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COMPARISON OF PROJECT MANAGEMENT PRACTICES IN IT/ENGINEERING AND HOSPITALITY/TOURISM

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Abstract

Project management practices significantly vary across industries due to differences in operational environments, expectations of the stakeholders, risk aspects and surely, what are the project deliverables. This paper provides a comprehensive comparison of project management in IT/engineering and hospitality/tourism. IT and engineering projects typically involve technical complexity, structured development methodologies, and reliance on specialized tools, whereas hospitality and tourism projects center on customer experience, service quality, and logistical coordination. Through an analysis of methodologies, stakeholder dynamics, success metrics, and risk management approaches, this study highlights both the distinctions and shared foundations between the sectors. The comparative analysis is expanded to include organizational culture, communication practices, regulatory impacts, innovation dynamics, and sustainability considerations. Two proposed case studies illustrate typical project structures: an Agile-based software development project and a hotel renovation and rebranding initiative. The project about the hotel renovation is elaborated in both traditional project management approach and agile methodology as a proposal for improvement. The paper argues that cross-industry learning such as adopting customer-centric practices in engineering or applying Agile methods in hospitality service innovation as shown in this paper can enhance project outcomes. Ultimately, the study concludes that while the contextual differences between these industries shape project characteristics, both fields benefit from disciplined planning, effective communication, and structured risk management.

Key words: PM (project management), *stakeholder engagement, service quality, iterative development, customer experience, risk mitigation, agile methodology*

INTRODUCTION

Project management has become an essential driver of organizational success across a wide range of industries, enabling companies to coordinate resources, deliver value, and adapt to rapidly changing environments. As global markets evolve and customer expectations intensify, organizations increasingly recognize that effective project management is not merely an operational necessity but a strategic function that supports innovation, competitive advantage, and long-term sustainability (PMI, 2021). Although the foundational principles of project management—such as defining scope, developing timelines, allocating resources, and managing risks—are universally applicable, their interpretation and execution vary substantially depending on the industry context in which they are applied (Berkun, 2021). Information technology (IT) and engineering projects are typically characterized by high levels of technical complexity, rapid technological advancements, and multidimensional stakeholder environments. These fields often require specialized knowledge, adherence to strict technical standards, and the integration of multiple subsystems or disciplines. As a result, their project management approaches emphasize structured methodologies, iterative development,

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rigorous testing, and formal documentation to reduce uncertainty and ensure technical reliability (Kasauli et al., 2021).

In contrast, hospitality and tourism operate within highly dynamic, service-oriented environments where human interaction, customer expectations, and experiential quality play central roles. Projects in these sectors—such as event planning, hotel renovations, marketing campaigns, or tourism product development—tend to be shaped by seasonal demand, cultural considerations, and logistical constraints. Consequently, project managers in hospitality and tourism must balance planning with flexibility, coordinate large and diverse groups of stakeholders, and prioritize customer satisfaction and service excellence (Ivanov & Webster, 2022).

Studying the differences and similarities between project management practices in IT/engineering and hospitality/tourism is valuable for several reasons. First, it highlights how industry context influences methodological choices, communication practices, risk management strategies, and success metrics. Second, it offers insights into how cross-industry learning can improve project outcomes—for instance, how IT's iterative methods can support innovation in hospitality or how hospitality's customer-centered approach can enhance user-focused design in IT. Finally, the comparison contributes to a broader understanding of how project management must evolve to meet the diverse demands of modern organizations operating in both technical and service-driven sectors.

PROJECT MANAGEMENT PRINCIPLES AND FRAMEWORKS

Project management is grounded in established frameworks such as the Project Management Body of Knowledge (PMBOK) and PRINCE2. These frameworks define essential knowledge areas including integration, scope, schedule, cost, quality, resource, communication, risk, procurement, and stakeholder management (PMI, 2021). Although these principles are universal, industry context determines how they are prioritized, interpreted, and applied.

In IT and engineering, Agile methodologies have become highly prominent because they promote adaptability, iterative development, and stakeholder collaboration (Rigby et al., 2020). Agile allows teams to respond quickly to technological change, evolving requirements, and continuous feedback. Engineering projects frequently combine Agile with more traditional Waterfall approaches in hybrid models suited to hardware development cycles and safety requirements (Hobbs & Petit, 2022). Hospitality and tourism projects, however, generally use linear or event-driven methodologies because many projects require strict adherence to dates, seasons, or guest schedules (Walters & Mair, 2020).

PROJECT MANAGEMENT IN IT AND ENGINEERING

There is a wide spectrum of IT and engineering projects' types. They can be categorized as follows:

- Software and application development;
- System integration and IT infrastructure deployment;
- Artificial intelligence and data analytics implementations;
- Construction and civil engineering;
- Automation and robotics initiatives;
- Product design, prototyping and testing;
- Cybersecurity implementation projects.

These projects typically require technical precision, interdisciplinary collaboration, and compliance with industry standards (Anderson & Smith, 2020).

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Methodologies and tools

Key methodologies applied in these projecst are based on:

- Agile/Scrum: Flexible, iterative development;
- Kanban: Continuous workflow optimization;
- Waterfall: Structured, sequential processes;
- DevOps: Integrated development and operations for continuous deployment (Bass et al., 2015);
- Lean engineering: Waste reduction and efficiency (Patel, 2020);

Tools that are frequently used and are especially popular among IT / Software / Technical development companies / projects are:

- Jira;
- Azure DevOps;
- GitHub;
- GitLab;
- Microsoft Project;
- Confluence;
- AutoCAD;
- SolidWorks, and many more (different simulation and modelling software).

Stakeholders

Primary stakeholders include clients, product owners, system architects, engineers, developers, cybersecurity teams, regulatory agencies, and end-users. Stakeholder engagement occurs through requirement documents, sprint reviews, and technical validation processes (Kasauli et al., 2021).

Risk Management

The approach of risk management in this field engages several important aspects of the project that might lead to failure (in general / some of the most important are listed):

- Technical failures and integration gaps;
- Cybersecurity/security breaches;
- Infrastructure delays;
- Regulatory non-compliance;
- Budget overruns, and others.

Risk mitigation is achieved through prototyping, simulation, iterative testing, quality assurance, and compliance reviews (Hobbs & Petit, 2022).

PROJECT MANAGEMENT IN HOSPITALITY AND TOURISM

Hospitality and tourism industries deals with wide range of different types of projects than can be categorized on different bases. Some of them includes:

- Hotel renovation and / or expansion;
- Event planning and execution (conferences, weddings, festivals);
- Service innovation and experience design;
- Digital transformation (PMS or CRM implementation);
- Tourism product development;
- Marketing and branding campaigns;
- Staff recruitment and seasonal training;
- Sustainability and green certification initiatives, and others.

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These projects emphasize customer experience, service consistency, and logistical precision (Lupu & Nica, 2021).

Methodologies and tools

Pretty common methodologies and approaches include:

- Traditional linear planning;
- Event management frameworks;
- Critical Path Method (CPM);
- Lean service management;
- Service design tools (customer journey mapping, service blueprinting)
- Staff recruitment and seasonal training.

Tools that can be found very often are:

- Different event-planning systems;
- Hotel central software platforms, known as Hotel PMS (Hotel Property Management System);
- CRM platforms (standing for Customer Relationship Management platforms);
- Scheduling software systems;
- Analytics dashboards, etc.

Stakeholders

Stakeholders include hotel guests, event attendees, owners, managers, vendors, suppliers, tourism boards, investors, and local communities. Stakeholder expectations revolve around service excellence, safety, comfort, and reliable coordination (Ivanov & Webster, 2022).

Risk Management

Major risks can be related to:

- Weather disruptions;
- Vendor reliability issues;
- Seasonal demand fluctuations;
- Customer dissatisfaction;
- Health and safety incidents;
- Staff shortages, etc.

Mitigation strategies include contingency plans, vendor contracts, staff training, communication protocols, and customer service standards (Walters & Mair, 2020).

COMPARATIVE ANALYSIS

The following table encompasses specifics related ot the major differences standing at the same aspects for both IT / engineering and Hospitality / Tourism industries, ten in total.

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Table 1. Comparative analysis of IT / engineering and hospitality / tourism key dimensions

	IT/Engineering	**Hospitality and Tourism**
Project scope and deliverables	Deliverables are technical and performance-based, such as software systems, infrastructure, or mechanical designs (Thomas & Ray, 2019)	Hospitality/tourism deliverables are experiential, focusing on guest satisfaction, event execution, ambiance, and service quality (Nguyen & Dao, 2021)
Project Lifecycle	Adaptive methods are used, such as Agile or hybrid ones, that support continuous refinement (Rigby et al., 2020).	Predictive methods are used with fixed deadlines tied to seasons or scheduled events (Lupton & Baird, 2020)
Stakeholder Engagement	Engineering stakeholders are technically skilled and involved through structured documentation and validation cycles (Kasauli et al., 2021)	Hospitality stakeholders include the public and must be managed through interpersonal communication, empathy, and responsiveness (Lupu & Nica, 2021)
Communication Practices	IT communication is formalized and documentation-heavy (Berkun, 2021)	Hospitality communication is real-time, relational, and emotionally engaged (Walters & Mair, 2020)
Risk Profiles	IT risks include data breaches, system failures, and integration issues (Zhao & Peng, 2021)	Hospitality risks include customer complaints, health and safety issues, weather disruptions, and seasonal instability (Ivanov & Webster, 2022)
Human Resources Management	Engineering requires specialists with technical training and certifications	Hospitality requires large teams with customer-service competencies (Sharma & Gupta, 2021)
Financial Structures	Engineering projects are capital-heavy with long-term ROI	Hospitality projects rely on seasonal budgets, variable revenue streams, and faster payback expectations (Singh, 2022)
Innovation and Change Management	IT innovation focuses on digital systems, efficiency, automation, and cybersecurity (Olsen, 2023)	Hospitality innovation focuses on personalization, guest experiences, and sustainable operations (Wang & Lee, 2023)
Regulatory Environments	Engineering faces strict safety, environmental, and technical standards (Hobbs & Petit, 2022)	Hospitality faces health, safety, consumer protection, and licensing regulations—varied by region (Lupu & Nica, 2021)
Success Metrics	IT success metrics: system performance, reliability, testing benchmarks, cost and schedule adherence	Hospitality metrics: customer satisfaction, guest reviews, service ratings, occupancy rates (Nguyen & Dao, 2021)

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PROPOSED CASE STUDIES

Two different case studies are proposed towards application of specific project management methodologies in the two different industries. Application of one very successfull methodology in IT/Engineering is proposed towards the project related to the Hospitality and Tourism industry.

Table 2. Comparison of case studies' crucial aspects

	Case Study 1: Agile Development of a Mobile Banking Application	**Case Study 2: Hotel Renovation and Rebranding Project**
Project scope	A major financial institution launched a digital transformation project to redesign its mobile banking app. The project adopted Agile Scrum with two-week sprints and continuous integration.	A mid-scale hotel embarked on a year-long renovation and rebranding effort
Project elements	Team(s) include developers, designers, cybersecurity experts, and a product owner. Tools include Jira, GitHub, and Confluence. User stories are defined functional requirements.	Sequential planning: design → demolition → construction → furnishing → reopening. Tools include Gantt charts, supplier management systems, PMS upgrades. Stakeholders: hotel management, contractors, suppliers, designers, tourism board.
Challenges	Integrating with legacy banking systems. Regulatory compliance. Cybersecurity demands. Evolving customer expectations.	Supply chain delays. Noise restrictions. Need for extensive staff retraining. Maintaining customer loyalty during partial closures.
Outcomes	Faster deployment cycles and fewer software defects. Improved customer usability. Expected app rating improvement. Increased user retention and engagement.	Expected increase in occupancy post-renovation. Improved guest satisfaction scores. Stronger brand identity. Better alignment with sustainability trends.

Applying Agile Scrum as a Comparative Cross-Industry Suggestion

Most often, hospitality renovation projects traditionally use linear methods, referring to sequential, step-by-step approaches where each phase must be completed fully before the next one begins (Example: Plan → Design → Build → Finish → Deliver). Most common example of a linear method is Waterfall method, widely used in IT/Engineering projects before Agile methodology was accepted, especially after February 2001 with the creation of the Agile Manifesto. Taking into account the benefits of Agile methodology especially in IT/Engineering industry, Agile Scrum as a framework could improve flexibility, communication, and responsiveness, especially during design and service development stages. Elements of a possible improvement with even partially application are shown are given in continuation.

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- **Sprint-based design and prototyping**: Instead of finalizing the entire design upfront, the hotel could develop interior design prototypes in short sprints, allowing rapid client and guest feedback before full execution. Example sprints:
    - Sprint 1: Lobby redesign concepts;
    - Sprint 2: New room layout prototype;
    - Sprint 3: Sustainability features testing (LED systems, eco-material samples).

  This approach reduces risk of costly redesigns later.
- **Daily stand-ups for cross-team coordination**: Short 15-minute Scrum-style stand-ups between managers, contractors, and designers would have improved daily communication, preventing delays caused by misalignment.
- **Incremental service development**: While construction must remain sequential, service experience elements can be developed iteratively, such as:
    - Guest communication scripts;
    - Branding materials;
    - Staff training modules;
    - Digital check-in procedures;
    - These can be tested and refined through iterative cycles**.**
- **Product Owner role**: A hotel manager could act as the Product Owner, prioritizing features based on guest value, for example upgrading Wi-Fi before upgrading secondary amenities.
- **Sprint reviews and stakeholder feedback**: Regular sprint reviews with leadership, designers, and front-line staff could accelerate feedback and ensure alignment with guest expectations.

Expected improvements related to the outcomes of the project are listed in table 3.

Table 3. Outcome comparison

Traditional approach strengths	**Potential benefits of Agile enhancements**
Clear sequence of construction tasks. Predictable timeline and budgeting. Necessary for compliance and safety standards.	Faster detection of design flaws. Improved communication across teams. Higher adaptability to supply issues. More guest-centered renovation decisions. Reduced rework and faster response to changes.

CONCLUDING REMARKS

The comparative analysis of project management practices in IT/engineering and hospitality/tourism reveals that industry context significantly shapes how projects are structured, executed, and evaluated. IT and engineering projects rely heavily on technical precision, iterative development, documentation, and adaptive methodologies such as Agile and hybrid models. Hospitality and tourism projects, in contrast, emphasize customer experience, interpersonal communication, logistical coordination, and fixed timelines tied to events or seasonal demand. Despite these differences, both sectors share essential project management foundations, including planning, risk management, stakeholder engagement, and performance monitoring.

The case studies further illustrate these contrasts. The Agile mobile banking application project demonstrates the strengths of iterative cycles, continuous stakeholder feedback, and incremental improvements. The hotel renovation project, managed traditionally

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through a linear, sequential approach, reflects the constraints typical of construction and service operations, where tasks depend on prior completion and deadlines must align with operational realities. These cases show how industry norms influence methodology choices but also highlight potential benefits from cross-industry adaptation.

Applying Agile Scrum to the hospitality renovation project illustrates how practices commonly used in IT could strengthen flexibility and communication in service-oriented environments. While the physical construction aspect of hotel renovation must remain largely linear due to structural, safety, and compliance requirements, other components—such as interior design prototyping, service redesign, branding, technology upgrades, and staff training—could benefit from iterative cycles. Incorporating Agile elements such as sprints, daily stand-ups, and sprint reviews could improve coordination between contractors, managers, designers, and front-line staff, reducing miscommunication and enabling quicker responses to emerging issues.

Integrating Agile practices could introduce several advantages. First, iterative prototyping of room layouts or service processes would allow the hotel to refine concepts before full-scale implementation, reducing costly rework. Second, daily stand-ups could improve cross-team alignment, ensuring that construction, design, and operational teams remain informed and synchronized. Third, assigning a product owner—such as a hotel manager—would help prioritize tasks based on guest value, ensuring that customer-centered decisions guide the renovation. Fourth, sprint reviews could provide regular opportunities for stakeholder feedback, promoting transparency and early problem detection. Overall, these elements could increase adaptability, improve communication, and enhance the guest-centered focus of the renovation. However, the application of Agile also presents limitations. Construction activities cannot easily accommodate iterative changes, as revising structural work is expensive, slow, and dependent on regulatory approvals. Frequent design changes could disrupt contractor schedules and increase costs. Agile requires team stability and consistent stakeholder availability, which may not be feasible in hospitality settings with diverse vendors and outsourced services. Additionally, Agile's flexibility may conflict with strict deadlines imposed by tourism seasons or hotel booking commitments. These constraints suggest that while Agile can enhance certain phases of a hospitality renovation, it cannot fully replace traditional linear methods.

In conclusion, while project management practices differ significantly between IT/engineering and hospitality/tourism, cross-industry learning offers valuable opportunities for innovation and efficiency. IT can benefit from hospitality's customer-centric approach, improving user experience and service quality. Hospitality can adopt Agile principles to increase adaptability and communication in areas where iteration is possible. The combined Discussion and Conclusion emphasize that no industry benefits from strictly adhering to one methodology; instead, the most effective project management approaches involve thoughtful adaptation to project context, stakeholder needs, and organizational goals. By integrating structured planning with iterative flexibility, organizations across both sectors can enhance project outcomes, reduce risk, and deliver greater value to clients and customers.

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