#579 - Determining The Effectiveness of Risk Process Practice In Malaysia's Urban Landscape Planning Project Lifecycle

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Abstract

Many urban landscape planning project risks become issues if not handled early. Risk management is necessary to control these undesirable risks through a project lifecycle risk process. Risk management is a well-established topic with global applications. However, research on integrating the risk process into the project lifecycle is uncommon. This study aims to examine how well the present risk process practice works throughout the project lifecycle. The aim of the study was achieved by conducting a thorough analysis of the risk process practice in the urban landscape planning project lifecycle. Within the project lifecycle phase, the practice effectiveness examined characteristics of risk process planning, process sequentialness, and completeness of each process stage. An investigative case study was used in the research technique. An expert interview with twelve landscape practitioners overseeing urban landscape planning projects in Malaysia was used to gather data. The content analysis approach is then applied to analyse it to create a topic and categorise, describe, and synthesise a thematic map. According to the study, the risk process is insufficiently integrated into the landscape architecture project lifecycle. The process is applied ad hoc and unplanned as risk process practice, beginning in the middle of the project lifecycle phase. Secondly, the risk process is applied intermittently since the risk is applied randomly and nonsequentially over the project lifecycle stage. Third, risk process techniques are incomplete because they only cover process steps. The practice restricted project performance risk management benefits. Infective integration causes project risk to be realised late in the lifecycle, managed poorly, and executed informally. The urban landscape risk management process should be elevated in urban landscape planning practice by integrating it into the project lifecycle framework.

INTRODUCTION

Statutes governing architecture, town planning, and engineering frequently classify landscape planning projects as professional construction services (ASLA 2019) despite falling under the planning and design profession. The construction industry regards the landscape planning project as being on a modest scale. Urban landscape planning initiatives are highly risky because they are dynamic, complex, fast-tracked, and subjective (S.Muthuveeran et al., 2023). This project risk can escalate into a critical obstacle that impedes accomplishing the project's goals (Willumsen et al. 2019). Therefore, it is beneficial to use risk management to improve the regularity of project performance by implementing precise and methodical risk management from the endeavour's inception. Since that time, project management has integrated it (ISO 31000:2018 2018; PMI 2021; Wang et al. 2024). Risk management is a globally recognised and applied skill, with most standards and guides centring on concepts, processes, strategies, and practice techniques.

Risk management must systematically alert professionals of potential risks, quantify their consequences, and ascertain the best actions to control them using the most effective tools and techniques despite their excellent design and technical expertise (Tung, Chia, and Yan-Yan 2021). An application for risk process that identifies, evaluates, and responds to project risk is the most suitable system for delivering effective outcomes from landscape planning projects. The practice must be thoroughly incorporated into the structure of project management. The risk process is fundamental to all activities. Combining these processes would further simplify the work of a project professional because the risk process must be proportionally tailored to the organisation's context. Arashpour et al. (2017) support this claim by proposing that it eliminates the necessity to concentrate on the two processes independently, thereby countering the demands of a fast-paced and demanding industry. As a result, the project undertaking has enormous scope in the industry, and the practitioner needs solid knowledge to satisfy the scope of practice, covering all phases of work throughout a project's development (Zhao 2024). Therefore, integrating the risk process into the lifecycle of a project should be a unified procedure. PMI (2021) elaborates that to prevent excessive duplication, this integration must be carried out concurrently and throughout the entire project lifecycle.

Notwithstanding the existence of numerous standards, guidelines, and supporting guides that furnish comprehensive elucidations of the risk management practice's principles, process, strategy, and methodology, the research revealed that fewer of the documents offer a detailed explanation of the practice integrating the risk process into the project lifecycle. Specifically for urban landscape planning projects, has been the subject of discussion by none of the authors. Neither any study examines how well the present risk process practice works throughout the project lifecycle. Consequently, this study aims to assess the effectiveness of the current risk process practice within the urban landscape planning project lifecycle. The objectives to be achieved are 1) to evaluate risk process step completeness within the project lifecycle, 2) to determine the risk process commencing phase and intention of the practice, and 3) to examine the identify-analyse-treat risk process flow within the lifecycle phase.

EFFECTIVE INTEGRATION OF RISK PROCESS INTO THE PROJECT LIFECYCLE

Eight risk management standards and guides were examined to determine that there are a variety of risk process terminologies and grouping patterns. The risk process can be divided into six main sequential risk processes based on an analysis of the standards and guidelines: 1) Communication And Consultation, 2) Establishing Risk Context, 3) Risk Identification, 4) Risk Analysis, 5) Risk Treatment, and 6) Risk Monitoring And Review.

The project lifecycle varies between organisations and industries. Due to these projects' intricate and varied nature, there is rarely a similar understanding among industries or organisations about the exact scope of lifecycle phases. According to the Project Management Institute, initiating the project, planning, and organising it, carrying out the work, and wrapping up the project are the four general phases that make up a typical project lifecycle. APM (2012) further classified the project lifecycle into four distinct phases: concept, definition, development, and handover. Next to be included were the phases of benefits realisation and operation. According to project management author Kerzner (2022), the project lifecycle is structured into five distinct phases: conceptual, planning, testing, implementation, and termination. The project lifecycle generally comprises two to six phases, with infrequent occurrences of ten, according to Mohd Firdaus et al. (2023). By categorising the project lifecycle into four phases, this research summarises these discourses in the context of an urban landscape planning project in Malaysia. 1) Initiating, 2) Planning, 3) Executing, and 4) Closing.

Seven sources, C. Chapman & Ward (2003), APM (2010), ISO 31000:2018 (2018), Sanda et al. (2020), PMI (2021), Ashraideh and Engovatov (2023) and Wang et al. (2024) are examined in detail in Table 1 regarding the integration of the risk process into the project lifecycle. As previously discussed, initiating risk context establishment should occur during the project definition phase as soon as feasible. It subsequently executed a risk treatment and risk assessment procedure (comprising risk identification, evaluation, and analysis). Within the designated risk planning phase, where the integration is empirical to manage the risk, this process should be carried out as soon as feasible. Upon the conclusion of each loop cycle during the earliest stages of the design phase, the implementation of risk treatment could be addressed. Throughout the lifecycle of a project, risk management, communication, and control are implemented.

In summary, the description mentioned above and identified elements for successful risk process integration into the project lifecycle consist of 1) risk process step completeness, 2) risk process commencing phase and intention, and 3) risk process flow. The elements mentioned above have been simplified and visually depicted in Figure 1. The risk process begins with completing all six sequential steps, calculated throughout two to three iterative cycles. Furthermore, risk process activity is systematically designed and commenced as an intended procedure during the initial phase of the project lifecycle. Ultimately, the efficacy of the risk process is ascertained by its continuous operation throughout the project lifecycle and concurrent process flow during the project phase.

Source	Aspects and descriptions of an effective integration of the risk process into the project lifecycle
C. Chapman & Ward (2003)	SHAMPU's nine processes comprise the risk process: define, focus, identify, structure, ownership, estimate, evaluate, harness, and manage. Propose, design, plan, allocate, execute, deliver, assess, and support are the eight phases of the project lifecycle. The risk process commences with the earliest defined and concentrated phases, characterised by a high activity level. By the end of the planning phase, ensure that three iterative cycles of the risk process have been completed. The 'estimate and evaluate' risk process will be implemented sequentially as a sub-cycle process to commence the 'harness' process of the initial five processes. During the allocate phase, during which the 'Harness' process commences earnestly, the risk process iterative cycle loop concludes. Beginning with the execute phase, the 'Manage' process is an ongoing activity.
APM (2010)	Adapted from from C. Chapman & Ward (2003). The risk process comprises five distinct phases: initiation, identification, assessment, response planning, and implementation. Risk process execution commences with the prompt initiation phase. Initially, finalising the risk process cycle is preferable before making substantial commitments. The risk process should consist of three seamless cycles, referred to as strategic-level risk management cycles, which should commence during the earliest phase of project initiation and conclude after the planning stage. The risk process continuum should be executed iteratively and concurrently throughout the project's lifecycle, called tactical-level risk management cycles.
ISO 31000:2018 (2018)	Theoretically, the risk process traverses the project lifecycle sequentially, consisting of three phases: context establishment, risk assessment, and risk mitigation. Multiple instances of risk assessment with varying degrees of specificity are implemented during the planning phase. The execution of risk treatment persists throughout the subsequent phases of the project lifecycle. Risk treatment is an ongoing process that follows a risk assessment. Communication and consultation, context establishment, and monitoring and review commence earlier and throughout the project lifecycle.
Sanda et al. (2020)	Risk identification and assessment should be made from a life cycle viewpoint, beginning with the planning and feasibility stage and continuing through the operation and transfer stage with ongoing monitoring. Project risks are iterative and based on four stages, making risk management a continual process. The complete framework should be applied to recognised threats to ensure proper treatment. The project feasibility phase consists of risk identification, estimation, and assessment. The project procurement process contains risk owner identification, risk allocation criteria, risk burden resistance calculation, and responsibility distribution. The project implementation phase's risk treatment stage encompasses risk allocation mechanism modification, re-allocation, risk management plan review, and risk monitoring and control. Risk management during project operation involves identifying and managing significant changes in identified risks.
PMI (2021)	There are nine phases to the risk process: plan risk management, identify risks, conduct qualitative and quantitative risk analyses, plan risk responses, implement risk responses, and monitor risks. Initiating, planning, executing, monitoring, and controlling, and closing are the five project management process groups to which integration is indirectly mapped. Procedures for designing risk management, identifying risks, conducting qualitative and quantitative risk analyses, and devising risk response strategies will be sequentially executed within the planning process group. The execution process is responsible for implementing risk responses, whereas the monitoring and regulating process group is tasked with group monitoring of risk performances.
Ashraideh and Engovatov (2023)	Risk management is implemented throughout the entire life cycle of nuclear power plants. Any stage of the life cycle, including after the completion of construction works and the commissioning of the project, can be used to identify risks. The maximum number of hazards for all stages of the project life cycle was identified during the design and sitting phases. Within the same stage, risk analysis is conducted following the completion of a prioritised list. The risk response is implemented by allocating time to gather the necessary information for the

	response plan. The risk procedure is monitored and connected at all stages. Promptly enter risk information and monitor risks more effectively.
Wang et al. (2024)	Investigate the risk management process of green building initiatives. Conducted a systematic literature review to generate a risk list and gathered critical risk factors through interviews or questionnaires. Identify risk factors primarily during the design and operation phases. Risk-handling strategies should be meticulously addressed during the design, construction, and operation phases. Adopt specific risks at various phases or the relationship of the same stakeholder at different stages.

Table 1, Risk integration into the project lifecycle process: a comparative analysis.

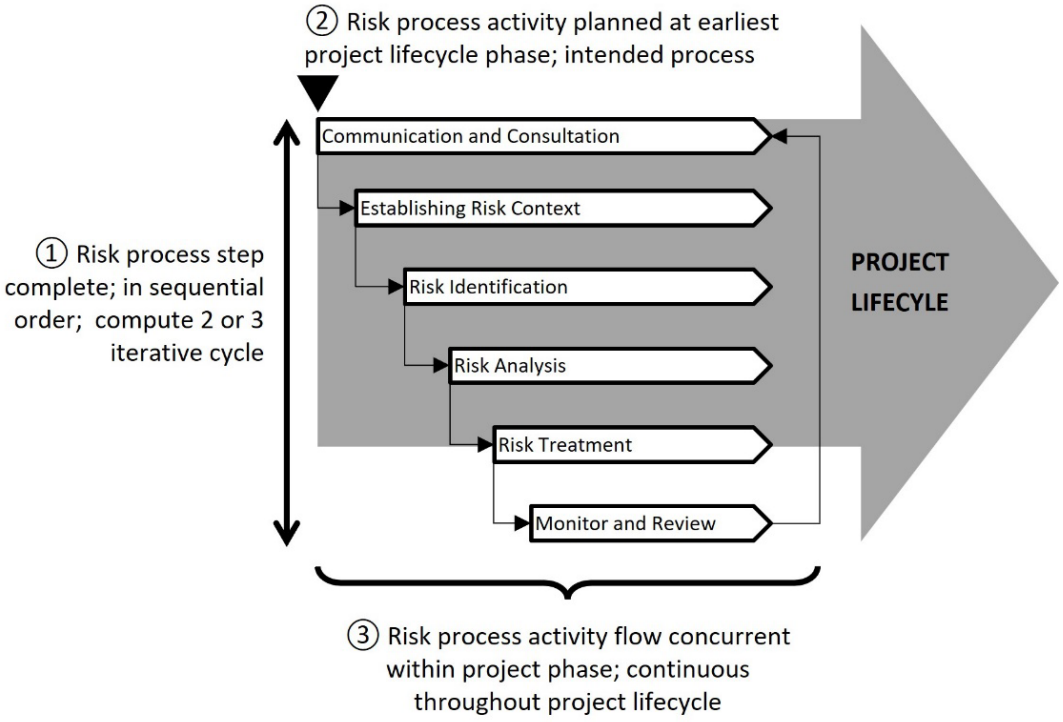

Figure 1. Aspect extracted for effective integration of the risk process into the project lifecycle.

RESEARCH METHOD

By assessing the three aspects mentioned above, this study utilised an exploratory case study methodology (Yin 2016) to examine the efficacy of risk process integration into the project lifecycle. Landscape practitioners in charge of an urban landscape planning project participated in semi-structured interviews that comprised the fieldwork data collection. The materials were formally documented after transcribing and organising the transcribed interview audio and project documents into text using the ATLAS.ti 9 research software to deduce and interpret deductive codes, classify them, and ultimately identify the themes, the data analysis utilised content analysis (Mayring 2022). The research examines the correlation between the subject categories under investigation, identifies patterns, and interprets the findings.

Twelve (12) interviewees responded under predetermined sampling criteria in representing the urban landscape planning project. Individuals employed by landscape planning and design firms and holding professional designations in landscape planning and design were the criteria for the interviewees. Their current organisation is comprised of individuals in managerial and decision-making positions, indicating that they have influenced policy and practice. With over ten years of experience in the industry, each interviewer was qualified. Diverse project sizes, locations, and scopes comprised a cycle of landscape planning initiatives in an urban region of Malaysia. Alphanumeric codes (L01 to L12) were allocated to each interviewee to facilitate identification. The details of the interviewees are presented in Table 2.

Interviewee	Interviewee's Background		Interviewee's Organisation Background		
	Interviewee's Position	[1]Years of Experience	[2]Years Established	[3]Headcount Size	[4]Total Ongoing Project
L01	Director	Expert	Established	Small	Medium
L02	Project Director	Intermediate	Established	Small	Medium
L03	Director	Expert	Established	Small	High
L04	Director	Expert	Established	Small	Medium
L05	Principal	Intermediate	New	Small	Low
L06	Director	Expert	Established	Small	Low
L07	Director	Intermediate	New	Micro	Medium
L08	Director	Intermediate	New	Micro	Low
L09	Director	Expert	New	Small	Low
L10	Director	Expert	Intermediate	Small	Medium
L11	Associates	Intermediate	Established	Small	Medium
L12	Head of Contract	Intermediate	New	Small	Medium

Notes: *[1]Beginner (< 10 years) / Intermediate (10 < 20 years) / Expert (> 20 years)*
[2]New (< 10 years) / Intermediate (10 < 20 years) / Established (> 20 years)
[3]Micro (< 5) / Small (5 < 30) / Medium (30 < 75): Malaysia's SME classification (SME 2024)
[4]Low (< 20) / Medium (20 < 40) / High (> 40)

Table 2, Interviewees information.

RESEARCH RESULTS

Risk Process Step Completeness Practice

The completeness of the 6 steps of the risk lifecycle process in a project step is, as was previously mentioned, the primary determinant of effective integration. Table 3 contains the comprehensive results. Under this, all project practices were evaluated, and it was determined that project organisations L06, L11, and L12 were the most effective at integrating all the steps of the risk process sequentially. The three essential identify-analyse-treat risk process steps were practised intermittently by L03, L09, and L10, but the other steps were not. The three fundamental risk process steps were not practised together with another step, and L01, L02, L04, L05, L07, and L08 practised the risk process step insufficiently.

Observed practices of all twelve project organisations (100%) in identifying project risks, most of which (6 out of 12) had inadequately managed the risk process step. Eleven project organisations (92%) treated the risks, while only 6 (50%) analysed the risks. However, out of

the total project organisations involved, only 6 (50%) conveyed these risks and implemented risk monitoring and context, respectively.

Interviewee	Communication And Consultation	Establishing Risk Context	Risk Identification	Risk Analysis	Risk Treatment	Risk Monitoring And Review	Risk Proces Completeness
L01			●		●	●	Incomplete
L02		●	●		●		Incomplete
L03	●		●	●	●	●	Intermittent
L04	●		●		●	●	Incomplete
L05		●	●		●		Incomplete
L06	●	●	●	●	●	●	Complete
L07			●		●		Incomplete
L08			●				Incomplete
L09	●		●	●	●		Intermittent
L10		●	●	●	●		Intermittent
L11	●	●	●	●	●	●	Complete
L12	●	●	●	●	●	●	Complete

Note :Complete: Six (6) risk process steps practised
Intermediate: Three (3) core risk process steps (Identify-Analyse-Treat) practised
Incomplete: Three (3) core risk process steps ((Identify-Analyse-Treat) not practised.

Table 3, Risk process step completeness practice.

Risk Process Step Starting Point and Practice Intention

Additionally, the research investigated the practice intention and the starting point of the risk process step. The comprehensive findings are presented in Table 4. The findings indicated that. Early in the initiating phase, the project organisation initiated no identify-analyse-treat risk activity. The majority, 10 out of 12 project organisations (83%), went through the core risk phase of identifying the earliest project phase of the project lifecycle process. In contrast, project organisations L03, L09, and L11 commenced the communication-establish context-monitor risk activity during the planning phase, while L12 initiated it effectively during the definition phase. The remaining project organisations implement the communication-establish context-monitor risk process step during a subsequent project lifecycle phase.

A review of the intention behind risk process practice revealed that only four project organisations (33%) had a risk process practice to identify, analyse, and address intentionally and succinctly planned risks. However, additional risky activities such as monitoring, communicating, and establishing context are unintentionally practised. 8 out of 12 project organisations (67%) recorded their risk activity as unplanned and practised inadvertently. Ad hoc execution of the risk process was prevalent.

Interviewees	Risk Process Step	Project Lifecycle				Risk Process Starting Phase and Intention
		Initiating	Planning	Executing	Closing	
L12	Communication and Consultation	●●	●●	●●	●	**Initiating / Intended**
	Establishing the Context	●	●	●	●	

	Risk Identification		●●	●●	●	
	Risk Analysis		●●	●●	●	
	Risk Treatment		●●	●●	●	
	Monitor and Review		●●	●●	●●	
L03, L09, L11	Communication and Consultation	●	●	●	●	**Planning / Intended**
	Establishing the Context	●	●	●	●	
	Risk Identification		●●	●●	●	
	Risk Analysis		●●	●●	●	
	Risk Treatment		●●	●●	●	
	Monitor and Review			●●	●●	
L01, L02, L04, L05, L06, L10	Communication and Consultation		●	●	●	**Executing / Unintended**
	Establishing the Context		○	○	○	
	Risk Identification		●	●	○	
	Risk Analysis		●	●	○	
	Risk Treatment			●	○	
	Monitor and Review		●	●	●	
L07, L08	Communication and Consultation			○	○	**Executing**
	Establishing the Context			○	○	
	Risk Identification			●	○	
	Risk Analysis			○	○	
	Risk Treatment			●	○	
	Monitor and Review			○	○	
Note:	●●	Intended Practice				
	●	Unintended Practice				
	○	Non-practice				

Table 4, Risk process step starting point and practice intention.

Risk Process Step Flow

The review of risk process practice's impact on the efficacy of the project lifecycle concluded with examining the risk process step flow as the third factor. Table 5 contains a comprehensive tabulation of the results. All three identify-analyse-treat risk process steps were managed concurrently by project organisations L11 and L12 to identify and assess their risks throughout the distinct phases of the project lifecycle. Procedural steps were routine: risk identification was accompanied by observation; the identified risk was then examined and treated simultaneously. The majority (50%) of the organisation L03, L04, L05, L06, L09, and L10 members consecutively managed their risk process steps throughout various project lifecycle phases.

In contrast, the remaining (33%) risk process steps in L01, L02, L07, and L08 were redundantly managed, as the steps taken to address risks were frequently improperly completed sequentially. A frequent cessation of the risk process subsequent to its initiation disrupted its flow. In practice, it is not uncommon for risks to be visibly apparent and recognised already during the project's planning phase. However, the critical analysis and subsequent treatment would occur exclusively during the executing phase of the project lifecycle.

Interviewee	Risk Process	Process Activity In Project Lifecycle				Risk Process Flow
		Initiating	Planning	Executing	Closing	
L01	Identify Risk		●			Redundant

	Analyse Risk				
	Treat Risk		●		
L02	Identify Risk			●	Redundant
	Analyse Risk				
	Treat Risk			●	
L03	Identify Risk	●			Consecutive
	Analyse Risk		●		
	Treat Risk		●		
L04	Identify Risk		●		Consecutive
	Analyse Risk			●	
	Treat Risk			●	
L05	Identify Risk			●	Consecutive
	Analyse Risk			●	
	Treat Risk				●
L06	Identify Risk		●		Consecutive
	Analyse Risk		●		
	Treat Risk			●	
L07	Identify Risk		●		Redundant
	Analyse Risk				
	Treat Risk			●	
L08	Identify Risk		●		Redundant
	Analyse Risk				
	Treat Risk				
L09	Identify Risk		●		Consecutive
	Analyse Risk		●		
	Treat Risk			●	
L10	Identify Risk	●			Consecutive
	Analyse Risk			●	
	Treat Risk			●	
L11	Identify Risk		●		Concurrent
	Analyse Risk		●		
	Treat Risk		●		
L12	Identify Risk		●		Concurrent
	Analyse Risk		●		
	Treat Risk		●		

Note:Concurrent: Risk process step flow within the same project lifecycle phase
Consecutive: Risk process step flow across different project lifecycle phase
Redundant: Risk process step flow incomplete

Table 5, Risk process step flow.

DISCUSSION

To assess the efficacy of the risk process practice within the project lifecycle, comparisons were made between the 12 project organisations. Risk process flow step, starting point and intention, and risk process completeness are the metrics evaluated. The discourse revolves around the evaluation of the outcomes, which have been condensed in Figure 2.

Based on the provided example, it can be inferred that 2 out of 12 (17%) of project organisations successfully integrate the risk process step into their project lifecycle. Risk activity is proactively identified and intended to be mitigated during the initial stages of the planning phase. Concurrently, the execution of the activity flow occurs throughout the project

phase. The integration of the risk process into the project lifecycle was only moderately effective in 3 out of 12 project organisations (25%). This evaluation supported clearly defined risk processes that were practised intermittently but consecutively throughout the project lifecycle. Despite early detection during the planning phase, the risk process activity transpired unintentionally and without purpose. In addition, during another phase of the project, a comprehensive identify-analyse-treat cycle was executed sequentially.

Furthermore, an element of redundant activity flow was identified. The risk process is ineffectively integrated into the project lifecycle in majority 7 out of 12 organisations (58%), in contrast. The risk process was unplanned and unintentionally practised to the extent that it was primarily practised in incomplete sequential steps. Most of the risk process flow ultimately comprised redundancy.

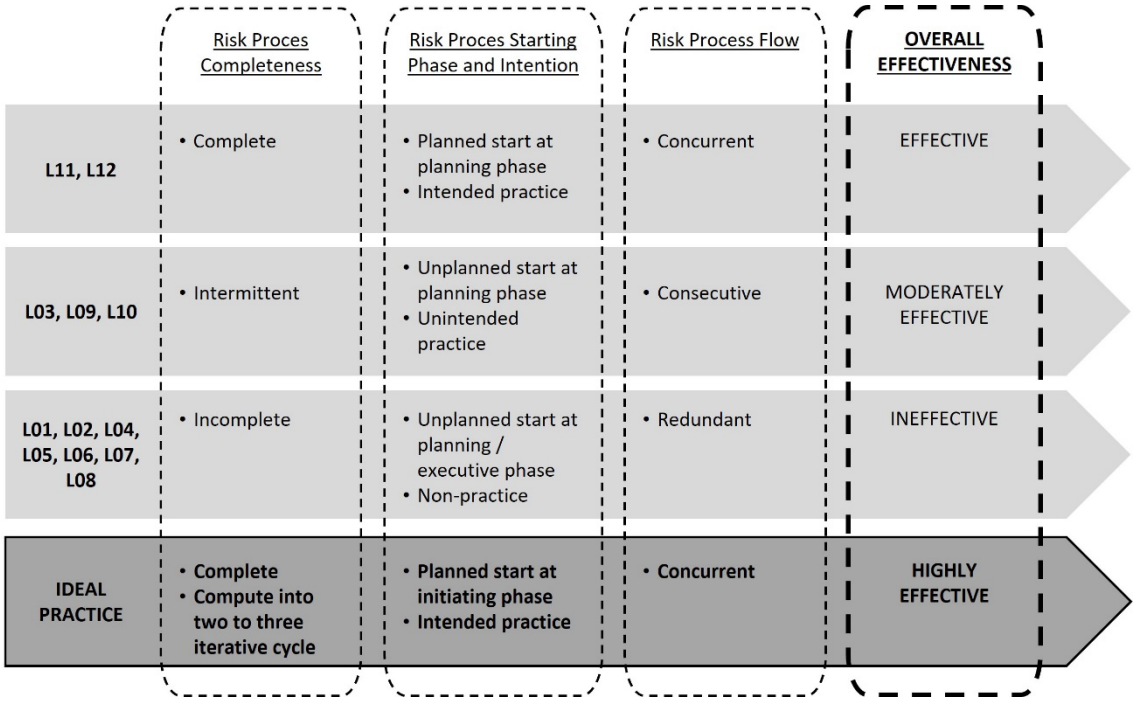

Figure 2. Overall risk process practice in urban landscape planning project lifecycle.

The research concludes that the incorporation of the risk process throughout the lifecycle of urban landscape planning projects in Malaysia is ineffective. Incomplete steps in the procedural practices of risk processes, unplanned risk activity, and redundant flow are all considered in relation to this factor. This similar practice is discussed (Adnan and Rosman 2018; Omer, Adeleke, and Chia 2019; Taofeeq, Adeleke, and Lee 2020). They noted that the project risk process in Malaysia is unstructured, informal, and does not adhere to recommended steps. The results show a significant difference from the productive risk process integration proposed by C. Chapman & Ward (2003), APM (2010), ISO 31000:2018 (2018), Sanda et al. (2020), PMI (2021), Ashraideh and Engovatov (2023) and Wang et al. (2024), which states that the risk process step should be practised thoroughly and sequentially. It encompasses the following: communicating risk, establishing the risk context

during the earliest phase of the project, and perpetually monitoring risks throughout the project's lifecycle. Furthermore, risk process activities must be established during the earliest phase of the project lifecycle definition and executed simultaneously within the same period.

CONCLUSION

Three aspect considered in assessing risk process practice throughout the project lifecycle were evaluated to ascertain the efficacy of the practice. The results demonstrate a discrepancy between the proposed risk management literature and the actual risk process practised throughout the project lifecycle. The constraints on the practical application of risk processes in urban landscape planning initiatives stem from differences in practice. This research may assist practitioners of landscape projects in assessing their present risk management practices and devising strategies for further development. A risk management application could benefit from the integration, which would allow project activities to be consolidated into a single, interdependent process that could be tailored to the specific context of the organisation. This practice will elevate risk management and its application to the urban landscape planning project in Malaysia by increasing comprehension.

Hence, additional research suggested approaches for effectively integrating risk processes throughout the lifecycle of a project. Incorporating its intricate and expedited characteristics, it can enhance the dynamic nature of landscape planning and complement its context.

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