

CHAPTER 22

Studies on Hybrid Project Management Practices in Construction Projects

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ABSTRACT

This research explores Hybrid Project Management (HPM) practice in the construction sector, trying to overcome the strengths and weaknesses of traditional and agile approaches. The complicated and legal aspects of construction industry can only be well supported with an elastic yet systematised project management procedure. The conventional method offers formal control and no flexibility, whereas the agile method offers the maximum flexibility and struggles to deal with formal and large-scale projects. Our study aims at bridging this gap by studying the role of hybrid practices in enhancing project performance. The research examines real-life situations, challenges, and results based on the analysis of qualitative data (semi-structured interviews), and extensive literature reviews. Among the key results are that HPM allows greater adaptability, stakeholder engagement, risk management, and better cost-time-quality performance, yet it also allows to see key challenges, including cultural resistance, integration complexity, and the lack of standardised models. Our research proposes an HPM model unique to the construction project that integrates conventional project planning with feedback and adaptive cycles. This model offers a realistic approach to construction firms that want to optimize on project performance.

Keywords: Hybrid project management; construction projects; waterfall; agile; implementation challenges.

1.0 Introduction

Project management has undergone a paradigm shift in the current dynamic business environment. Time and cost continue to remain critical success factors, but they are now not merely restricted to that.

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Instead, project management has now become a key driver of strategic change, innovation and long-term value creation in a wide range of industries. Due to the growing reliance on projects by firms as a means of growth, stabilizing market unpredictability, digitalizing and delivering offerings with a customer-focused experience, the scale, volume, and complexity of projects have multiplied many times over. This has questioned the old means of management of projects and demands a reconsideration and redesigning of the way projects are managed, and the research.

Project performance is rooted in the fact that there is a difference between a project management approach and a project management methodology. Project management approach is the mode of thought and a plan on how project is supposed to be handled and therefore being more abstract and higher level. Conversely, a project management methodology involves a real step wise program of what specific processes and techniques are to be followed in managing a project. Examples of project management methodologies include Waterfall and the Scrum methodologies.

Project management approaches have broadly two common approaches:

Traditional: Traditional Project Management (TPM) is a linear and organized method and therefore mostly suitable in projects whose scope is known and have minimal changes. It operates on the values of predictability and comprehensive planning.

Agile: The Agile Project Management (APM) operates on an iterative and flexible model, which divides the tasks into small, manageable units. This allows the teams to cope with any change better and promotes teamwork.

Although there are some benefits of both these approaches, they also have their flaws. Traditional strategies introduce control and order that is why they are best suited in high-risk or controlled environments. However, they are inflexible and non-iterative at the same time and are inflexible to the needs of the clients as they evolve. Agile approaches on the other hand can facilitate well teamwork, flexibility, and responsiveness. Nevertheless, their casualness as well as reliance on continuous team communication might become complex to large-scale or regulatory projects.

In a bid to defy this, there has arisen the hybrid approaches to project management. Hybrid models put into consideration the predictability of established frameworks and the flexibility of agile practice. These are intended to bring a balance in circumstances where strategic flexibility is to be retained, and procedural integrity and traceable accountability is to be upheld. It attempts to integrate old and agile styles in a manner that makes the most of their advantage and curbs their disadvantages.

The contribution of project management towards organisational change, innovation and value creation is a well-known fact in the recent literature. Ciric et al. (2022) mention that the projects have come to be the source of digital transformation and competitive

advantage within the organisations and heightens the importance of rethinking the traditional means. In these regards, the choice of a suitable project management can be considered as a very important managerial choice rather than a purely procedural one. A single size fits all methodology is not the best approach in the present day because the environment of the project has become unpredictable, there are diverse stakeholders in a project with soaring expectations of performance. Later, researchers and professionals are paying more attention to HPM as the approach which can be adapted to the characteristics of the project, the level of its organisational maturity and industry-related limitations. This transition indicates that project success is multidimensional and necessitates the structure as well as flexibility to react promptly to the changing project dynamics.

2.0 Literature Review

Project management has evolved a lot over the time due to the changing nature of projects, changing requirements of the project and changing scale of the project. Traditional project management has always been a dominant and major methodology, especially in construction and mechanical fields. In traditional project management methodology, activities are predefined. Traditional project management methodology has some challenges, like when the project requires flexibility and decision making, its rigidity can be an obstacle (Collyer and Warren, 2009; Fernandes et al., 2018). The requirement of flexibility and agility gave rise to agile project management. In the construction industry, especially for large-scale projects where the capital is intensive, project has multiple stakeholders and project also has some tight deadlines, TPM or APM alone does not meet the requirement of the project.

Traditional project management methodology has five phases respectively initiation, planning, execution, monitoring and closure. Reiff and Schlegel (2022) noted that traditional project management methods heavily rely on preplanning, scope management, predefined processes, documentation, and control. Kerzner (2003) explained that Traditional project management defines what shall be the actions, and who will be responsible for those actions. Lalmi et al. (2021) notes that traditional practice is best for the projects which are predictable like earthwork. Papadakis and Tsironis (2020) mentioned that traditional practice due to its rigidity can cause stakeholder dissatisfaction where real time communication is needed. Traditional project management relies heavily on predefined plan which is scope of project and hence changes in later stage of project can cause scope creep. When there are multiple decision makers, it can cause project delay and cost increase. Especially for the projects where stakeholder feedback are important.

To reduce or address the limitations of Traditional Project Management, the Agile Project Management approach was developed. The agile approach is based upon the

manifesto of Beck et al. (2001). Agile management mainly focuses on concepts like adaptability, continuous stakeholder engagement, and incremental delivery of the project. The most important feature of the Agile approach is its ability to adapt to changing client requirements. This feature or concept is most important in the design and planning stages of a project. However, Merschbrock and Munkvold (2015) found that even though this methodology has good flexibility, it still does not work well with activities like legal and contractual requirements kind of parts of the project.

Hybrid project management synergize or combines the adaptability and flexibility of agile project management and structure of traditional project management. my name (Wysocki, 2019). TPM is mainly used for the feasibility study, procurement, and regulatory approvals. APM is mainly used for design development and continuous stakeholder engagement to improve the feedback (Abbas et al., 2020). Fernandes et al. (2018) explained that the hybrid project management model falls under either a layer-based model or an integration-based model. Components of both approaches are integrated in a single workflow in integration-based models. Different approaches are used at different project stages in layering-based models. This kind of flexibility is important specially in the construction industry where each stakeholder has different problems and different expectations. Fernandes et al. (2018) highlighted hybrid approaches used in large infrastructure projects, where control during execution was managed by Gantt charts and Earned Value Management, while BIM tools and Agile practices were used to support design flexibility. The Water-Scrum-Fall model and the Agile-Stage-Gate approach are two of the four primary hybrid methodologies identified by Reiff and Schlegel (2022).

Senaratne and Ruwanpura (2016) noted that in the case of HPM, the increased coordination of stakeholders and early identification of issues are some of the major benefits achieved with the help of agile stand-ups and iterative reviews with conventional scheduling and documentation. Bushuiey and Kozyr (2020) noted that HPM maintained the compliance requirements of the project while improving delivery timelines and quality. Despite the challenges, companies are experimenting with HPM due to the growing evidence of improved project performance. Some of the major barriers are that there is no professional who has experience with agile, and people are resistant to change. Also, there are complexities in integrating these processes. Secondly, there is no standard framework for hybrid project management methodology.

Basically, a hybrid project management methodology is not just a trend but the future of evolution of construction projects. Project-specific tailoring, leadership support, and cultural readiness for change are required for the successful implementation of HPM. However, with increasing digitisation through applications such as BIM, collaborative platforms, and real-time dashboards, hybrid models are becoming increasingly feasible.

Future studies should be more concentrated on developing construction-focused HPM frameworks while also evaluating the critical success factors of a project. HPM is no longer merely a theoretical idea, and the future of construction project management relies on the collaboration of traditional expertise with contemporary techniques.

3.0 Research Methodology

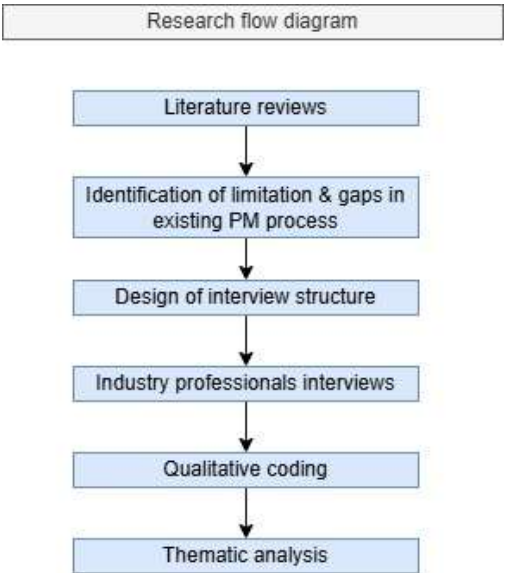
3.1 Research design

This research involves a qualitative exploratory framework in the learning process of implementing traditional, agile and hybrid project management techniques in the construction projects, and a hybrid project management framework applied specifically to the airport projects. The exploratory nature of the undertaken study and the lack of empirically tested HPM frameworks were some of the reasons why a qualitative approach was used.

The research design includes a structured literature review, semi-structured interviews with experts, and qualitative thematic analysis. This combination strengthens the rationality of the suggested Hybrid framework by enabling triangulation between the theoretical outlook and the actual project practice standpoint.

3.2 Research process overview

Figure 1: Research Flow Diagram



Source: Author's own work

This methodical process validates that the framework's development was supported by both theoretical outlook and actual project practice standpoint.

3.3 Literature review method

Traditional, agile, and hybrid project management approaches were studied by a systematic review of research papers with a major focus on construction projects. Three main objectives were accomplished by the literature review as mentioned below:

- to understand the theoretical strengths and limitations of current project management techniques
- to identify limitations of the hybrid project management models currently in use for construction or infrastructure projects
- to develop the base for the creation of interview themes and analytical categories

3.4 Data collection: expert interviews

Ten semi-structured interviews with professionals working on construction projects in India, the Middle East, and North America were conducted to gather primary data. Table 1 summarises the list of respondents. Both operational and strategic outlooks were represented due to this diversity.

Table 1: List of Respondents

Sr. No.	Designation	Industry Experience (in Years)
1.	Founder	35+
2.	Project Manager	35+
3.	Associate General Manager	19
4.	Director Operations	16
5.	Director	10+
6.	Project Engineer	3
7.	Planning Engineer	2
8.	Project Engineer	2
9.	Project Manager	1
10.	Associate Project Manager	1

Source: Created by authors

To give flexibility to respondents to share their opinion and, at the same time, to ensure consistency across interviews, a semi-structured interview style was chosen. Project management procedures, methodology decisions, hybrid approach in practice, implementation challenges, and considered success factors were the main topics of the

interview questions. All participants were anonymised to protect their privacy and to adhere to ethical standards.

3.5 Data analysis method

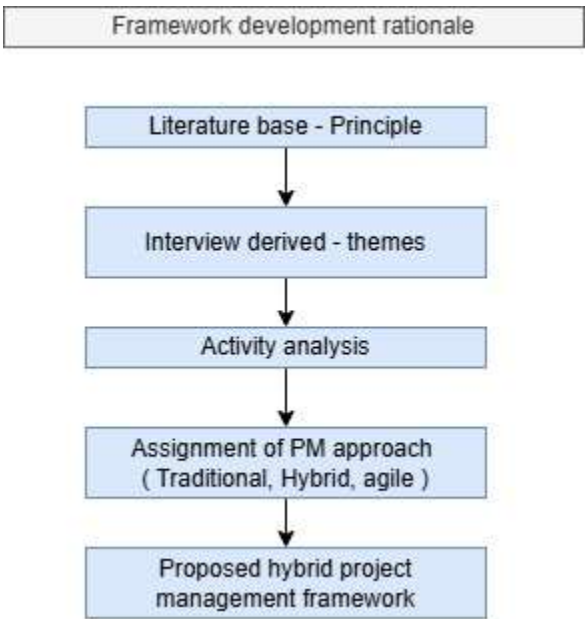
To enable qualitative theme analysis of interview responses, a technique of hybrid inductive-deductive coding was used. While inductive codes have come straight from the interview responses, deductive codes were developed from part of the literature study.

Interviews, interview transcription, preliminary coding, code improvement, theme development, and interpretation were part of a structured process used for the research study. Transparency, clarity, and consistency in data interpretation were achieved by this methodical approach of the study.

3.6 Hybrid framework development approach

This study's hybrid research approach was created by integrating qualitative research with propositions from the literature study. The parts of the project most appropriate for traditional, agile, or hybrid techniques were identified by mapping rationales found in interviews.

Figure 2: Framework Development Rationale



Source: Author's own work

An airport project has a high level of complexity consisting of a variety of components, some of which benefit from adaptability and iterative collaboration, and others require strict regulatory control, which is reflected in this activity-level tailoring. Due to this, rather than one methodology for the entire project, the framework represents a hybrid outcome-based approach.

4.0 Data Analysis

Semi-structured interviews with practitioners working on construction projects are used to extract the qualitative data. The respondents were of various positions, such as engineers working on the project, general manager and consultants with experience ranging between early-career professionals (13 years) and senior professionals (>30 years).

NVivo software was used to perform a combined inductive-deductive thematic analysis. The deductive codes were based on the ones in current literature (e.g., traditional, agile, hybrid approaches, standards, and challenges), and the inductive themes were directly generated using the content of the interview transcripts, e.g. informal hybridisation, lessons-learned practices, organisational culture, and digital adoption.

Table 2: List of Themes

Sr. No.	Theme type	Themes
1	Inductive	Project management process
2	Deductive	Project management team
3	Deductive	Project management standards and guidelines
4	Inductive	Cost, quality, and schedule management
5	Inductive	Stakeholder and communication management
6	Inductive	Risk and uncertainty management
7	Inductive	Safety and health management
8	Deductive	India vs overseas project management differences
9	Deductive	Core principles of traditional, agile and Hybrid approach
10	Deductive	Project management approaches
11	Deductive	Integration of traditional and agile practices -Hybrid project management
12	Deductive	Challenges in hybrid project management adoption
13	Inductive	Organisational readiness and culture
14	Inductive	Digital and technological integration
15	Deductive	Success factor and future scope

Source: Author's own work

It was possible to identify 15 themes and classify them into four categories:

1. Fundamental project processes and strategies.
2. Management, norms, and organisational structures.
3. The performance, risk, and stakeholder dynamics.
4. Facilitating conditions and prospects of hybrid project management.

Table 2 summarises the 15 themes used for qualitative analysis.

In interviews, the delivery of a project was always explained according to the process groups described in PMBOK: initiation, planning, execution, monitoring and controlling and closure. According to one of the senior project managers, projects tend to be divided into phases, with each phase considered as a mini project, especially in the case of long-duration or even large-scale developments. Planning is front-end loaded, whereby baseline schedules, work breakdown structures and resource plans are ready to satisfy a contractual time span, and sub-phases are time-boxed in this model.

There is, however, a variance in closure and learning practices. There are organisations in which organised lessons-learned workshops are performed, and the central repositories are managed by applications of the PMOs; on the other hand, there are organisations in which the central repositories are maintained by informal discussions and, therefore, organisational learning is limited. This lack of consistency limits the systematic implementation of the hybrid practices, which rely on feedback and continuous improvement.

Conventional project management is still prevailing, particularly when it comes to large infrastructure and government projects, because of regulatory conformity, consistent scope, and rigidity of the contract. Respondents pointed out that early design freezing, resistance to change and fixed baselines were applied to ensure cost and time certainty.

Agile is discreetly used in more uncertain projects like renovation, fit-out, marine works, and data centres and in most cases, it entails iterative review, short-cycle planning, and frequent client contacts. It is important to note that the agile terminology is hardly ever applied directly; instead, practitioners speak of flexible planning.

Practitioners view the major difference between traditional and agile/hybrid methods to be the balance of flexibility, control, and decision-making. The old methods focus on the sequential milestones and documentation, whereas the hybrid methods are based on overlapping work activities, the reduction of feedback cycles, and collaborative leadership.

The term hybrid project management was broadly characterised as a compromise between initial baselines and responsive re-planning in the running. Key enablers were found to include continuous learning and digital transformation. There were, however, senior practitioners who warned that there is too much emphasis on labels and that, in traditional project management, there has always been a high degree of adaptability, leading to a necessity to have more practical hybrid frameworks as opposed to strictly conceptual ones.

The reference frameworks were often referred to as PMBOK, ISO standards (including ISO 9001, ISO 45001, ISO 21500), PRINCE2 principles and FIDIC contracts. Several organisations have created in-house SOPs and their own project management systems based on combining these standards with agile practices. Project management teams and PMOs are also important in facilitating hybrid practices. Risk management also indicates a hybrid logic, the integration of past risk registers and risk contingencies, with the iterative reviews and change management during implementation.

BIM, ERP, Primavera, MS Project, and cloud-based collaboration tools were listed as the important enablers of HPM. Nonetheless, the rates of digital maturity are highly differentiated across organisations.

The key obstacles are the resistance to change, the lack of knowledge about agile principles, and the issue of fit between adaptive practices and the need to document the contract. The adoption requires successful leadership support, training, standardised templates and organisational culture to be successful.

With the growing complexity and digitalisation of the projects, hybrid forms will emerge that combine the old method of governance with the new growing flexibility that is more likely to take hold, should organisations invest in the development of capability and in the systematic application.

5.0 Findings and Results

The study's main findings and results are in line with the purpose of an HPM framework for airport projects.

5.1 Overview of the proposed HPM framework

The study's main outcome is an HPM framework for an airport project that is structured around the 49 PMBOK processes, which cover ten knowledge areas and five process groups. The framework uses a customisation approach on the process level, assigning a Traditional, Agile, or Hybrid project management strategy to each of 49 PMBOK processes, rather than assigning a single management methodology for the entire project lifecycle.

5.2 Basis for the management methodology assignment and rationale development

A cumulative analysis of literature study and industry professional interviews gives the justification for assigning project management techniques to PMBOK processes. Primary advice on the applicability of traditional, agile, and hybrid techniques under various situations of uncertainty, complexity, and governance requirements was taken from the literature review.

Interviews with industry professionals provided contextual information about how projects are handled and where control vs flexibility is important.

5.3 Consolidation of 102 Airport Planning Activities into 49 PMBOK Processes

102 airport-specific activities were identified from international airport planning manuals and regulatory guidance papers. These activities were categorised under the 49 PMBOK processes after a methodical analysis (Table 3). The process supported the choice to allocate methodologies at the process level rather than at every individual activity's level.

Table 3: Process Areas and Sub-Activities

S.no.	Process Area	Activities under those process areas
1	Develop Project Charter	Develop and Approve Project Charter and Initial Planning Proposal Define Project Objectives, Vision, and Success Criteria
2	Develop Project Management Plan	Identify Key Assumptions, Constraints, and Pre-Project Dependencies
3	Direct and Manage Project Work	Execute Airside Civil-Works Construction and Quality-Assurance Program Execute Terminal Building Construction and Fit-Out Management Plan Develop Air-Traffic-Control and Navigation Facility Construction Package Conduct Site Reconnaissance and Topographical Validation Surveys Implement Utilities and Electrical Infrastructure Integration Plan Deliver Fuel Farm and Hydrant Infrastructure Construction Plan Implement Utilities and Environmental-Services Infrastructure Delivery
4	Manage Project Knowledge	Execute Training, Capacity-Building, and Knowledge-Transfer Program Develop and Submit Final Project-Closeout Report and Master-Plan Documentation
5	Monitor and Control Project Work	Monitor and Control Project Work Using Performance-Measurement Techniques
6	Perform Integrated Change Control	Facilitate Integrated Decision-Making and Site Selection Approval Process
7	Close Project or Phase	Perform Regulatory Closure, Certification, and License-Acquisition Process Execute Project-Closure and Operational-Transition (ORAT) Management Process
8	Plan Scope Management	Develop Governance Framework and Policy Guidelines for Project Execution Plan Emergency Response Facilities and Safety Infrastructure Layout
9	Collect Requirements	Perform Current-State Assessment and Baseline Documentation Develop a Demand Forecasting Model for Passenger and Cargo Throughput Develop Space Program and Demand-Capacity Alignment Analysis
10	Define Scope	Translate Forecast Outputs into Design and Operational Planning Parameters Establish Design Capacity Metrics and Performance Baselines

11	Create WBS	Develop a Detailed Project Management Plan (Schedule, Scope, and Budget)
		Perform Alternatives Analysis and Design Optimisation Workshops
12	Validate Scope	Perform Detailed Design Development and Design-Review Process
		Perform Commissioning, Integrated-System Testing, and Validation Trials
13	Control Scope	Develop Land Use and Security Zoning Master Plan
		Perform Quality-Control and Design-Conformance Verification Process
14	Plan Schedule Management	Establish Strategic Planning Horizons and Preliminary Project Schedule Baseline
		Develop Airside Layout Plan and Airspace Management Framework
15	Define Activities	Perform Runway Design and Performance Optimisation Study
		Develop Terminal Complex and Landside Access Master Layout
		Develop Cargo Terminal and Landside Logistics Plan
		Design Apron Configuration and Aircraft Stand Optimisation Plan
16	Sequence Activities	Conduct Airfield Wind Analysis and Runway Orientation Planning
		Conduct Airfield Capacity Analysis and Runway Requirement Determination
		Optimise Stand Geometry and Apron Circulation Plan
17	Estimate Activity Durations	Conduct Site Reconnaissance and Topographical Validation Surveys
		Develop Conceptual Design Alternatives and Comparative Costing Models
18	Develop Schedule	Perform Quantitative Forecasting and Predictive Analytics for Capacity Planning
		Develop Implementation Phasing and Prioritisation Strategy
		Develop an Integrated Implementation and Delivery Management Plan
19	Control Schedule	Plan CNS/ATM and Air Traffic Infrastructure Requirements
20	Plan Cost Management	Develop Preliminary Cost Baseline and Financial Management Plan
		Implement Financial-Risk and Foreign-Exchange Management Plan
21	Estimate Costs	Perform Feasibility Study and Economic Viability Assessment
		Perform Landside Traffic Simulation and Curb Capacity Analysis
		Conduct Market Demand Analysis and Initial Forecasting Study
22	Determine Budget	Identify Potential Funding Sources and Develop Financing Strategy
		Establish Final Cost Baseline and Financial Control Plan
23	Control Costs	Implement Internal Roadworks and Transportation-Infrastructure Development
24	Plan Quality Management	Perform Regulatory and Standards Compliance Review
		Perform Structural Design and Pavement Capacity Analysis
25	Manage Quality	Design Check-in and Passenger Flow Optimisation Model
		Develop Baggage Handling System (BHS) Design Requirements and Simulation Plan
26	Control Quality	Execute Statutory Approval and Regulatory Compliance Management Process
		Conduct Internal and External Audit Management Process
		Conduct Emergency-Response Simulation and Continuous-Improvement Cycle

27	Plan Resource Management	Develop Organisational Structure and Define Roles & Responsibilities
		Develop Aircraft Grouping and Parking Configuration Strategy
28	Estimate Activity Resources	Develop Aircraft Mix Analysis and Fleet Utilisation Model
		Define Land Requirement and Prepare Land Acquisition Strategy
		Design Fuel Farm and Hydrant Distribution System Plan
		Develop General Aviation Infrastructure Master Plan
29	Acquire Resources	Assign Project Manager and Establish Leadership Authority
		Manage Land Acquisition and Property Transfer Process
30	Develop Team	Perform Maintenance Facility Siting and Risk Analysis
		Execute Ancillary Building Construction and Commissioning Program
31	Manage Team	Develop Operational-Readiness and Standard-Operating-Procedure Documentation
32	Control Resources	Deliver Apron and Airfield Infrastructure Construction Package
		Deliver Cargo-Handling Infrastructure and Systems Implementation
33	Plan Communications Management	Perform Gate Allocation and Apron Capacity Analysis
		Perform Operational Process Optimisation for Passenger Processing Facilities
34	Manage Communications	Develop Landside Traffic Circulation and Access Plan
		Integrate Ground Transport Planning into the Overall Mobility Master Plan
35	Monitor Communications	Perform Stakeholder Consultation and Community Engagement Analysis
36	Plan Risk Management	Conduct Needs Assessment and Define Project Scope Baseline
		Define Project Boundaries and Geographic Scope Statement
37	Identify Risks	Perform Route Network and Airline Demand Assessment
		Perform Desktop Site Screening and Alternative Analysis
38	Perform Qualitative Risk Analysis	Perform Risk Assessment and Airspace Safety Evaluation
		Conduct Social Impact Assessment and Community Risk Evaluation
39	Perform Quantitative Risk Analysis	Conduct Cost-Benefit and Financial Feasibility Analysis for Site Alternatives
		Execute Economic Evaluation and Project Selection Analysis
40	Plan Risk Responses	Develop Terminal Planning Concept and Functional Space Program
		Conduct Terminal Concept Evaluation and Final Selection Process
41	Implement Risk Responses	Perform Environmental-Mitigation Implementation and Monitoring Process
42	Monitor Risks	Perform Environmental Impact Assessment and Mitigation Planning Process
		Execute Environmental-Monitoring and Compliance-Tracking Program
43	Plan Procurement Management	Develop Financial Policy Framework and Funding Acquisition Plan
44	Conduct Procurements	Conduct Strategic Procurement and Service-Level Agreement Management
		Administer Construction Contract Management and Execution Control
45	Control Procurements	Develop ATC/AIS/Met Briefing Facility Layout Plan
		Perform Equipment Installation, Calibration, and Acceptance Testing
46	Identify Stakeholders	Conduct Stakeholder Identification and Engagement Planning Process
		Perform Ground Transportation Connectivity Study
47	Plan Stakeholder Engagement	Develop Concept of Operations (CONOPS) for Airside and Landside Systems

		Design Airside Taxiway Network and Service Road Layout Plan
48	Manage Stakeholder Engagement	Conduct Airfield Throughput and Delay-Reduction Simulation Study
		Design Support Infrastructure and Operational Facilities Master Plan
49	Monitor Stakeholder Engagement	Design Vehicle Parking Master Plan and Access Strategy
		Develop Airport Security Infrastructure Implementation Plan

Source: Author's compilation based on international airport planning manuals, regulatory guidance documents, and PMBOK framework

5.4 Distribution of activities under traditional, agile, and hybrid processes

There are certain trends in the type of activities assigned to each project management methodology when the entire activity list is studied. Regulatory approvals, contract administration, procurement planning, baseline scope definition, and formal risk identification are important parts of traditional methodology. Tasks are usually subject to external regulatory frameworks, allowing very little flexibility for alterations and requiring a lot of paperwork. While industry experts' perceptions emphasise the importance of control and predictability in these areas, the literature repeatedly associates such conditions with plan-driven project management approaches.

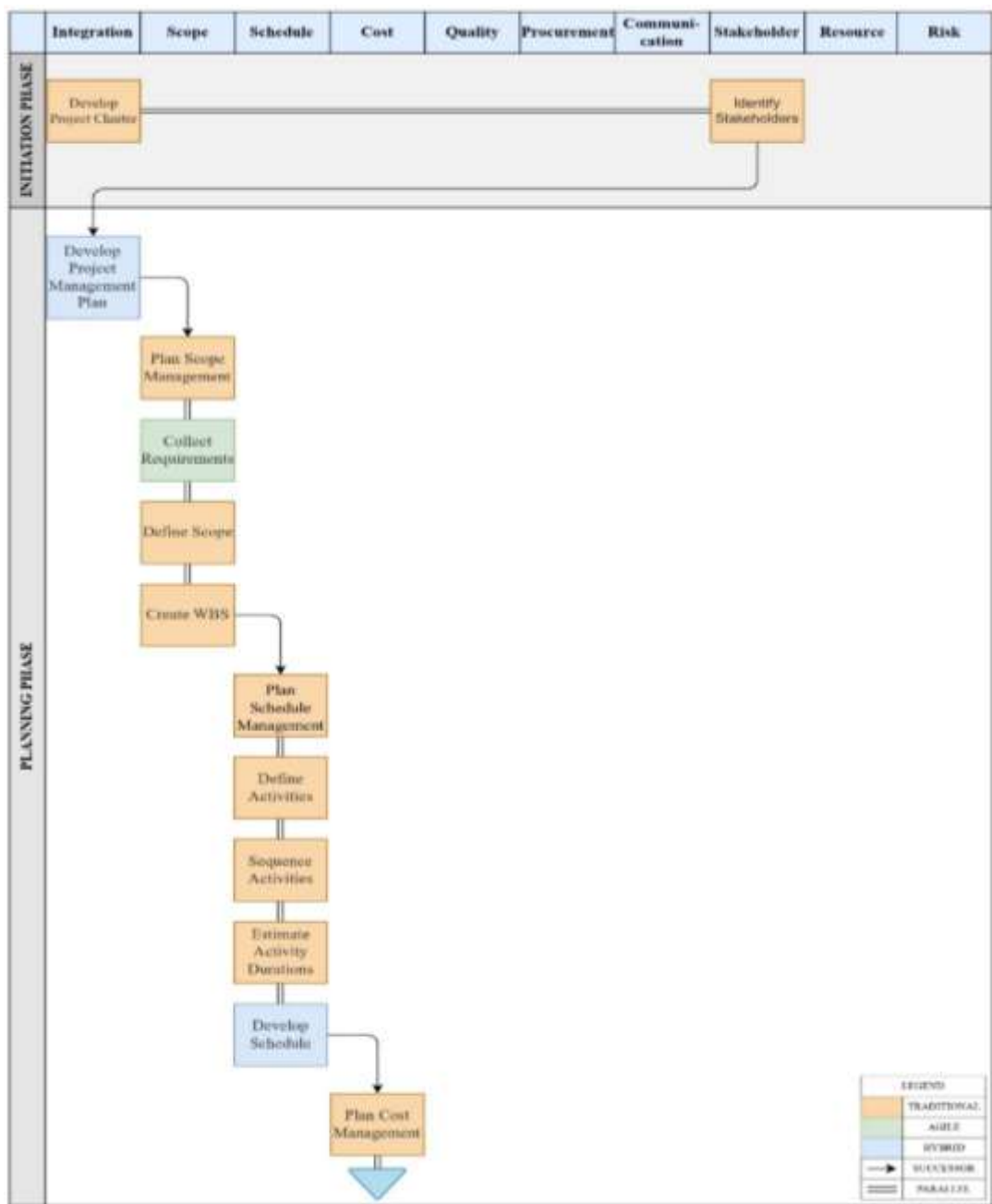
Stakeholder engagement, continuous information sharing, and changes based on ongoing feedback are all included in agile processes. Both academic literature studies and interview analysis show that iterative methods and adaptive planning increase the effectiveness of managing such dynamic activities in the airport project.

Hybrid management processes are activities that have structured planning elements with elastic implementation requirements. Examples are integrated schedule management, design coordination, interface management, performance monitoring, and change control. This necessitates compliance with project dynamics in real time, as well as compliance with pre-set project baselines. This classification highlights the importance of implementing various methodological approaches by demonstrating the way airport projects activities evolve during the project lifecycle.

5.5 Final framework output

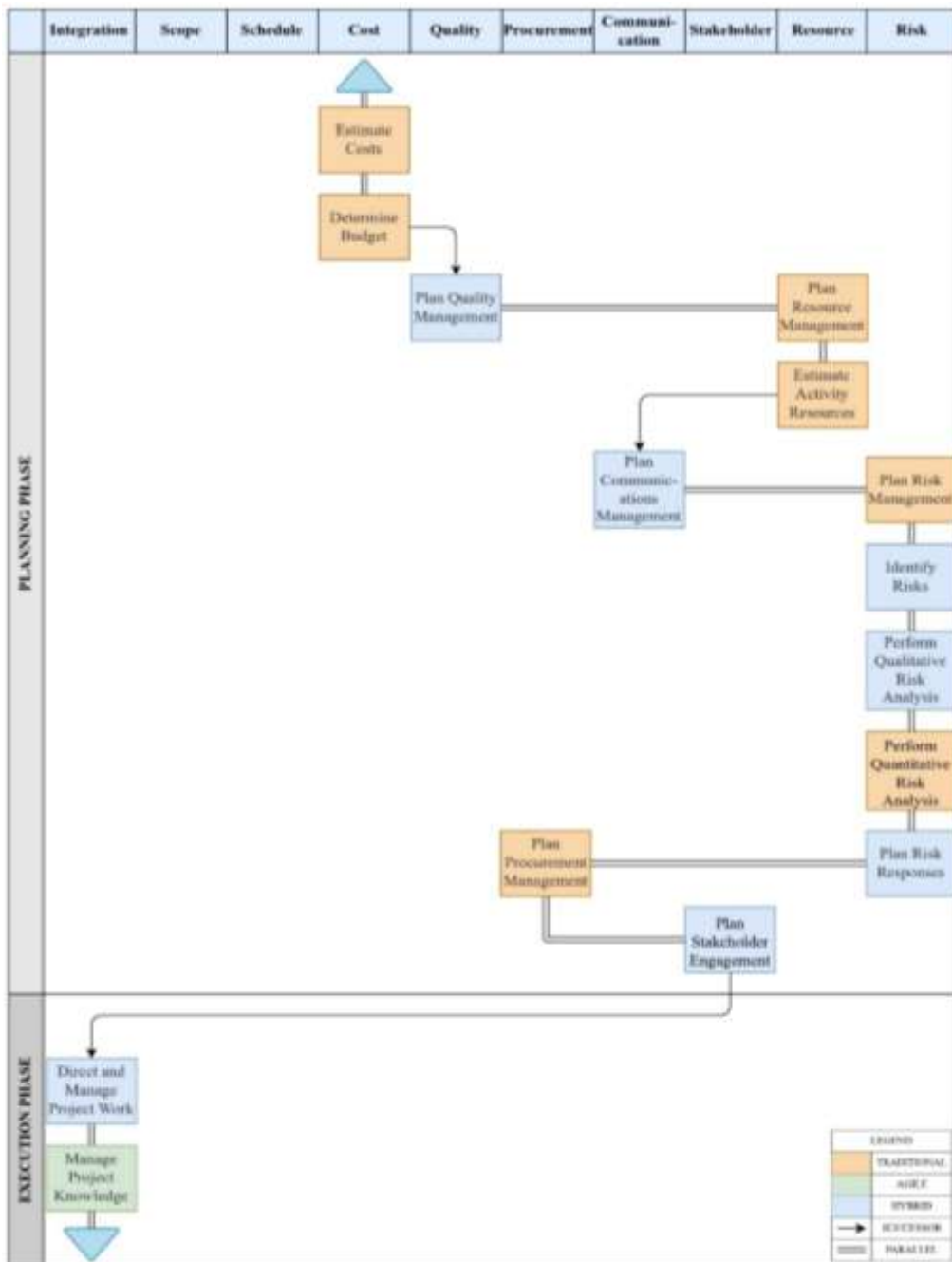
The main deliverable of this paper is the detailed HPM framework of airport projects that provides the recommended approach to management and a clear explanation of why each of the 49 PMBOK processes is recommended. The framework is an organised idea that aims at helping project managers to select appropriate project management methodologies in airport projects based on process characteristics and activity structure.

Figure 3: Proposed Hybrid Project Management Framework



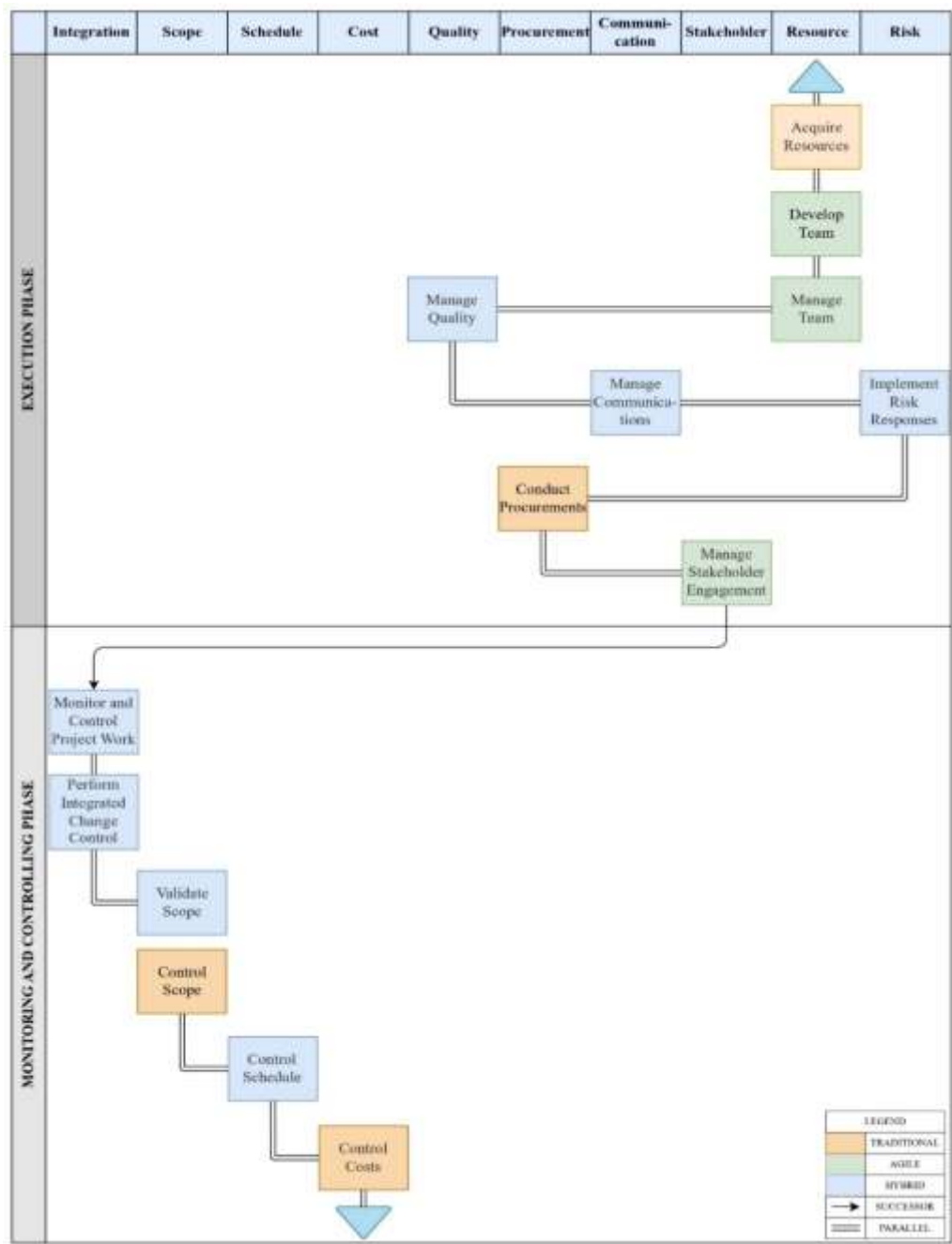
Source: Author's own work

Figure 4: Proposed Hybrid Project Management Framework (continued)



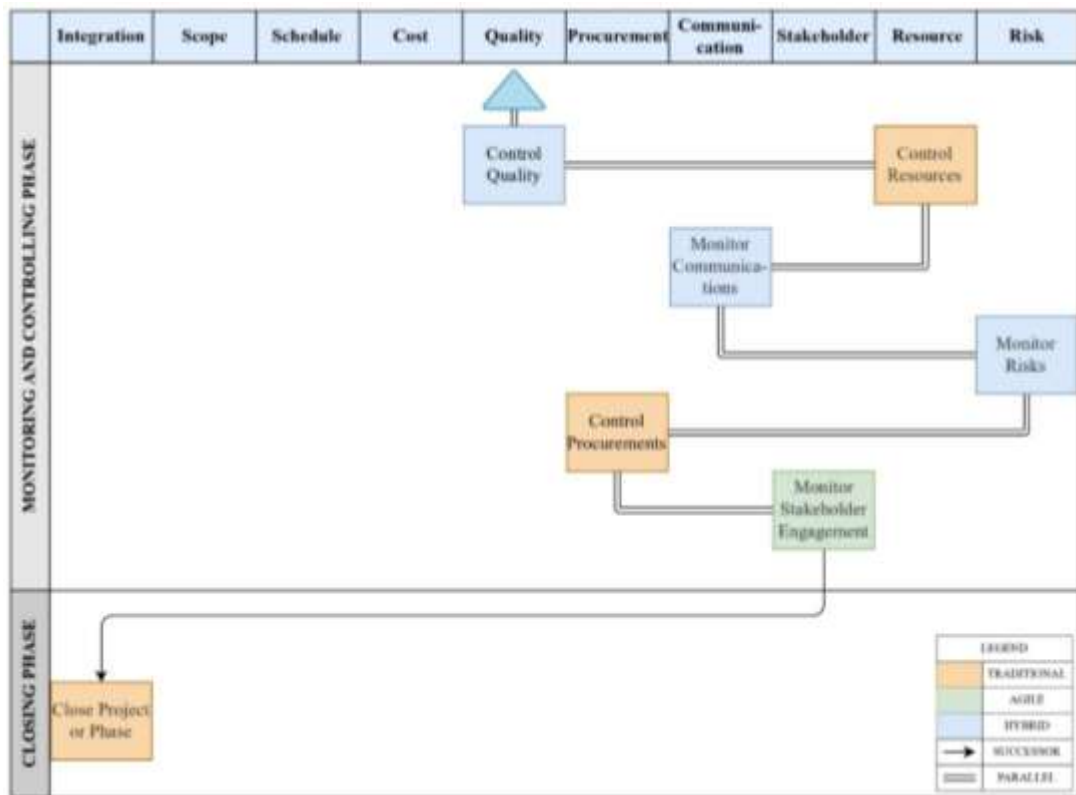
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Figure 5: Proposed Hybrid Project Management Framework (continued)



Source: Author's own work

Figure 6: Proposed Hybrid Project Management Framework (continued)



Source: Author's own work

6.0 Conclusion, Limitations and Future Research

This research paper presented an HPM system that is specifically designed to suit airport projects to address the shortcomings of adopting a single project management system to handle large-scale construction projects. The research points out that the intensity of regulation, stakeholders, and uncertainty are diverse in airport projects in terms of various project processes, and a systematic literature review and qualitative data regarding interviews with industry experts were analysed.

The findings indicate that different PMBOK processes in an airport project can gain from the specific strengths of traditional, agile, and hybrid project management approaches. The study proposes a structured framework for airport development projects by mapping 102

airport-specific activities to the 49 PMBOK processes and then assigning the appropriate management approaches at the process level.

The proposed framework suggests process-level methodology selection rather than a single uniform approach, allowing project managers to implement structured and controlled methods where outcomes are predictable and adaptive methods where change and iteration are unavoidable. In this way, the approach aligns industry-specific operational needs with project management principles. This study's main contribution is converting hybrid project management idea into a tailored framework for an airport project. The proposed framework gives a base for decision making which would be informed for complex projects. But this study is based upon the observations and experience of Industry professionals and literature review study. Future researchers can contribute by providing empirical evidence to strengthen this study.

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