status of ongoing projects and can be continuous or periodic. Assurance focuses on the trustworthiness of project controls and the project's goals and objectives. With respect to governance, both monitoring and assurance require mechanisms in place to collect information and draw conclusions from it. Reliability mechanisms are equally necessary and help ensure that project objectives are correctly interpreted, that the conclusions reached are appropriate, and that the activities carried out as a result of those conclusions are done so responsibly.

2.2 Systems thinking and sociotechnical alignment

There are several concepts in systems thinking that bear on project management. Some of these deal with cross-boundary interconnectedness, such as the simultaneous variance of several workstreams due to changes in the project's design and architecture. Similarly, changing the sequencing of activities can cause inter-dependencies and cross-border impacts on workstreams. A project management oversight mechanism is necessary to identify trade-offs and potential consequences.

With respect to digital project management, the integration of people, processes and technology should be evaluated based on the project's objectives. Digital project management systems should be evaluated based on the decisions they facilitate and the information and communication flows they modify. Not all digital project management systems facilitate robust governance and oversight. Some systems raise alerts, but mechanisms should be in place to set clear thresholds and define ownership.

A systems approach accounts for feedback delays. Costs and schedule variances reported in monthly management reports may have been reported hundreds, if not thousands of management actions earlier. Electronic tools can reduce the time it takes to report information. Agile and lean concepts can reduce the time it takes to identify and remove process constraints. High frequency, and therefore timely, feedback is of little value if the feedback is incomplete or if the system rewards management for concealing negative feedback.

2.3 Stakeholder theory and engagement

Project outcomes reflect the various interests that affect or are affected by the decisions made in the project. Mitchell, Agle, and Wood (1997) created a stakeholder salience framework with the dimensions of power, legitimacy, and urgency. With the project in mind, management cannot assume that all of the stakes affected by the project are the same. Those with different interests may include upper, lower, and lateral tiers of the project's organizational structure.

In regard to stakeholder engagement, the goal is for management to improve the knowledge and understanding of stakeholders affected by a particular project. As a result, concerns may be addressed and/or changes managed. This is a voluntary process of achieving informed discretion. The more a project management team is informed, the more discretion may be granted to affect positive change. For management of the complex nature of many projects, see Olander (2007) and Aaltonen and Kujala (2010).

Engagement is important for addressing issues that spread across organizational units. A notification about a delayed part may require the participation of employees in procurement, engineering, and the supplier, as well as the project sponsor. A review of the project schedule may indicate that a previously defined requirement has changed. This review may also identify a limitation of the project process. Engagement can aid in identifying how the practice of oversight can be effective. However, this is only the case if the purpose of the participation is clear and the decision-making authority is clearly defined.

2.4 Agile project management as adaptive oversight

Agile project management focuses on the management of project work through the development and implementation of project plans in an iterative and incremental manner. The authors of the systematic literature review noted that there is a lack of clarity in other areas outside of software development, and recommended further research to address this gap. In the context of oversight in the industry, the practices of project management may include review of project work coordination, and rolling-wave plan of project schedules. Oversight of projects may be effective if the practice of management is complemented by regular and frequent reviews of the project work.

It is important to strike the right balance. There are a number of industrial projects where it is required to have a documented change of control of a project. Review of the project work may result in a request to alter the work sequence. It is important that the feedback generated by the required review of work sequence results in a authorized change.

Agile practices can change the way different stakeholders engage and interact with one another. As practices and procedures are reviewed and evaluated continuously, concerns of stakeholders can be identified and evaluated quickly. However, the success of these practices is determined by the availability of relevant stakeholders who are able to implement suggestions made by the reviewers. Changes in priorities can create instability in work procedures and frustrate suppliers.

2.5 Lean management as process and variance control

Breaks in the workflow and reworking of project deliverables are indicators of project constraints that are often hidden by aggregate performance measures. Lean management and project delivery approaches have been integrated with building information modelling (BIM) to improve project outcomes, and these have been documented in the construction, engineering, and project management literature. Although these studies have largely been confined to the AEC industry, the same practices and methods can be adopted by other industries.

There is a tendency to focus on the symptoms of deviations rather than the underlying causes, and this often results in a blame game. However, lean management encourages the definition and removal of the constraints to reliable improvement. Constraints are documented, assigned, and acted upon by the team. There are several ways of implementing lean management practices and routines in a work environment, and some of these are counterproductive.

The core principles of lean management should be routinely applied in the context of a project, and irregular and unprecedented flexibility should be encouraged.

2.6 Digital tools and data-enabled monitoring

Oversight with the help of digital tools relies on the timely availability of status reports, decisions and data, and the integration of work-package data. The tools enable users to identify behavioral patterns, and detect anomalies. The level of oversight relies on the effectiveness of governance of data, and how end users of the tools engage with them.

Chen et al. (2025) identify sociotechnical alignment and project management digital governance as key elements of digital transformation in project management. Other key elements identified in the literature and concentrated in this research stream, include lean construction, Integration of Building Information Modeling (BIM) and associated process and technology challenges. These elements are largely confined to the construction industry, and as such, should be applied broadly with caution in other industries.

Integration of the three key elements of digital oversight; data, technology and human factors enable digital tools to provide notifications and alerts, which require responsible persons to take specific actions. Oversight and alerts require the integration of automated systems and address potential bias introduced by automation, and provide assurances about the quality of data. Digital tools offer the potential to create a sense of certainty based on a dashboard reporting systems that may not accurately reflect the true situation. Digital tools provide helpful integrations to support project management oversight if used to structure and integrate project decision making.

2.7 Project-management effectiveness as an oversight outcome

In this regard, project management comprises various elements such as scope, schedule, cost, and quality, as well as effective use of resources. Project management also focuses on accomplishment of project objectives, while oversight, on the other hand, involves verification of processes. Project objectives are typically composed of scope, schedule, and cost. These include the achievement of project objectives by end of the project. The agreement must be clear as to what elements of the project are to be compared (i.e. cost, schedule, scope, and quality).

The focus of this research is on the reliability of project information and management. Project information includes identification of material variances and/or project management deviations. This research also focuses on the process by which an individual provides accountability for, and takes action to resolve the issue. It is clear that the concepts of oversight and project management are related, however, for measurement purposes, one cannot simply assume that oversight is project management and vice versa. This is to avoid redundant measurements.

Natural Resources for Human Health
eISSN: 2583-1194

3. CRITICAL LITERATURE REVIEW: AGILE OVERSIGHT, LEAN CONTROL, DIGITAL MONITORING, AND STAKEHOLDER ENGAGEMENT

3.1 Agile oversight and the limits of formal control

Agile project management has largely been restricted to the software development domain. However, it is starting to gain traction in other areas. There are multiple reasons for this including a growing focus on effective management of inter-disciplinary projects, shortening of product development cycles, and increased focus on the integration of different technologies in various fields (Dong et al., 2024).

With regard to control, management of iterative processes requires, from time to time, the formal approval of outside bodies; for example, other regulatory agencies. Fostering agility and a rapid response capability to oversight requires an accepting culture in the work environment. Transparent oversight may facilitate learning and help find root causes, and, in turn, resolve otherdependencies. Therefore, the absence of timely or significant achievement, and/or accomplishment of goals by an organization may be as important as a timely flagging of abnormal situations, which require further oversight, and/or corrective actions.

In the process of adopting agile practices in management, a culture may emerge to promote stakeholder engagement. Additionally, there may be a greater focus on adapting the organization to changing conditions, thereby enhancing the overall competitiveness of the organization in the marketplace.

3.2 Lean control, process transparency, and corrective action

Various Lean concepts and tools are process and management oriented. Babalola et al. (2019) and Michalski et al. (2022) explore Lean in construction. A key element in oversight is understanding that challenges at the project level can be made up of several constraints at the process level. Sometimes it is challenging to identify the barriers and it can consume a lot of time if there are a lot of constraints. The use of reliable methods and plans and follow-up work can be of great help in addressing the barriers.

Use of Lean concepts and tools can identify process related challenges and address them in an ongoing process. Often the challenges are addressed when there is a significant change in the process and it can take a long time before challenges are addressed when process constraints are identified monthly. How quickly challenges are addressed can determine the value of Lean oversight in a process. There are challenges of local Lean concept and tool optimizations, for example, the improvement in the flow in one part of the process can mean that challenges and delays are moved to another part of the process. Therefore, Lean oversight should be focused on cross-process improvements.

3.3 Digital monitoring: visibility versus decision quality

The electronic tools used in construction increase the timeliness and convenient access of project information. However, the use of electronic tools to manage and control project work does not always guarantee project success. More research is required on the integration of sociotechnical systems, particularly in project management.

Digital monitoring facilitates tracking of schedules, designs, risks, decisions, purchases, and changes to correct problems. When data are interoperable, decision-makers can easily assess inter-relationships of data as opposed toanalyzing numerous and disconnected spreadsheets. Digital tracking may facilitate audit and accountability to show who made a given decision and when. The level of benefit is dependent on how the data are defined and classified, and ownership.

Some of the expected limitations of digital integration are the presence and use of multiple, disparate systems; inconsistent coding; inaccurate, incomplete and untimely data inputs; over-reliance on management dashboards; inadequate cybersecurity controls; and corporate cultures that incentivize employees to report positive or favorable statuses.

3.4 Stakeholder engagement as an oversight mechanism

Many 'hidden' oversight needs may be satisfied by appropriate stakeholder engagement. These may include identifying hazardous work arounds, procurement risks, design and operational conflicts, and noncompliance. Stakeholder engagement may improve the quality and scope of oversight.

Achterkamp and Vos (2008) reviewed the stakeholder concept in project management. Other works include Olander (2007) and Aaltonen and Kujala (2010). Mitchell et al. (1997) developed a conceptual model that classified stakeholders based on their

influence potential. These works collectively indicate that to effectively address stakeholder concerns, a systematic and prioritized approach must be taken.

According to Davis (2014), different stakeholder groups often have different perceptions of project success. How these differences are dealt with in oversight provisions is of great importance. It should be clear which outcomes are to be monitored and assessed. Undoubtedly, different stakeholder groups will have varying views and perceptions, and they may, in fact, be completely at odds with each other. The role of governance is to surface these conflicts, record the trade-offs, and assure that decision-makers resolve the conflicts. Governance further involves assuring that legitimate processes are in place to address the conflicts.

It is reasonable to think that the types of engagement achieved through differing management practices might influence the relationship between the other practices and the outcome being sought. For example, management practices such as 'agile,' 'lean' or 'digital' may impact the nature and quality of participation and the outcomes thereof, particularly if differing perceptions of success are attended to within project management.

3.5 Project governance, control systems, and effectiveness

The body of knowledge on project governance reinforces control systems integrating decision-making and authority, especially in relation to strategic direction. Project governance is concerned with integration and alignment of projects and corporate strategies. Musawir et al. (2020) identify similar challenges and suggest that governance be contextualized, especially when considering the wide array of practices, projects and initiatives. A variance is only deemed important if and when it is communicated, and acted on, through established and approved means.

Controls related to indicators integrate baselines and integrate changes to project scope. Reviews of risk registers and schedules address changes in project plans. Lagging indicators may be unavailable or qualitative. Controls should consider both types of indicators. Leading indicators include but are not limited to, unresolved constraints, latent demands, supplier and customer risks, the age of outstanding change requests, and other corrective actions.

Project controls should address effectiveness, efficiency, and other aspects of project success. While project efficiency may be discussed in relation to "lean project management," the relation between project management practices and project success is less clear. This paper relates to the field of "management by project" or "projected management" in the sense that effective controls should allow project managers to reliably achieve target project outcomes and impacts and should not lead to an unrealistic expectation of control.

3.6 Regional and sectoral context: Eastern and Western China

Eastern and Western China represent broad regions composed of differing industrial, infrastructural, and regulatory conditions. These and other factors such as the digital readiness and organizational size of firms may influence the design and implementation of lean management.

To date, it has not been possible to confirm, using evidence from the literature, that Eastern China supports better project controls than Western China. Likewise, it has not been possible to substantiate the proposition that Western China contains worse implementation issues than Eastern China. Regional labels do not explain why challenges exist in specific regions.

In the case of future similar studies, the outlined methodology could be used to analyze other cases, including different provinces, industrial sectors, and projects. Depending on the particular case, a range of factors could be considered, including project size and scope, the regulatory environment, and the nature of the project's supply and value chains.

3.7 Synthesis and unresolved issues

Four conclusions can be drawn from the critical review. Agile and lean practices help to manage processes and provide oversight in different ways. Digital practices aid information visibility and also help to address process inconsistencies. Ultimately, the interdependence of these practices helps to inform strategic choices. However, ongoing stakeholder engagement to clarify governance can also lead to delays. Management outcomes should be evaluated in the context of oversight. Governance should be evaluated based on the reliability of the processes in place to oversee management. In particular, contextual conditions and constraints should be articulated and accounted for.

The studies and articles in the body of evidence used in this review are fairly broad and address various aspects of China's construction and ICT sectors and do not always address the industrial sectors that have been the focus of this review.

4. RESEARCH METHODOLOGY

4.1 Design and rationale

An integrative literature review combined with conceptual framework construction is the approach adopted for this research. The objective is to depict and synthesize pertinent theories and/or evidence with regard to project governance and project controls, agile and leaning forms of project management, digital and sociability-focused forms of project management, digital and other forms of project transformation, stakeholder theory, and the success of/in project outcomes. The review is not intends to not to integrated to determine a pooled impact. This review is not a systematic review, as defined by the standards of scientific/scholarly research, because the manuscript does not elaborate a systematic process involving an exhaustive and verifiable search of research/publication records, a screening log at the research record level, or a completed audit trail. Also, compliance with PRISMA is not claimed by the authors of the manuscript. Numerical/graphical representation of the outcome of the screening of the manuscript is not presented.

4.2 Search and source selection

The search strategies described in the manuscript consisted of various phrases reflecting governance and oversight of projects, forms and frameworks of project management (both traditional and non-traditional), digital and other forms of project transformation, engagement of project stakeholders, and project outcomes. Example search phrases included "project governance" in conjunction with "project performance"; "industrial projects" in conjunction with "agile project management"; "project control" in conjunction with "lean"; "project management" in conjunction with "digital transformation"; "stakeholder engagement" in conjunction with "project success"; and "project" in conjunction with "monitoring" and "industrial projects". Search strategies reflective of the ones used in the manuscript are presented above. The manuscript does not indicate the date of the last search, the names of the search platforms and/or syntax reflective of the search in the various platforms, the total number of records retrieved, or the rationale for excluding any records retrieved.

4.3 Eligibility and synthesis procedure

The core sources were scrutinized for relevance to at least one of the five constructs or to the oversight environment: governance and accountability; adaptive project practices; lean project management; digital project and program management; stakeholder management; or management of the project-management function. Outside China, theoretical and/or practical project-management sources were included in the literature review. Generally, findings from a given management domain were not extrapolated to other domains; likewise, findings from one part of China (i.e. East vs. West) were not extrapolated to the other.

The core comparative synthesis examined the purpose, theoretical foundation, context, methodology, and outcomes of the reviewed literature. Relevance and adequacy of each source for the development of the management model were established through the synthesis. The oversight framework comprises the five elements of adaptive oversight: digital visibility, process transparency, stakeholder coordination, and management effectiveness.

4.4 Conceptual development and quality safeguards

With the focus of this research being on different management practices and adaptations, it was necessary to retain the principal constructs of the Mother Framework. In this regard, agile and lean management practices were integrated in an oversight framework. Digital project and program management tools and integrations, stakeholder management, and project management were aligned as the core of the framework.

These safeguards include use of traceable references, prudent transfer of findings across sectors, and acknowledgement of the abstract nature of the research design. Fabrication of data and/or statistical results is avoided. The propositions are not tested against hypotheses. No effect sizes, levels of significance, or mediation are provided.

5. LITERATURE SYNTHESIS FINDINGS

5.1 Adaptive oversight requires structured feedback

The reviewed literature includes various examples of the use of agile techniques to improve oversight. Dong et al. (2024) provide a management-related literature review of the concepts and definitions of agility and flexibility in the context of project management. Their review does not test the research framework, and therefore, does not establish a project oversight capability in either Western or Eastern China. In an oversight framework, one may consider practices that include cyclical review and planning. The core of oversight, however, is the timeliness of response to changing conditions in the workplace, including effective prioritization of issues for correction, identifying reasons for insufficient/inadequate progress in workplace activities, and taking corrective action, as appropriate.

5.2 Lean practices make constraints and process deviations visible

There exist numerous management related literature that lean practices are preferable to practices of more traditional management. Among other things, lean practices encourage reduction of waste in processes and promote improvement of process efficiency. Babalola et al. (2019) provide an analysis of the use of lean construction practices in the building industry, and Michalski et al. (2022) examine lean practices in construction using BIM. Among other things, practitioners of lean management are encouraged to make aggregate status of process activities available. Insufficient or inadequate progress in workplace activities may be due to many reasons. Identifying such reasons is the responsibility of the management team.

Lean oversight facilitates identification of missing prerequisites and/or lack of availability of resources and/or interfaces during normal course of planning and coordination. It is also useful in recognizing gaps and inconsistencies. Its benefits primarily depend on management's intent and will to take required actions and/or incorporate findings of gaps and inconsistencies in its business processes. One of the pitfalls is local improvement. In this regard, some processes, work streams and activities are improvised to the extent that its adverse impacts are transferred to other processes, work streams and activities. The focus of lean oversight should be integration of various processes, work streams and activities.

5.3 Digital tools increase visibility only when integrated

Although the review of digital transformation focused on integration of various components of an organization, the recent reviews of digital transformation in project and construction management and related areas, do justify concentration on integration of various components of an organization. These reviews do not establish a performance result or outcome, and/or establish a relationship of digital tools and engagement of stakeholders. Therefore, cautious transfer to other sectors e.g. manufacturing, energy and related fields is justifiable.

5.4 Stakeholder engagement converts information into coordinated action

Stakeholders can help explain and give information about issues that are beyond the reach of a single organization. Engaging stakeholders can help explain and give information that is needed to improve processes and help with alignment. Stakeholder engagement can help solve issues that occur between contractors and organizations. Often times, engagement can help provide the information needed to coordinate work and explain stakeholder concerns.

Engagement requires purposive and structured planning. Consultation, when excessive, can also impede the timely taking of decisions. Strong stakeholders can monopolize information. Effective oversight is required to identify relevant stakeholders for consultation and/or information, highlight the stakeholders with decision-making authority, and resolve difference. Engaging stakeholders should be viewed as a mediating rather than an outright positive element.

5.5 Effectiveness requires multiple indicators and clear boundaries

The literature identifies and supports a multidimensional framework to evaluate project management. Cost, schedule and scope management are vital aspects of project management and oversight, but they are not all encompassing. Stakeholders' perceptions of project success are explored by Davis (2014) and project success in general is addressed in Serrador and Pinto (2015) and Joslin and Müller (2015). Future studies should address the same as well as the distinction between oversight and outcome performance. Digital dashboards, when used appropriately, should be measured as an oversight capability. Their effectiveness should be assessed through the timely identification and resolution of variances. Other equally important aspects that impact effectiveness should be assessed in the same manner.

Natural Resources for Human Health
eISSN: 2583-1194

5.6 Integrated interpretation

Given the significance of each theme, we believe the Mother Framework is a logical construct that warrants further consideration. The themes do not serve as evidence of the model nor demonstrate the relationships. For example, in favorable situations, the integration of Agile, Lean and Digital practices may result in higher levels of Feedback, Visibility and Traceability. It is proposed that this may be achieved through engagement of Stakeholders. The direct relationships are proposed, but not established by this review.

6. PROPOSED SYSTEMS FRAMEWORK AND RESEARCH PROPOSITIONS

6.1 Framework structure

This framework keeps the same five basic features. The three independent variables are (1) the adoption of agile practices, (2) the adoption of lean practices, (3) the integration of digital tools. Stakeholder Engagement is suggested as a mediator. Project Management Effectiveness is the dependent variable. The framework defines seven paths. Paths 1-3 connect each independent variable to Stakeholder Engagement. Path 4 connects Stakebuilder Engagement to Effectiveness. Paths 5-7 connect Effectiveness to each independent variable. The model allows and encourages future research. The purpose of this model is to show both direct and indirect relationships, and to not assume mediation.

Additional interpretative specificity is provided by oversight. The adoption of agile practices is connected to the utilization of structured adaptive routines, the adoption of lean practices is connected to the creation of process visibility and improvement, the integration of digital tools is connected to the use of information systems, Stakeholder Engagement is connected to the involvement of sponsors, and Effectiveness is connected to the achievement of project management oversight responsibilities. The conditions of areas and regions are external situational variables, and would be additional paths in the Mother Framework unless explicitly modeled by future research.

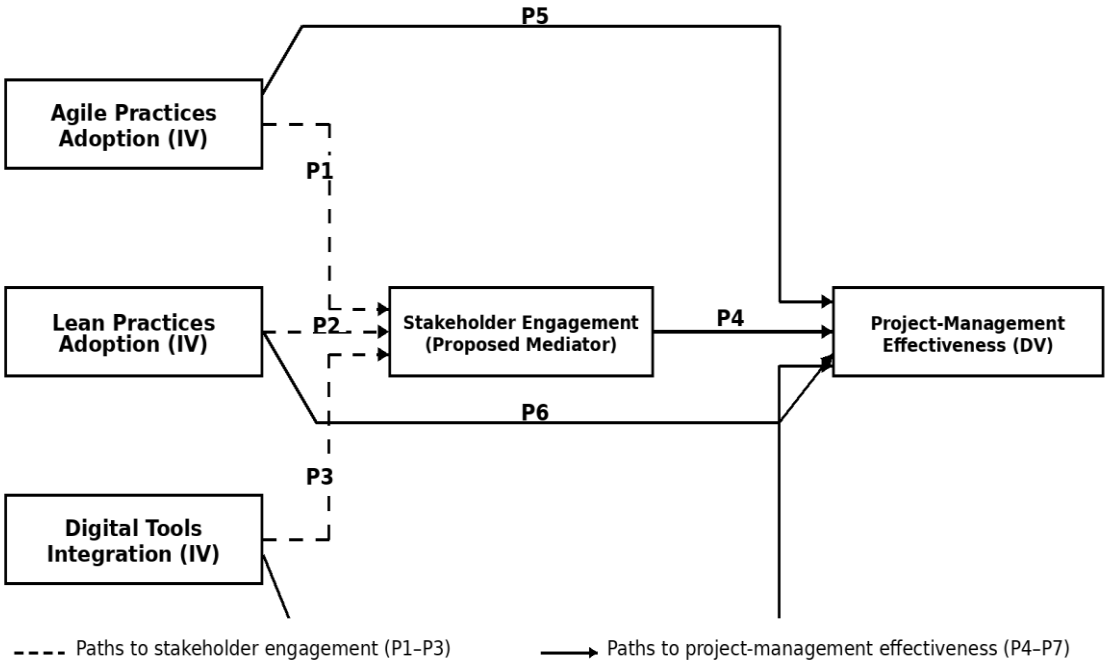


Figure 1. Systems framework for project oversight, showing propositions P1–P7.

The literature cited below describes the various concepts on which the constructs of the proposed model are based. However, the literature does not test this proposed model in the context of industrial projects in the East and West of China. Because of this, it is the responsibility of researchers to verify the existence of the proposed directions.

6.2 Proposed propositions

P1: According to the theory of action underlying this proposition, a project management team may be considered as being "agile" if it encourages stakeholders to provide feedback and identifies questions and issues in an iterative manner. If issues and concerns related to the project are clearly communicated and structured opportunities to address the concerns are in place, then stakeholders are more apt to recognize and respond to ongoing issues and changes. The description and theory related to the role and behavior of the project management team in an "agile" project are described in Dong et al. (2024).

P2: According to the theory of action underlying this proposition, the usage of Lean project management may result in stakeholder engagement and participate in joint problem-solving, and in effect, integration across work components. This theory is described in several reviews of the Lean project management approach to the construction industry (Babalola et al., 2019; Michalski et al., 2022).

P3: The adoption of digital tools may promote the integration and engagement of stakeholders through the establishment of digital information and integration structures, which may reinforce engagement in the control and execution of collaborative activities and decisions (e.g. Bridging integration and engagement structures). If this integration is theory based, then the cited references do not support and/or describe this theory and therefore, must be supported by additional, empirically based, research.

P4: Stakeholder engagement can be a route to maximizing management skills. Through active participation, proper project information can be captured, barriers to the project addressed, and projected outcomes and results better managed. The stakeholder analysis cases support the relevance of influence, impact, and perception of success, but do not validate them for the context under consideration (Aaltonen & Kujala, 2010; Davis, 2014; Olander, 2007).

P5: APM is about being flexible to adjust to latest project needs. That is why combining APM with agility is worth exploring. The case makes sense and provides reason for adopting APM in the project management context. But, this case study is place bound and does not include the subject being addressed in this research (Dong et al., 2024).

P6: Incorporating lean principles in project management is expected to improve project management, because, among others, it enhances flexibility of project management. The literature review however, is restricted to the area of project management in construction, and thus extrapolation of findings to other area of management is warranted (Babalola et al., 2019; Michalski et al., 2022).

P7: Integration of digital tools in project management is expected to lead to the integration of management information across the project. It may also improve exception management. If adequate oversight of project information is ensured, digital integration may assist project management. There are numerous examples of integration of digital tools in project management, but not all are positive (Chen et al., 2025).

6.3 Boundary conditions and operationalization

Because the propositions describe positive associations rather than categorical causality, there is the potential for negative associations and/or weak positive associations. In the case of negative associations, this may be a result of superficial implementation, lack of authority of the stakeholders, inadequate or insufficient data, or lack of capability of the organization to manage the project. Agility and lean practices may lead to inflexibility and/or alert fatigue, and engagement may lead to stalling. Boundary conditions describe potential situations where empirical evidence may be found to either confirm or disconfirm the propositions.

Potential contextual variables include uncertainty and complexity of the project, exposure to law and regulation, project phase and contract, ownership and control structure of the project, size and maturity of the organization, dependence on the supplier and customer, power of stakeholders, and integration of the organization's supply and value chains.

Agility and lean practices may lead to inflexibility and/or alert fatigue. Digital practices may lead to alert fatigue. Effective practices may lead to stalling. The stalling and alert fatigue may be positive, while inflexibility may be negative. Measuring the practices may help determine how practices may lead to positive and/or negative situation.

The dimensions provided do not comprise a scale and therefore will need to be developed in the manner described above to reach completion. It is likely that, as part of their development, each scale will require review by subject matter experts, a pilot

test, evaluation of construct validity, and an assessment of the reliability of the measures, among others. Finally, evidence should be presented to support that the scales developed are relevant and appropriate to the industry and geography of interest. The level of measurement (constructs), the sample size, and the presence of sub-grouping in the population (e.g. by geography) should inform the researcher's choice of mediation analysis. Cross-sectional data, at best, offer evidence of association. Longitudinal and multi-source data will strengthen the research.

7. DISCUSSION AND IMPLICATIONS FOR INDUSTRIAL PROJECT OVERSIGHT

7.1 Theoretical implications

The framework offers a holistic and synthesized approach to understanding the management of complex projects, focusing on three dimensions: People, Processes, and Technology. The People dimension incorporates theory on governance and accountability (Müller 2009; Too and Weaver 2014). The Process dimension incorporates the Theory of Lean (Babalola et al. 2019). The Technology dimension encompasses a variety of theories, including Agile (Dong et al. 2024), Digital (Chen et al. 2025), and Sociotechnical (Chen et al. 2025) Integration. The Stakeholder theory explains the Trade-Offs among various Actors (Mitchell et al. 1997; Olander 2007).

This research also offers a positive way of looking at management systems, in that if the appropriate combination of management practices is in place, then stakeholder management and engagement could be improved. Future research can empirically validate assumptions made in this paper.

The framework also separates the capability for oversight from the results being oversighted. Oversight is usually accomplished through the regular reporting of status. Of course, the regular reporting of status is not the same as achieving the desired results (e.g. achieving a particular target cost or delivering an outcome by a specified time). There is a distinction to be made and often times, circular measurements (e.g. measuring the status of reporting status) are made. This framework clarifies those distinctions.

7.2 Practical implications for project sponsors and managers

Prior to the initiation of work, sponsors and members of the project steering committee should come to agreement regarding their decision rights for changes to the project scope and cost, the level of risk they are willing to accept, approval of the project's design and resolution of project issues. Project status reports should capture, at a minimum, the status quo, the reason for the status, the effect, and what decision is required and when. Through this approach, reports should support the project decision-making process.

Short cycle, agile-like review of the project should be implemented to ensure reports support decision-making. In these reviews, the focus should be on the status of the project, the decision that should be made, and what is preventing that decision from being made. Each of these should be documented in a manner consistent with the requirements of the project to control changes.

Distinguishing process problems from variable problems, and analyzing problems on the basis of the systems causing them, allows teams to move beyond chronic problems. Blaming persons for chronic problem behaviors is usually an indication of a failure to understand fully the organizational systems causing the problems. If the design of an organizational system contains flaws that result in work performance affecting the system performance of another organizational unit, a cross-functional assessment would be justified. The system of organizational design should address the balance of trade-offs among the requirements of safety and performance for the customer and the overall system.

Digital products should be prescribed according to the oversight needs they fulfill. Before use, organizations should define and publish standards regarding data ownership, terms, and definitions; data update frequency and ownership; data interoperability and integration; access and use rules; and data retention. Uncertainty and true latency of data should be reported and presented with respect to time. Data should not be reported and presented as facts with certainty. Automated actions should be prescribed and reportable. A technology product or service may be cost-ineffective to implement, but it may improve an organization's oversight and traceability.

7.3 Stakeholder and organizational implications

Stakeholder engagement should be triggered by major project decisions. There are accepted ways for project managers to map stakeholders for their projects. These include mapping by responsibility, interest, influence, risk, information flows etc. It is

important to identify, for example, those who have the information, those who need to be consulted, and/or those who need to be briefed. Often, a good mapping exercise should help eliminate the need to consult people who do not need to be involved in the process and/or help identify and close information gaps.

There needs to be an internal culture in which personnel and managers raise and/or discuss negative information. If an organization is not able to develop and/or sustain an honest culture in which negative information is raised and/or discussed, various controls (including oversight) may become less reliable, and/or information may be purposely or/and accidentally sanitized. A responsible and/or good faith effort to raise issues and/or concerns should be rewarded and encouraged.

7.4 Implications for Eastern and Western China

The differences in oversight between the Eastern and Western parts of China may not be significant. A more useful comparison could be between different industries and/or different project types within different regions. The comparison should look into different relationships and/or associations to identify what explain the differences in oversight between the various regions.

An enterprise that has integrated its systems may be able to employ digital monitoring more quickly than an enterprise that contains its data across multiple systems. The former may benefit more from standardized lean routines. The latter may be more suited to continuous, flexible, and adjustable management. Claims made in this research are conditional expectations and should not be misconstrued to describe the true capabilities of various provinces in China.

Policy and industry representatives may wish to apply the framework in diagnostic and/or prioritization of staff training activities. The framework can be based on the definitions of management barriers and the presence of management receptivity. Comparative research studies should disclose their sampling techniques, measurement equivalence, and other variables.

7.5 Implementation sequence for oversight systems

The description of the process contains five steps. Step one requires the specification of the types and degree of assurance required, as well as the definition of the decisions that must be made. Step two requires the identification of project information gaps, for example, redundant or missing information. Step three requires the determination of what type of management, lean, or agile methods should be employed to meet the requirements of step two. Step four requires the specification of permissions and ownership of data and information. Finally, step five requires the evaluation of the management system to assess its ability to identify matters of concern and to confirm that it facilitates the making of better informed decisions.

Evaluation should occur by considering process and outcome indicators. Process indicators for candidates refer to the time required to identify a problem and escalate it, make a decision, resolve an unresolved problem, or update critical data. Outcome indicators are performance, risks (i.e. schedule and cost variances, rework, and errors), and stakeholder assessments. Indicators should not be interpreted in isolation. They are context specific to the type of project, extent of achievement, and incentives. Measures and indicators should be introduced and tried out to observe if they achieve the intended impact and objectives, or if undesirable impact occurs.

8. LIMITATIONS AND FUTURE RESEARCH

8.1 Limitations

There are several limitations of the current study. First, it is a synthesis of concepts and does not include primary research. Thus, causality and effects can neither be stated nor proven. Propositions are based on logic. Second, the review employs focused literature search instead of comprehensive and systematic searches. Record counts, Screening, and database Exports are not reported. As a systematic review, it lacks the description of the search process and procedures. A documented search and procedure will be submitted to a journal of higher impact before retracting the review.

Third, the bodies of knowledge in the literature vary conceptually, conceptually, and methodologically. For example, construction projects and research may vary from other projects in Information Systems, Software, and other Digital Projects. Fourth, project management is a combination of several inter-related and multi-dimensional components. How each of these components are represented and measured in the project may differ. Fifth, the paper focuses on project management in a conceptual framework of East and West China. Lastly, there may be other factors beyond the ones represented in the paper that may also affect the construction of the framework.

8.2 Future research agenda

Constructs and their operational definitions must be validated. The phrase "industrial setting" is relative, and if expert review and pilot testing confirms an item captures the targeted idea, it should be acceptable to use that item as a measure. Measuring flexibility will determine if constructs represent maturity or engagement activities and their quality. The equivalence of measures should be determined across different segments of the population, i.e. language, economic, and cultural differences.

Numerous quantitative research designs can be utilized to validate the propositions. The type and nature of the sample should be determined by the unit of analysis. Longitudinal research is beneficial to understand and interpret stakeholder engagement and its relation to business outcomes. Improving the context of the research design to incorporate the wealth of information available should increase the chances of meeting the research objectives.

Comparative case studies can test the propositions and assess the routines used to provide and exercise oversight. Other case studies can explore the digital maturity and the contractual arrangements of the firms being studied. Additional case studies can explore the supply chain of firms to assess what impacts oversight and integration processes on a firm's ability to deliver projects and if improved oversight processes enhance project outcomes. Finally, research should explore what determines the effect size of adopting oversight processes.

9. CONCLUSION

This study develops a systems-based conceptual framework for project oversight within the Industrial Sector in East and West China, using the "Mother Framework" as a foundation. The main difference from the "Mother Framework" is the interpretive focus of the new framework on areas such as visibility of information, accountability, escalation, correction, and overall quality in decision making. It also contains Stakeholder engagement as a possible moderator, as well as Agile, Lean and Digital practices, with project management effectiveness once again, function as the Dependent variable.

The conceptual framework was developed based on the available research. From the research, it was suggested that integration of the above practices in project management may result in more adaptive and responsive project feedback. It was also suggested that integration of the above practices may result in greater project process and project management performance transparency and oversight.

Stakeholder integration within a project may result in closer partnership and better integration. There may be a myriad of other reasons for project performance management and oversight" implementation failure. These include; unclear decision-making rights, poor and/or unreliable project performance data and measure, and overall project management system and structure.

The paper does not establish statistical or empirical mediation or performance differences between project management in East and West China. These also require further research, using valid and reliable sampling methods. The framework should also assist research in this area.

REFERENCES

[1] Aaltonen, K., & Kujala, J. (2010). A project lifecycle perspective on stakeholder influence strategies in global projects. Scandinavian Journal of Management, 26(4), 381–397. https://doi.org/10.1016/j.scaman.2010.09.001

[2] Achterkamp, M. C., & Vos, J. F. J. (2008). Investigating the use of the stakeholder notion in project management literature, a meta-analysis. International Journal of Project Management, 26(7), 749–757. https://doi.org/10.1016/j.ijproman.2007.10.001

[3] Babalola, O., Ibem, E. O., & Ezema, I. C. (2019). Implementation of lean practices in the construction industry: A systematic review. Building and Environment, 148, 34–43. https://doi.org/10.1016/j.buildenv.2018.10.051

[4] Chen, M., Martins, T. S., Zhang, L., & Dong, H. (2025). Digital transformation in project management: A systematic review and research agenda. Systems, 13(8), Article 625. https://doi.org/10.3390/systems13080625

[5] Davis, K. (2014). Different stakeholder groups and their perceptions of project success. International Journal of Project Management, 32(2), 189–201. https://doi.org/10.1016/j.ijproman.2013.02.006

[6] Dong, H., Dacre, N., Baxter, D., & Ceylan, S. (2024). What is agile project management? Developing a new definition following a systematic literature review. Project Management Journal, 55(6), 668–688. https://doi.org/10.1177/87569728241254095

[7] Fleming, Q. W., & Koppelman, J. M. (2010). Earned value project management (4th ed.). Project Management Institute.

[8] Joslin, R., & Müller, R. (2015). Relationships between a project management methodology and project success in different project governance contexts. International Journal of Project Management, 33(6), 1377–1392. https://doi.org/10.1016/j.ijproman.2015.03.005

[9] Michalski, A., Głodziński, E., & Böde, K. (2022). Lean construction management techniques and BIM technology—Systematic literature review. Procedia Computer Science, 196, 1036–1043. https://doi.org/10.1016/j.procs.2021.12.107

[10] Mitchell, R. K., Agle, B. R., & Wood, D. J. (1997). Toward a theory of stakeholder identification and salience: Defining the principle of who and what really counts. Academy of Management Review, 22(4), 853–886. https://doi.org/10.5465/AMR.1997.9711022105

[11] Müller, R. (2009). Project governance. Gower.

[12] Olander, S. (2007). Stakeholder impact analysis in construction project management. Construction Management and Economics, 25(3), 277–287. https://doi.org/10.1080/01446190600879125

[13] Serrador, P., & Pinto, J. K. (2015). Does Agile work?—A quantitative analysis of agile project success. International Journal of Project Management, 33(5), 1040–1051. https://doi.org/10.1016/j.ijproman.2015.01.006

[14] Tezel, A., Taggart, M., Koskela, L., Tzortzopoulos, P., Hanahoe, J., & Kelly, M. (2020). Lean construction and BIM in small and medium-sized enterprises (SMEs) in construction: A systematic literature review. Canadian Journal of Civil Engineering, 47(2), 186–201. https://doi.org/10.1139/cjce-2018-0408

[15] Too, E. G., & Weaver, P. (2014). The management of project management: A conceptual framework for project governance. International Journal of Project Management, 32(8), 1382–1394. https://doi.org/10.1016/j.ijproman.2013.07.006

[16] Biesenthal, C., & Wilden, R. (2014). Multi-level project governance: Trends and opportunities. International Journal of Project Management, 32(8), 1291–1308. https://doi.org/10.1016/j.ijproman.2014.06.005

[17] Musawir, A. ul, Abd-Karim, S. B., & Mohd-Danuri, M. S. (2020). Project governance and its role in enabling organizational strategy implementation: A systematic literature review. International Journal of Project Management, 38(1), 1–16. https://d