

Integrated Risk Analysis of Manager Competency in Bali Construction Delays

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ABSTRACT

Construction project delays remain a critical challenge in Indonesia's construction industry, particularly in Bali's strategic tourism development areas. This qualitative study identifies and categorizes risk factors related to project manager (PM) quality and recruitment systems that contribute to construction project delays in Bali through systematic literature review and expert validation. Using rigorous content analysis methodology, this research analyzed 25 national and international peer-reviewed journal articles published between 2020-2025, complemented by PMBOK® Guide Seventh Edition standards, and validated findings through consultation with five senior construction practitioners in Bali. Through thematic content analysis and constant comparative method, the study identifies 16 Risk Events and 38 Risk Agents categorized into eight dimensions: PM competency, recruitment & HRM, planning & system, coordination & communication, resource management, vendor & supply chain, organizational culture, and external factors. Results reveal that PM competency-related factors constitute the most critical risk agents, with weak communication ability appearing in 76% of literature, weak planning ability in 72%, and insufficient leadership in 68%. Recruitment system deficiencies, including lack of competency-based selection criteria (24%), unstructured recruitment processes (20%), and inadequate training programs (32%), significantly contribute to PM performance gaps. The integration of these findings with Bali's unique construction context including high-end tourism project specifications, international client expectations, complex cultural regulations, and seasonal workforce dynamics—provides comprehensive understanding of project delay root causes. This study offers the first systematic qualitative framework linking PM quality and recruitment systems to construction delays in Bali's tourism construction context, contributing theoretical understanding grounded in international literature and validated through local expert perspectives.

Keywords: construction delays, project manager competency, recruitment system, risk identification, systematic literature review.

INTRODUCTION

The construction sector plays a vital role in supporting infrastructure development and national economic growth, yet project delays remain one of the most persistent challenges facing the industry globally and in Indonesia. Research indicates that construction project delays not only increase costs and reduce work quality but also result in significant financial losses for project owners and damage construction companies' credibility and competitiveness. Various studies have identified that project delays are multidimensional phenomena, stemming from technical, managerial, and external factors that interact in complex ways within specific contextual environments. Understanding these delay factors requires comprehensive analysis that goes beyond simple identification to explore underlying causal relationships and contextual manifestations.

Among the various factors contributing to project delays, human resources—particularly project managers have emerged as key elements influencing project success or failure. Project managers serve as primary controllers in planning, execution, and supervision phases, making their competence, qualifications, and leadership style critical determinants of achieving time, cost, and quality targets. Research [1] that managerial capabilities such as decision-making, communication, and team coordination significantly influence project completion success. [2] states that low project manager effectiveness contributes to increased delay risks, while [3] position project managers as

critical variables in controlling large-scale projects. The Project Management Institute's [4] emphasizes that project managers must possess comprehensive competencies encompassing technical aspects, leadership capabilities, and strategic understanding, articulated through the PMI Talent Triangle framework comprising ways of working, power skills, and business acumen.

However, in Bali's development context—particularly in strategic areas like Denpasar, Badung, Canggu, and Uluwatu experiencing rapid infrastructure and tourism development growth—a significant gap exists between international competency standards and actual field conditions. Many construction companies place project managers without adequately considering formal qualifications in terms of education, experience, or professional certification. Subjective and non-standardized recruitment processes often result in selected project managers lacking the capabilities to handle project complexities, contributing to high construction project delay risks in Bali's unique environment. This situation is further complicated by Bali's distinctive construction context characterized by high-end specification requirements for luxury tourism projects, international client expectations involving different communication styles and quality standards, strict cultural preservation regulations, and seasonal workforce dynamics related to tourism cycles and religious ceremonies.

RESEARCH METHODS

Research Design and Approach

This study employs a qualitative descriptive research design using systematic literature review as the primary research method, complemented by expert validation to ensure contextual relevance and practical applicability. The qualitative approach was selected for its ability to provide comprehensive, contextually rich understanding of complex phenomena through in-depth analysis and synthesis of existing research knowledge. This methodological choice is particularly appropriate for the research objectives of identifying and categorizing risk factors, as it enables thorough exploration of nuanced relationships between project manager competency, recruitment practices, and project delays as documented in scholarly literature and validated through practitioner expertise.

The research follows an inductive reasoning process, systematically analyzing specific observations and findings reported across multiple studies to develop broader generalizations and theoretical insights about risk factors and their manifestations. The systematic literature review methodology ensures rigor, transparency, and reproducibility in identifying relevant research, extracting pertinent information, and synthesizing findings into a coherent framework. The integration of expert validation provides practical grounding and contextual adaptation, ensuring that the literature-derived framework accurately reflects the realities of construction practice in Bali's unique environment.

The study focuses on Bali Province, specifically the Sarbagita metropolitan area encompassing Denpasar City and Badung, Gianyar, and Tabanan Regencies. This geographic focus was strategically selected because Sarbagita serves as Bali's primary economic activity center as designated by Presidential Regulation No. 45/2011, with the highest concentration of tourism construction projects including luxury villas, boutique resorts, high-end hotels, and commercial facilities. The area's distinctive characteristics—international client involvement, high-end specifications, cultural preservation requirements, and complex regulatory environment—make it an ideal context for exploring project manager quality and recruitment system issues in construction project management. The contextual validation through local experts ensures that the identified risk factors are not only theoretically sound based on international literature but also practically relevant to Bali's specific construction environment. The research flowchart is presented in Figure 1.

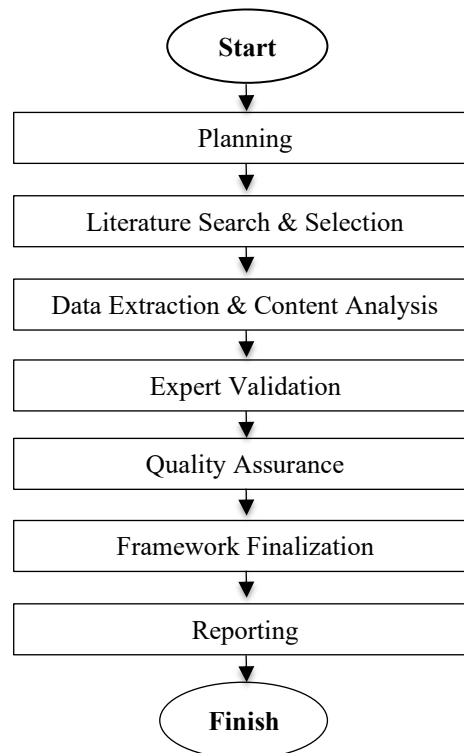


Figure 1. Flow chart

Data Collection

A systematic literature review was conducted employing PRISMA-informed procedures to ensure methodological transparency, reproducibility, and analytical rigor. Comprehensive searches across Scopus, Web of Science, Google Scholar, ScienceDirect, and SINTA-indexed repositories in October 2024 utilized Boolean keyword combinations encompassing construction delays, project manager competencies, and human resource management. The search generated 180 records, which were screened against predefined inclusion criteria requiring peer-reviewed journal status; publication dates between 2020 and 2025; English or Indonesian language; empirical methodological grounding; and substantive relevance to construction delay mechanisms or project manager capability within developing-country or Southeast Asian contexts. Sequential title–abstract assessment and full-text appraisal, guided by a standardized methodological quality checklist evaluating research design rigor, transparency, and evidential robustness, resulted in the selection of 25 high-quality articles forming the core evidence base. The PMBOK® Guide Seventh Edition was additionally incorporated to anchor the analytical framework in internationally recognized project management standards.

To enhance contextual validity, expert validation was undertaken with five purposively selected senior practitioners representing project management, consultancy, development, and human resource domains within Bali’s construction sector. Structured consultation sessions involved systematic evaluation of the preliminary literature-derived framework, including assessment of factor relevance, definitional clarity, categorical coherence, and the identification of context-specific determinants insufficiently represented in the international literature. Expert insights illuminated distinctive features of Bali’s project environment, including the technical complexity of luxury tourism developments, intercultural communication demands associated with international clients, regulatory dualism involving both formal government procedures and adat governance, and cyclical labor availability shaped by tourism seasons and ceremonial obligations. All consultations were documented through detailed notes and audio recordings, followed by member checking to ensure interpretive accuracy. Integrating expert insights refined factor definitions, enhanced contextual

specificity, and strengthened the credibility, applicability, and practical relevance of the resulting risk identification framework.

Data Analysis

Data analysis followed an integrated, multi-stage qualitative procedure combining systematic literature review, thematic content analysis, and the constant comparative method. Risk factors were extracted from 25 selected articles using a standardized template to ensure completeness, traceability, and consistency. More than 150 initial factors were coded through iterative open coding, consolidated into conceptually coherent categories, and subsequently clustered into themes through constant comparison within and across studies. The resulting 80 distilled factors were organized using an adapted House of Risk framework, distinguishing between Risk Events and Risk Agents to clarify causal structures.

Each factor was assigned a unique identifier and its frequency calculated across the literature to provide descriptive insight into factor prominence. Expert validation was integrated throughout the analysis to assess contextual relevance, refine factor interpretations, and incorporate Bali-specific manifestations without compromising conceptual parsimony. Analytical rigor was ensured through triangulation across literature, PMBOK standards, and expert insights; investigator triangulation during coding; and the maintenance of a comprehensive audit trail. The methodology adhered to Lincoln and Guba's trustworthiness criteria—credibility, transferability, dependability, and confirmability and complied with ethical protocols for expert participation.

RESULT AND DISCUSSION

Overview of Risk Factor Identification

Through a systematic synthesis of 25 peer-reviewed studies, complemented by PMBOK® Guide standards and validated through consultations with five senior practitioners, this research developed a comprehensive framework of risk factors linking project manager quality and recruitment systems to construction delays. The framework comprises 16 Risk Events representing observable delay manifestations and 38 Risk Agents capturing underlying causal mechanisms, organized into coherent thematic categories that reflect multiple dimensions of delay causation and contextualized for Bali's tourism-oriented construction environment.

The distribution of factors highlights key patterns in delay research. Schedule-related events form the largest group of Risk Events, while coordination and communication issues—although fewer in number—exhibited the highest frequency in the literature, indicating strong consensus regarding their critical influence. Among Risk Agents, project manager competency constitutes the most extensive category with eight core dimensions, underscoring the centrality of managerial capability in delay outcomes. The remaining agents span organizational systems, communication structures, resource management, supply chain practices, organizational culture, and external environmental conditions, demonstrating the multi-level nature of causal pathways.

Frequency analysis further revealed that 12 factors were highly critical (appearing in >60% of studies), 18 were classified as critical (40–60%), and 24 were moderately represented (<40%). Expert validation confirmed the practical relevance of all identified factors, including those with lower frequencies, suggesting that literature prevalence reflects research emphasis rather than practical significance. This reinforces the robustness and comprehensive applicability of the final risk factor framework.

Risk Event Identification and Categorization

The systematic analysis identified 16 distinct Risk Events representing observable outcomes or conditions that directly cause or contribute to construction project delays. These Risk Events were organized into five thematic categories providing comprehensive coverage of different types of delay manifestations as presented in Table 1.

Table 1. Identified Risk Events from Systematic Literature Review

Code	Category	Risk Event	Description	Frequency
RE01	Schedule	Uncontrolled scope creep	Addition of work items, specification changes, or area expansion without proper change order procedures causing unplanned duration increases	15/25 (60%)
RE02	Schedule	Stakeholder approval/decision delays	Design approval, shop drawing, material submittal, or change order processes taking excessive time due to slow stakeholder responses	18/25 (72%)
RE03	Schedule	Inaccurate duration estimates	Overly optimistic scheduling not considering work complexity, field conditions, or historical data, resulting in unrealistic baseline schedules	20/25 (80%)
RE04	Schedule	Material/vendor supply delays	Materials arriving late to site, vendors not meeting delivery schedules, or material quality issues requiring rework/replacement	17/25 (68%)
RE05	Schedule	Skilled labor shortage	Insufficient worker numbers or worker skills not matching job requirements, causing low productivity and delayed work	16/25 (64%)
RE06	Schedule	Low labor productivity	Output per worker-day below standards due to low motivation, poor conditions, or inadequate supervision	14/25 (56%)
RE07	Schedule	PM or key personnel turnover	Replacement of project manager or key staff mid-project causing disruption and knowledge loss	10/25 (40%)
RE08	Communication	Miscommunication among stakeholders	Information not conveyed accurately, misunderstandings of drawings/specifications, coordination failures	19/25 (76%)
RE09	Communication	Conflicts among project parties	Disputes between owner-contractor, contractor-subcontractor, or among stakeholders regarding scope, payment, or quality	12/25 (48%)
RE10	Communication	Ineffective supply chain coordination	Poor synchronization among main contractor, subcontractors, suppliers, and vendors affecting delivery timing	13/25 (52%)

Code	Category	Risk Event	Description	Frequency
RE11	Planning	Design revisions during construction	Design changes by consultant or owner mid-construction requiring rework, demolition, or schedule adjustment	14/25 (56%)
RE12	Planning	Weak monitoring and control	Delays identified late due to non-real-time monitoring, infrequent earned value analysis, or slow corrective actions	16/25 (64%)
RE13	Planning	Complex activity dependencies	Critical path activities with high interdependence causing cascade effects when one activity delays	11/25 (44%)
RE14	External	Regulatory and permitting delays	Prolonged processes for building permits, site permits, utility connections, or approvals from government agencies	13/25 (52%)
RE15	External	Extreme weather conditions	Heavy rain, strong winds, or natural disasters stopping outdoor work or endangering worker safety	9/25 (36%)
RE16	External	Material price and availability fluctuations	Significant price increases, material scarcity, or supply chain disruptions affecting procurement timelines	11/25 (44%)

The analysis identified *Schedule-Related Events* as the most dominant category, with seven risk events appearing at high frequencies (40–80%). *Inaccurate duration estimation* (RE03) was the most prevalent factor (80%), reflecting broad scholarly consensus that unrealistic scheduling fundamentally undermines timeline performance. This issue is consistently attributed to overly optimistic assumptions, limited use of historical data, inadequate consideration of project complexity, and insufficient attention to contextual project characteristics. Expert validation further indicated that duration estimation challenges are particularly pronounced in Bali's tourism construction sector due to extended lead times for imported materials, ceremonial work stoppages during major Hindu festivals, multilayered regulatory and adat-based approval structures, and seasonal labor availability linked to tourism cycles.

Stakeholder approval and decision delays (RE02) were identified in 72% of the literature, underscoring the critical influence of decision-making speed on schedule adherence. These delays commonly arise from prolonged approval procedures, unclear authority structures, bureaucratic complexity, and limited stakeholder engagement. Experts highlighted that, in Bali's international tourism projects, decision delays are exacerbated by cross-cultural communication gaps, differences in decision-making styles, and limitations in project managers' ability to effectively communicate technical information to non-technical international clients.

Material and vendor supply delays (RE04), cited in 68% of the literature, further emphasize construction's dependency on reliable supply chains. The literature reports late deliveries, vendor non-compliance with contractual schedules, quality-related material replacements, and logistical constraints as key contributors. Expert validation revealed that Bali's island geography intensifies these risks, particularly for imported materials requiring customs clearance, inter-island logistics, and navigation of limited port capacity during peak tourism seasons—challenges compounded by weak supply chain management and vendor coordination capabilities among project managers.

Despite comprising only three factors, the *Coordination and Communication Events* category recorded the highest average frequency. Miscommunication (RE08) reached 76%, the highest of all identified risk events, indicating strong, cross-study consensus regarding the centrality of communication effectiveness to project coordination. Miscommunication manifests through inaccurate information transfer, misinterpretation of drawings and specifications, inadequate documentation, and cultural or linguistic barriers, particularly in international projects. All experts confirmed the pervasive nature of communication breakdowns in Bali, occurring across client–manager, manager–consultant, manager–contractor, and contractor–subcontractor interfaces.

The *Planning and Control Events* category captured systemic weaknesses in project management processes. *Weak monitoring and control* (RE12), identified in 64% of the literature, reflects inadequate real-time performance tracking, infrequent earned value analysis, delayed variance detection, and slow corrective responses. Experts noted that many Bali-based construction firms still rely on informal monitoring practices, resulting in delayed identification of schedule deviations and escalation of risks before mitigation actions are taken.

Finally, although the *External Factor Events* category recorded moderate frequencies (36–52%), expert validation underscored their substantial practical impact. *Regulatory and permitting delays* (RE14), cited in 52% of the literature, were unanimously recognized as a defining constraint in Bali’s construction environment. These delays stem from the island’s dual governance structure that integrates formal governmental processes with customary adat authorities, requiring multilayered approvals related to land use, cultural appropriateness, tourism zoning, and heritage conservation. Project managers lacking familiarity with these regulatory systems or the cultural sensitivity required to navigate adat protocols face significantly extended permitting periods that directly impact project timelines.

Risk Agent Identification and Categorization

The systematic analysis identified 38 distinct Risk Agents representing underlying causal factors that trigger, enable, or exacerbate risk events. These Risk Agents were organized into eight comprehensive categories spanning individual competencies, organizational systems, and environmental factors as presented in Table 2.

Table 2. Identified Risk Agent from Systematic Literature Review

Code	Category	Risk Agent	Description	Frequency
RA01	PM Competency	Insufficient technical competence	PM lacks adequate knowledge of construction engineering, materials, methods, or technologies	16/25 (64%)
RA02	PM Competency	Weak planning ability	PM unable to develop realistic schedules, detailed work breakdown structures, or optimal resource allocation plans	18/25 (72%)
RA03	PM Competency	Insufficient leadership ability	PM ineffective in leading teams, motivating workers, building team cohesion, or providing direction	17/25 (68%)
RA04	PM Competency	Weak communication ability	PM ineffective in communicating with stakeholders, presenting ideas, or negotiating	19/25 (76%)

Code	Category	Risk Agent	Description	Frequency
RA05	PM Competency	Weak risk management capability	PM lacks adequate track record in similar projects, comparable project scales, or complex project types	15/25 (60%)
RA06	PM Competency	Weak risk management capability	PM slow or hesitant in taking critical decisions, frequently escalates trivial issues, or makes decisions based on incomplete information	15/25 (60%)
RA07	PM Competency	Poor decision-making ability	RAplacement of project manager or key staff mid-project causing disruption and knowledge loss	10/25 (40%)
RA08	PM Competency	Inadequate problem-solving skills	PM not creative or systematic in troubleshooting, difficulty identifying root causes, or ineffective in resolving recurring issues	14/25 (56%)
RA09	Recruitment & HRM	Lack of competency-based selection criteria	Companies recruit PMs without clear competency requirements, competency assessment tools, or structured evaluation	6/25 (24%)
RA10	Recruitment & HRM	Unstructured recruitment process	No recruitment SOPs, non-standardized interviews, subjective assessment, or lack of structured selection process	5/25 (20%)
RA11	Recruitment & HRM	Inadequate training and development	No continuous learning opportunities, insufficient budget for PM certification, or lack of mentoring programs	8/25 (32%)
RA12	Recruitment & HRM	Ineffective performance evaluation	No clear KPIs for PMs, irregular performance reviews, absent feedback mechanisms, or non-merit-based rewards	7/25 (28%)
RA13	Recruitment & HRM	Inappropriate PM placement	PMs assigned to projects not matching their experience level, specialization, or competencies	6/25 (24%)
RA14	Planning & System	Unclear scope definition	Scope of work not defined in detail initially, ambiguity in contract documents	14/25 (56%)
RA15	Planning & System	Unrealistic cost and time estimates	Duration and budget calculations not based on historical data or benchmarks, overly optimistic assumptions	16/25 (64%)
RA16	Planning & System	Absence of project risk management system	Companies don't implement risk management framework, risk registers not utilized	11/25 (44%)

Code	Category	Risk Agent	Description	Frequency
RA17	Planning & System	Weak monitoring and reporting systems	No dashboards or tools for real-time progress tracking, inconsistent reporting	13/25 (52%)
RA18	Planning & System	Incomplete project documentation	Minutes of meetings, change orders, and important documents not well documented	10/25 (40%)
RA19	Coordination & Communication	Lack of integrated communication platform	Communication still manual (email, WhatsApp) and not well-recorded in one system	8/25 (32%)
RA20	Coordination & Communication	Insufficient coordination meeting frequency	Progress or coordination meetings rarely or irregularly held	12/25 (48%)
RA21	Coordination & Communication	Weak stakeholder engagement	Owners, consultants, and contractors not actively involved in project decision-making	11/25 (44%)
RA22	Coordination & Communication	Lack of information transparency	Project data (cost, schedule, issues) not openly shared with relevant parties	9/25 (36%)
RA23	Resource Management	Suboptimal resource allocation	Personnel, equipment, and materials not allocated according to needs or appropriate timing	13/25 (52%)
RA24	Resource Management	Inappropriate workforce qualifications	Recruited workers lack required skills or certifications for specific work	12/25 (48%)
RA25	Resource Management	Resource mobilization delays	Equipment, materials, or workers arrive late to site according to schedule	11/25 (44%)
RA26	Resource Management	Absence of backup plan for key resources	No contingency plan if critical resources (PM, main equipment) experience problems	7/25 (28%)
RA27	Vendor & Supply Chain	Non-qualification-based vendor selection	Vendors selected only based on lowest price without evaluating capability and track record	10/25 (40%)
RA28	Vendor & Supply Chain	Non-rigid vendor contracts	Contract clauses unclear regarding delivery time, quality standards, and penalties	9/25 (36%)
RA29	Vendor & Supply Chain	Single vendor dependency	No alternative vendors for critical materials or services, high dependency risk	8/25 (32%)
RA30	Vendor & Supply Chain	Weak subcontractor coordination	Subcontractor scheduling and quality control not integrated with main schedule	11/25 (44%)

Code	Category	Risk Agent	Description	Frequency
RA31	Organizational Culture	Collaboration-unsupportive organizational culture	Siloed mentality across departments or project parties, lack of teamwork culture	8/25 (32%)
RA32	Organizational Culture	Insufficient top management support	Senior management doesn't provide adequate authority, resources, or support for PMs	10/25 (40%)
RA33	Organizational Culture	Resistance to change/innovation	Stakeholders resist adoption of new technologies, digital tools, or modern construction methods	7/25 (28%)
RA34	Organizational Culture	Absence of lesson learned management	Companies don't document and learn from previous project mistakes	6/25 (24%)
RA35	External Factors	Government regulation changes	Changes in building codes, building permits, or other technical provisions mid-project	9/25 (36%)
RA36	External Factors	Unstable economic and market conditions	Inflation, foreign exchange fluctuations, or recession affecting project cost and financing	8/25 (32%)
RA37	External Factors	Regional infrastructure limitations	Poor road access to project location, unstable electricity, or limited water supply	6/25 (24%)
RA38	External Factors	Local social and cultural issues	Protests from surrounding residents, Balinese customary law requirements, or land conflicts hindering projects	7/25 (28%)

The analysis identified *Project Manager (PM) Competency* as the dominant source of delay-related risk agents, with eight competency dimensions appearing at high frequencies (52–76%). *Weak communication ability* (RA04) was the most frequent risk agent (76%), indicating its central role in delay causation. Communication deficiencies include ineffective stakeholder engagement, limited negotiation capacity, poor translation of technical information, and cross-cultural communication barriers—issues intensified in Bali's multicultural tourism construction environment.

Weak planning ability (RA02) (72%) emerged as the second most critical competency factor, encompassing unrealistic scheduling, inadequate work breakdown structures, poor resource allocation, limited critical path analysis, and absent contingency planning. Experts emphasized that Bali's reliance on imported materials, specialized trades, international approval cycles, and ceremonial work stoppages heightens the need for advanced planning skills. *Insufficient leadership ability* (RA03) (68%) further contributed to delays through inadequate team motivation, weak delegation, ineffective conflict resolution, and limited direction-setting.

Five additional competency dimensions—technical competence, experience, risk management, decision-making, and problem-solving—also appeared within the critical frequency range (52–64%), reinforcing the multidimensional nature of PM capability requirements.

Although *Recruitment and HRM* factors showed lower frequencies (20–32%), expert validation identified them as foundational systemic enablers of competency gaps. Organizations frequently lacked competency-based selection criteria (RA09), relied on unstructured recruitment processes

(RA10), and did not implement systematic training and development programs (RA11), resulting in inconsistent and often inadequate PM capability profiles.

Additional organizational and contextual risk agent categories including weaknesses in project governance systems, fragmented communication infrastructures, unsupportive organizational cultures, and external environmental factors were found to interact with individual PM competency gaps, thereby amplifying their impact on project delays.

Integration with Bali Construction Context

The systematic literature review identified risk factors derived from diverse international contexts, raising concerns regarding their applicability to Bali's distinct construction environment. Expert validation addressed this issue by examining how these factors materialize within Bali's tourism-driven construction sector and by identifying contextual dimensions requiring adaptation. The findings indicate that although all literature-derived factors are relevant in Bali, their manifestations and relative significance are shaped by local characteristics, necessitating contextual refinement of the risk framework.

A defining feature of Bali's construction sector is its emphasis on high-end tourism facilities, including luxury villas and boutique resorts, which involve complex architectural forms, imported materials, advanced building systems, and artisanal craftsmanship. These technical demands heighten the importance of project managers' technical competence, planning capability, and problem-solving skills, as conventional construction knowledge is insufficient for this segment.

International client dynamics represent another critical contextual factor. Projects involving foreign property owners or multinational hospitality brands require project managers to navigate cross-cultural communication styles, elevated quality expectations, diverse decision-making processes, and varying contractual norms. Consequently, communication competence, cultural intelligence, and stakeholder management capabilities become essential for preventing misalignment and delays.

Bali's dual governance structure—formal regulatory systems and customary village (adat) authorities—further complicates project execution. Project managers must manage both bureaucratic permitting processes and culturally embedded approval mechanisms, requiring regulatory knowledge, cultural sensitivity, and relationship-building skills. These complexities intensify the likelihood of regulatory delays without culturally attuned engagement strategies.

Seasonal workforce fluctuations driven by tourism cycles and religious ceremonies additionally impact labor availability. Effective management of these predictable disruptions requires advanced resource planning, adaptability, and cultural awareness to maintain productivity while respecting non-negotiable cultural obligations.

Overall, the integration of international literature with local expert insights reveals that Bali's combination of high technical specifications, international client expectations, complex cultural-regulatory systems, and distinctive labor patterns creates a project environment more demanding than standard construction contexts. This underscores the need to contextualize generic risk frameworks and highlights that effective project manager performance in Bali requires specialized technical expertise, heightened communication and interpersonal skills, cultural intelligence, and adaptive capacity.

Synthesis and Theoretical Implications

The integrated risk identification framework developed through systematic literature review and expert validation offers several key theoretical contributions to construction management research. First, it demonstrates that project delays arise from multi-level interactions among individual competencies, organizational systems, and external contexts. By distinguishing between Risk Events and underlying Risk Agents, the framework clarifies that observable delays stem from root causes embedded in competency gaps, inadequate recruitment and HR systems, weak organizational infrastructure, and challenging environmental conditions—thereby challenging single-factor explanations and emphasizing the need for multi-level interventions.

Second, the framework establishes project manager competency as the most influential individual-level determinant of project performance. All eight competency dimensions appear prominently in both literature and expert validation, supporting Resource-Based View arguments that human capital constitutes a critical source of organizational advantage. The particularly strong emphasis on communication ability, identified as the most pervasive competency deficiency, extends communication theory by underscoring its role as a coordinating mechanism essential for aligning diverse stakeholders and enabling effective execution of technical, planning, and leadership tasks.

Third, the identification of recruitment and HR system weaknesses as foundational enablers of competency gaps highlights an underexplored area in construction management research. While prior studies focus primarily on individual competencies, the framework demonstrates that delays are also shaped by systemic shortcomings in talent attraction, selection, and development, aligning with strategic HRM theory and indicating a need for greater scholarly attention to project manager pipeline development.

Fourth, the contextual validation results illustrate how generic risk factors manifest uniquely within Bali's construction environment, reinforcing contingency theory perspectives. The need to adapt international competency frameworks to accommodate challenges such as dual governance structures, cultural preservation regulations, and international client expectations highlights the importance of contextualized management practices and the development of cultural intelligence and adaptive capacity in project managers.

Fifth, the framework exemplifies the value of synthesizing PMBOK standards, empirical studies, and practitioner insights. Convergence across these sources strengthens evidence for the centrality of communication, planning, and leadership competencies, while discrepancies—such as the prominence of HR system deficiencies in practice but not in literature—reveal critical gaps for future research. This multi-source approach thus yields a more comprehensive and practically relevant understanding of the mechanisms through which project manager quality and organizational systems influence construction project delays.

Practical Implications and Recommendations

The developed risk framework offers significant practical implications for stakeholders aiming to reduce construction delays through improved project manager quality and recruitment systems. For construction firms, the findings highlight the need to implement competency-based recruitment processes, including clearly defined competency frameworks, structured assessment tools, standardized selection procedures, and evidence-based decision-making. Expert feedback indicates that such systems are largely absent in Bali, making recruitment reform a high-impact intervention.

Equally important is the establishment of systematic project manager development programs. These include competency assessments, individualized development plans, structured mentoring, progressive responsibility pathways, targeted formal training, and periodic reassessment. Current practices—typically limited to ad hoc training events—fall short of supporting long-term capability development, indicating substantial room for performance enhancement.

Strengthening organizational project management infrastructure further supports project success by reducing reliance on individual capabilities. Recommended measures include integrated project management software, standardized procedures and templates, organizational risk management systems, lessons-learned databases, and communities of practice. Such systems provide an enabling environment that complements individual competency development.

The findings also underscore the need to adapt project management practices to Bali's unique cultural, regulatory, and technical context. Effective adaptation requires cultural intelligence training, specialized technical training for high-end tourism construction, cross-cultural communication and language development, access to cultural and regulatory experts, and realistic scheduling that accounts for ceremonial work stoppages, dual-governance permitting processes, and material import constraints.

Industry associations can support these improvements by developing context-specific competency standards, offering aligned certification and professional development programs, facilitating

knowledge exchange, and collaborating with educational institutions to strengthen the project management talent pipeline.

Educational institutions should enhance curricula by integrating leadership, communication, and strategic competencies with technical knowledge; embedding cultural intelligence training; expanding experiential learning opportunities; and involving industry practitioners in curriculum design to maintain relevance with evolving industry needs.

Government and regulatory bodies can reduce regulatory-related delays by streamlining approval procedures, improving coordination among authorities, enhancing transparency and guidance, adopting e-government systems, and providing training for regulatory personnel. Efforts to improve administrative efficiency, while preserving cultural and regulatory integrity, would meaningfully increase predictability in project timelines.

Limitations and Future Research Directions

This study has several limitations that inform directions for future research. First, the systematic literature review, although rigorous, was constrained by database selection, language restrictions (English and Bahasa Indonesia), and a five-year publication window, potentially excluding relevant studies published earlier or in other languages. Broadening the temporal and linguistic scope would enhance comprehensiveness.

Second, the expert validation relied on five practitioners, which, despite their diverse experience, may not fully represent Bali's construction industry. A larger and more varied sample—potentially through broad-based surveys—could provide stronger quantitative validation of factor relevance and prevalence.

Third, the qualitative approach enabled rich identification and contextualization of risk factors but did not quantify their causal strength or test interrelationships. Future studies employing regression analysis, structural equation modeling, or comparative case studies could establish empirical causal pathways and effect sizes.

Fourth, although recruitment and HR system deficiencies emerged as central enablers of competency gaps, this study did not examine the organizational or institutional forces sustaining these weaknesses. Research grounded in organizational theory could investigate cultural, economic, and structural barriers to adopting competency-based HR practices.

Fifth, the contextual specificity of Bali's tourism construction sector limits generalizability. Applying similar review-and-validation approaches in other Indonesian regions or international settings would clarify which factors are universal and which are context-dependent, enabling cross-context comparisons.

Sixth, the study focused on risk identification rather than mitigation. Future research should design and test competency-based recruitment models, targeted training programs, organizational system improvements, and multi-level intervention strategies to evaluate their practical effectiveness.

Finally, while delays were the primary outcome examined, broader consequences—such as cost overruns, quality impacts, stakeholder satisfaction, and organizational competitiveness—were not explored. Future research assessing these downstream effects would strengthen the strategic rationale for investing in project manager quality and improved recruitment systems.

CONCLUSION

This study systematically identified and categorized comprehensive risk factors related to project manager quality and recruitment systems that contribute to construction delays in Bali. Through analysis of 25 peer-reviewed articles, integration of PMBOK® Guide standards, and validation with five senior practitioners, the research produced a multi-level framework comprising 16 Risk Events and 38 Risk Agents spanning individual, organizational, and environmental dimensions of delay causation. Findings confirm project manager competency as the most influential individual-level determinant of project timelines. All eight competency dimensions—technical competence, planning, leadership, communication, experience, risk management, decision-making, and problem-

solving—appeared in over half of the reviewed studies. Communication ability was the most frequently cited deficiency, followed by planning and leadership capabilities, underscoring the central role of project manager quality in preventing delays. The study further identifies recruitment and HR system weaknesses—including the absence of competency-based selection, unstructured recruitment processes, insufficient training and development, ineffective performance evaluation, and inappropriate project manager placement—as foundational contributors to competency gaps. Although underrepresented in prior literature, these organizational deficiencies were strongly emphasized by experts, indicating that sustainable delay reduction requires strengthening the systems that shape project manager capability development. Contextual integration revealed that Bali's tourism construction sector introduces distinctive complexity. High-end technical specifications, international client expectations, dual governance structures involving formal and customary authorities, and seasonal workforce dynamics intensify competency requirements—particularly in communication, cultural intelligence, planning, and relationship management. These findings highlight the necessity of adapting generic risk and competency frameworks to local industry contexts. The resulting framework offers significant theoretical contributions by demonstrating the interconnected, multi-level nature of delay causation; empirically reinforcing the centrality of project manager quality; foregrounding HR system deficiencies as critical root causes; and validating contingency-based perspectives on contextual adaptation. Practically, the framework provides a comprehensive diagnostic tool for industry stakeholders, supporting targeted interventions such as competency-based recruitment, structured project manager development programs, strengthened organizational project management systems, and context-responsive management practices.

As the first systematic qualitative synthesis of these risk factors tailored to Bali's tourism construction environment, this study fills a key knowledge gap and establishes a strong foundation for future quantitative testing, intervention development, and cross-context comparative research.

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