Effectiveness of Early Risk Assessment in Enhancing IT Project Success in Sri Lanka

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Abstract: The importance of effective risk management has been rising in Sri Lanka as the organizations strongly rely on Information Technology (IT) projects for digital transformation and competitiveness. The sector is growing but IT projects still have cost overrun, project delays, failures of requirements, technical challenges and problems with achieving desired outcomes. The aim of this study is to analyze the effects on Early Risk Identification and Risk Response on IT Project Success in Sri Lanka and to investigate opportunities to improve the IT Project Risk Management in the context of technology and existing frameworks. The positivist philosophy used deductive approach, mono method quantitative design, cross section time horizon and survey strategy were used. The data was gathered by structured questionnaires from IT project professionals. It is observed that there were 384 targeted respondents, out of which 374 responses were received, corresponding to 97.39% response rate. The reliability measure for Early Risk Identification, Risk Response and IT Project Success was very high ($\alpha = 0.931$, $\alpha = 0.848$, and $\alpha = 0.948$, respectively). The regression analysis revealed a high level of correlation ($R = 0.868$) among the predictors and project success, with 75.4% of the project success explained by the predictors ($R^2 = 0.754$). Early Risk Identification ($\beta = 0.564$, $p < 0.001$) and Risk Response ($\beta = 0.371$, $p < 0.001$) were significantly associated with project success. The results highlight early risk management in the institutions, professional training, tools assisted by technology, stakeholders' participation and recognized risk management standards.

Keywords: Early risk identification, Risk response, IT project success, Risk management, Information technology projects, Sri Lankan IT industry

1. Introduction

1.1 Background of Study

The ongoing digital transformation in Sri Lanka increased the necessity for successful projects. However, projects often face challenges related to cost constraints, scope changes, time limitations, and incomplete information. Koggalahewa and Abeysekera (2021) suggest that IT projects are only finished within planned time and financial requirements at a very low level of 12% showing the importance of risk management. Risks may occur at an initial, middle, late stage of a project but lack of feasibility analysis, lack of requirements and weak early risk identification are of critical importance as they may afterwards result in rework, delays and failure. Risk management can empower organizations to find risk, assess it, mitigate it, and prevent its threat to project success (Schmidt, 2023). However, there is financial scarcity, poor knowledge, lack of experience and organisational support which limit the consistent implementation. Bachtiar and Prasetya (2024) also report that undergoing a poor requirement analysis plays an important role in the failure of software projects. Thus, this research discusses proactive risk management concerning the budget, schedule, and anticipated project quality.

1.2 Problem Statement

IT project failure Continues to pose significant operational challenges and financial impacts even as the awareness of effective project management increases in the organization. Recent large-scale IT projects worldwide have been reported to exceed their budgets by 45%, experience schedule overruns of 7%, and deliver 56% less value than originally anticipated (Bloch, Blumberg and Laartz, 2012). This issue is significance to Sri Lanka since the failure of IT projects can undermine the competitiveness, disincentivize investment, and limit the digital transformation. A key contributing factor is inadequate early risk identification, as many Sri Lankan IT organizations lack standardized procedures for identifying, assessing and responding to potential risks during initial project stages (Jayasinghe et al., 2022). Effective risk management is further inhibited by financial constraint, lack of competent risk practitioners, and opposition to change (Espíndola et al., 2022). Additionally, risk management can occasionally be viewed as an unnecessary project cost (Perera et al., 2014). Hence, systematic initial risk management plays crucial roles in enhancing project cost, time, quality and success.

1.3 Sri Lanka's IT Sector and Project Failures

IT sector plays a significant role in the economy of Sri Lanka with the exports of software as well as digital infrastructure and economic development. IT projects are constrained by lack of finance, poor risk management,

lack of expertise, poor planning and requirement problems. These obstacles lead to escalation in budgets, project delays, lower value of the project, re-work, which is expensive, and project failure.

Table 1: Problem Identification

Factor	Global IT Project Statistics	Sri Lankan IT Project Challenges
Budget Overruns	IT projects exceed planned budgets by approximately 45% (Jayasekara, 2023).	Sri Lankan IT firms experience financial constraints and inadequate financial planning, increasing the likelihood of budget overruns.
Timeline Delays	IT projects exceed their expected completion time by approximately 7% (Lopes and Mañas, 2013).	Inadequate project scheduling and limited early risk mitigation contribute to frequent delays in project completion.
Project Value Loss	Approximately 56% of projects deliver less value than expected (Perera, 2014).	Poor requirement analysis can prevent Sri Lankan IT projects from delivering expected outcomes and meeting stakeholder expectations.
Success Rate	Only 12% of projects are completed on time and within budget (Aladağ, 2023).	Limited adoption of structured risk management practices reduces the likelihood of successful IT project completion in Sri Lanka.

Source: Author Construct, 2026

1.4 Research Objectives

- To examine the relationship between early risk identification and project success in IT projects.
- To analyses the impact of risk response strategies on the success of IT projects.
- To explore ways in which organizations can improve early risk management frameworks to enhance IT project success.
- To assess the role of technology in enhancing early risk management effectiveness, including Risk Identification, Risk Assessment, Risk Evaluation, and Risk Mitigation, in IT projects.

1.5 Research Questions

- What is the relationship between early risk identification and project success?
- What is the relationship between early risk response and project success?
- How can organizations improve early risk management frameworks to enhance project success in IT projects?
- What role does technology play in enhancing early risk management effectiveness, including Risk Identification, Risk Assessment, Risk Evaluation, and Risk Mitigation, in IT projects?

2. Literature Review

2.1 Theoretical Overview

2.1.1 Project early risk management framework (PMBOK)

Project Management Body of Knowledge (PMBOK) offers a framework for the identification, analysis, response and monitoring of project risks. It has risk management procedures that enable proactive decision making by project teams that identify risks which have the potential to have a significant impact on project objectives prior to risk occurring. These processes are particularly important in IT projects, where changing requirements, cybersecurity threats and technological uncertainty create significant project management challenges. Aven (2016) highlights the need for systematic risk assessment in uncertainty management, and Schmidt (2023) discusses mechanisms that lead to IT project failure. However, structured risk management does not necessarily guarantee project success. It is dependent on the resources of the organisation, proper management and the regular application of suitable procedures. Organizations with limited resources might find it challenging to adopt an integrated approach to risk management. While the PMBOK offers an effective procedural basis, it does not adequately account for some of the differences in organization's risk management capacities. This study investigates two related processes: Early Risk Identification and Risk Response, using PMBOK. These processes constitute the independent variables in the conceptual framework and IT Project Success is the dependent variable.

2.1.2 Contingency theory

According to Contingency Theory, the success of projects hinges on the management practices adapted to organisational and environmental circumstances. The dynamic nature of technologies in IT projects in Sri Lanka necessitates agile risk management (Tsuchida and Takeda, 2021). Risk control, efficiency and project success can be enhanced by adapting the risk strategies to the project circumstances (Tsuchida and Takeda, 2021).

2.1.3 Technology acceptance model (TAM)

The Technology Acceptance Model (TAM), proposed by Davis in 1989, explains technology adoption through perceived usefulness and ease of use. In Sri Lankan IT projects, TAM helps identify user resistance and mitigate early adoption risks. Addressing these factors improves user acceptance, satisfaction and organisational efficiency, ultimately contributing to successful IT project implementation and long-term sustainability.

2.2 Empirical Framework

2.2.1 IT project success

The success of the project has historically been assessed in terms of three criteria: cost, time and quality. However, recent approaches to evaluating project performance increasingly recognise the importance of strategic objectives, stakeholder expectations and broader organisational benefits. Kaufmann and Kock (2022) investigate the correlation between project management effort, project complexity and project profitability, and emphasize the need to take project characteristics into account when assessing project management effectiveness. Moreover, Ahmad et al. (2022) explore project risk management and project leadership in the context of project success. Based on their research, they recommend that management/leadership elements must be considered in conjunction, not as a separate organisational activity as risk management. However, the results of the various industries cannot be directly transferred to IT projects in Sri Lanka. IT projects differ from many conventional projects in technological uncertainty, the varying software needs and the cybersecurity issues. In addition, the evaluation of project success affected by differences in stakeholders' expectations and organizational resources. In this study, the operationalization of IT Project Success is the primary-based on project completion time, budget compliance, scope stability and efficiency. For this reason, its findings are directed towards these dimensions instead of all aspects of project success.

2.2.2 Early risk identification

Early Risk Identification is about identifying potential threats before they interfere with project activities. Aven (2016) introduced a conceptual understanding of risk assessment. Aven, (2016) adopts a broader theoretical perspective on risk management, whereas Bakker, Boonstra and Wortmann (2009) synthesize empirical evidence on the relationship between risk management and project success in IT projects. Correspondingly, Jada and Mayayise (2023) highlight risks of cybersecurity related to artificial intelligence. But their emphasis on cybersecurity does not necessarily determine the importance of early risk identification in terms of project success. While these studies demonstrate the crucial role of proactive risk management, they are difficult to apply to Sri Lankan IT projects due to different approaches to the studies, coverage of different industries, and different organisational contexts. Hence, more empirical research is needed to explore the relationship between Early Risk Identification and IT Project Success in Sri Lanka in the context of the country.

2.2.3 Risk response

Risk Response involves organisational actions taken following risk identification, including strategies such as risk avoidance, mitigation, transfer and acceptance. Bhoola, Hiremath and Mallik (2014) review risk response strategies for software projects and indicate evidence directly applicable to the IT industry. By contrast, Aladag (2023) examines accuracy of ChatGPT in terms of risk management for construction projects. This research indicates the potential applications of new technologies but does not provide conclusive evidence of the efficacy of traditional risk management approaches on IT projects in Sri Lanka. Barcaui and Monat (2023) examine the differences between project planning by generative artificial intelligence and by human project managers. The study is not directly about organising the technology-assisted planning of risk responses, but it is an important element in understanding technology-assisted planning. These differences highlight the necessity to distinguish the research on risk response practices from the research on technological tools that can help in risk management. This study focuses on organisational risk response practices and their relationship with IT Project Success.

2.2.4 Impact of early risk identification on project success

There are a number of possible reasons in the existing literature that may be relevant to why early risk identification might be linked to successful project outcomes. Aven (2016) highlights uncertainty and Bakker, Boonstra and Wortmann (2009) explore the importance of risk management for the success of IT projects in general. However, awareness of potential risks does not necessarily indicate that organizations possess the capabilities or resources required to manage them effectively. While identification of risk can enhance preparedness, its utility also relies on the assessment, communication, and response to that risk following such identification. Furthermore, most literature available examines risks and risk management as an organisational phenomenon. This limits the ability to distinguish the impact of early identification from project success, especially in Sri Lanka. PMBOK indicates the rationale for considering early identification as a specific risk management process. Therefore, the following hypothesis is formulated. H1a: Early Risk Identification has a significant positive relationship with IT Project Success in Sri Lanka.

2.2.5 Impact of risk response identification on project success

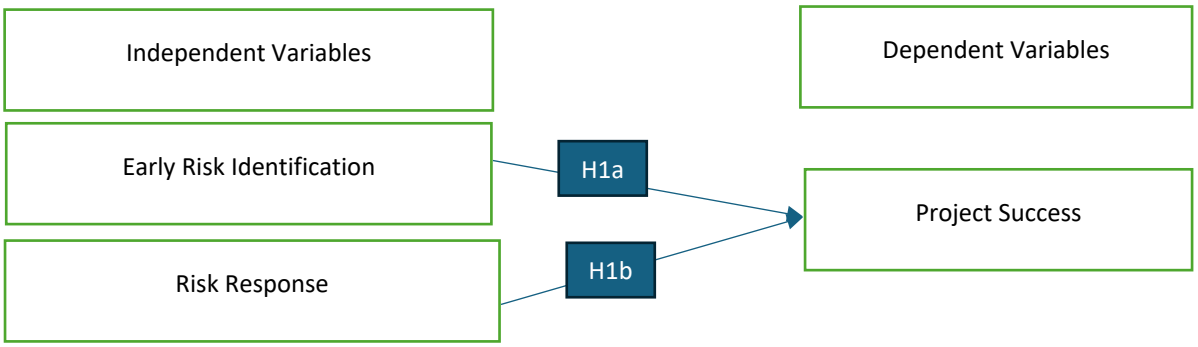
Bhoola, Hiremath and Mallik (2014) provide an industry-specific perspective on risk response strategies in software projects. Their research is relevant in that appropriate responses to identified threats could be an approach to managing project uncertainty. According to Javani and Rwelamila (2016) the risk management aspect within a developing country can be further explored through the study of IT projects in the South African public. However, Public-sector governance, institutional arrangements, and organisational resources, influence the immediate applicability of the results found in this study to IT organizations in Sri Lanka. The findings of these studies highlight the importance of examining risk response strategies within the specific organisational contexts. Furthermore, identifying potential risks and implementing effective responses to address them are two distinct processes. Organizations can be aware of potential threats but not take appropriate action to mitigate them. PMBOK is used to develop risk responses in a systematic way and Contingency Theory is the theory that explains how to respond to risks based on the project circumstances. Therefore, the following hypothesis is formulated.H1b**:** Risk Response has a significant positive relationship with IT Project Success in Sri Lanka.

2.3 Research gap

The studies emphasize the significance of risk management but provide limited empirical evidence on Sri Lankan IT projects. Javani and Rwelamila (2016) had analyzed the South African public-sector IT projects, and Kaufmann and Kock (2022) had explored the project management effort and the profitability. They may not be representative of Sri Lanka's organizational conditions. Accordingly, Koggalahewa and Abeysekera (2021) discussed project management methodologies, while Perera et al. (2014) discussed the risks in construction projects, which are less applicable for IT projects. While Schmidt (2023) investigated IT project failures, early identification of risk and risk response with project success have not been fully explored locally. To address this research gap, this study examines these relationships between the Sri Lankan IT professionals using PMBOK and Contingency Theory based cross sectional quantitative method.

3. Methodology

3.1 Conceptual Framework



Source: Author Construct, 2026

Figure 1: Conceptual Framework

3.2 Development of Hypothesis

3.2.1 Early risk identification

H1a: There is a relationship between Early Risk Identification and Project Success.

H0a: There is no relationship between Early Risk Identification and Project Success.

Risk Response

H1b: There is a relationship between Risk Response and Project Success.

H0b: There is no relationship between Risk Response and Project Success.

3.3 Operationalization of Variables

Table 2: Operationalization Table

Variable	Factors
Early Risk Identification	Importance of Risk Knowledge
	Role of Risk Knowledge in Mitigation
	Availability of Risk Knowledge Databases
	Use of Tools for Risk Knowledge Management
	Accessibility of Risk Management Knowledge
	Importance of Knowledge Sharing
Risk Response	Risk Management Implementation
	Systematic Approach in Risk Management
	Use of Internal Risk Procedures
	Internal Execution of Risk Management
	Full Risk Assessment at Project Commencement
Project Success	Timeliness of Project Completion
	Budget Compliance
	Project Scope Stability
	Achievement of Other Efficiency Measures

Source: Author Construct, 2026

3.4 Research Process

This research follows a positivist philosophy, which focuses on objective measurement and empirical evidence to analyses the relationship between early risk management and the success of IT projects. Deductive approach is used to test the hypothesis based on the existing literature and theories. The research adheres to the mono-method quantitative design, gathering quantitative data in the form of structured questionnaires and analyzing the data with the aid of SPSS. A survey plan is used to collect Likert-scale statements (usually standardized) on the responses of IT project managers and professionals in Sri Lanka. Lastly, cross-sectional time horizons will be used with data being gathered at a single point in time to explore existing relationships between Early Risk Identification, Risk Response, and IT Project Success.

3.5 Population, Sample Size and Sampling Method

The target group consisted of IT professionals from public and private sector projects in Sri Lanka, such as risk professionals, business analysts, project managers, executives and developers. The population was 50% and the targeted sample size was 384 respondents with 95% confidence level and 5% margin of error. A total of 374 valid responses were obtained, 97.39% of the targeted. The sampling used was non-probability convenience sampling, which was conducted through email and professional networks. Participants were selected based on availability and experience with IT projects. However, this method facilitated data collection from relevant IT professionals, and non-random selection may limit sample representativeness and the generalizability of findings to the wider population.

3.6 Questionnaire Development and Data Collection

A structured questionnaire was used to gather primary data which was distributed electronically under the help of email and professional networks to the private and public sector IT professionals in Sri Lanka. The questionnaire had 15 indicators which included Early Risk Identification (six), Risk Response (five) and IT Project Success (four). The indicators as per Aven (2016), Bhoola et al (2014) and Javani and Rwelamila (2016) were those related to the knowledge of risk, information sharing, risk management procedures, and project outcomes. Standardized answers were ensured by using closed-ended questions which measured Likert scales. The targeted respondents were 384 with 374 (97.39%) responding. The data obtained was coded and analyzed in SPSS to investigate the relationships between the three variables.

3.7 Validity and Reliability

Cronbach's alpha was used to check the reliability of the questionnaires. The internal consistency of the Early Risk Identification, Risk Response and IT Project Success was satisfactory ($\alpha = 0.931$, $\alpha = 0.848$ and $\alpha = 0.948$ respectively). Content validity was provided by the creation of indicators based on literature and research objectives. The lack of evidence for construct validity was constrained by the absence of expert validation and testing through pilot work and factor analysis. In addition, the risk knowledge and sharing determinants used to measure risk knowledge were the primary ones used to measure risk identification rather than the timing of risk identification, which could impact measurement accuracy.

3.8 Ethical Considerations

The study followed the ethical principles of voluntary participation, informed consent, confidentiality and anonymity. Participants were made aware of the research question, and the obtained data was only utilized for research. No personally identifiable information was disclosed when reporting the findings. The participation was voluntary and the respondents' identity was protected throughout the research. The research documentation provided is, however, not specific about the withdrawal deadline, the length of time for which data will be stored, the arrangements for storing the data and institutional ethics approval reference. They will need to be verified with the original research records prior to submission.

3.9 Data Analysis and Statistical Assumptions

The data collected from 374 respondents were analyzed using SPSS. Descriptive statistics, including means and standard deviations, were used to summaries the research variables, while Cronbach's alpha assessed internal consistency. Pearson correlation analysis examined the relationships between Early Risk Identification, Risk Response and IT Project Success. Multiple linear regression was employed to test the proposed hypotheses, with statistical significance established at $p < 0.05$. The regression model was specified as IT Project Success = $\beta_0 + \beta_1$(Early Risk Identification) + β_2(Risk Response) + ε

The reported regression results indicated that Early Risk Identification ($\beta = 0.564$, $p < 0.001$) and Risk Response ($\beta = 0.371$, $p < 0.001$) were significantly and positively associated with IT Project Success. The model explained 75.4% of the variance in project success ($R^2 = 0.754$). Regression assumptions, including linearity, residual normality, homoscedasticity, multicollinearity and influential observations, should be evaluated using residual plots, normal probability plots, tolerance, VIF and Cook's distance. As the available results do not document these diagnostic tests, their outcomes cannot yet be confirmed. The findings are interpreted as statistical associations rather than causal relationships because of the cross-sectional research design.

4. Data Analysis and Presentation

4.1 Actual Sample Description

The study of 374 respondents identified 374 valid responses out of a selected group of 384 respondents giving a high response rate of 97.39. This shows there was an effective turn-up of the targeted respondents. The high response rate also offers sufficient data to carry out a statistical analysis and test the relationships proposed between the research variables.

4.2 Testing Reliability

The reliability analysis demonstrated satisfactory internal consistency across all three measurement scales. Early Risk Identification recorded a Cronbach's alpha of 0.931, Risk Response recorded 0.848, and IT Project Success recorded 0.948. All coefficients exceeded the recommended threshold of 0.70, indicating acceptable reliability.

The scales comprised six, five and four indicators, respectively. However, reliability alone does not establish the validity of the measurement instruments.

4.3 Descriptive Analysis

The study obtained 374 valid responses from a targeted sample of 384 IT professionals in Sri Lanka, representing a response rate of 97.39%. The collected data were analyzed using SPSS to examine the relationships between Early Risk Identification, Risk Response and IT Project Succes.

4.4 Correlation Analysis

Pearson correlation analysis revealed statistically significant positive relationships between both independent variables and IT Project Success. Early Risk Identification demonstrated a strong positive correlation with project success ($r = 0.828$, $p < 0.001$). Similarly, Risk Response showed a strong positive correlation with project success ($r = 0.773$, $p < 0.001$). These findings indicate that higher reported levels of early risk identification and risk response were associated with higher levels of reported project success. However, the correlation between the two independent variables was not available in the reported results and requires confirmation using the SPSS output.

4.5 Regression Analysis

Multiple linear regression was conducted to examine the combined statistical associations of Early Risk Identification and Risk Response with IT Project Success. The model demonstrated substantial explanatory power, with $R = 0.868$, $R^2 = 0.754$ and adjusted $R^2 = 0.752$. The standard error of the estimate was 0.26914. These results indicate that the two independent variables collectively explained 75.4% of the observed variance in IT Project Success. The ANOVA results indicated that the overall regression model was statistically significant, $F(2, 371) = 567.832$, $p < 0.001$. Early Risk Identification demonstrated a statistically significant positive association with IT Project Success ($B = 0.505$, $\beta = 0.564$, $t = 15.338$, $p < 0.001$). Risk Response also demonstrated a significant positive association ($B = 0.341$, $\beta = 0.371$, $t = 10.104$, $p < 0.001$). The larger standardized coefficient for Early Risk Identification indicates that it had a stronger conditional association with project success within the fitted model.

Table 3: Summary of Hypothesis

H	Hypotheses	T	P	Status
H1a	There is a relationship between Early Risk Identification and Project Success	15.338	0.000	Accepted
H1b	There is a relationship between Risk Response and Project Success	10.104	0.000	Accepted

Source: Author Construct, 2026

5. Discussion

5.1 Summary of Findings

5.1.1 Relationship between early risk identification and project success

There is a strong positive correlation between Early Risk Identification and IT Project Success ($r = 0.828$) ($B = 0.505$, $p < 0.001$). Early identification enables managers to expect problems, to reduce disruptions, to increase project planning, to increase stakeholder involvement and to match project activities with organisation goals, thus increasing project success.

5.1.2 Impact Of Risk Response Strategies on IT project success

The coefficient of Risk Response and IT Project Success is 0.773, which shows a strong positive correlation, and the B value is 0.341 with a significant positive correlation (p value < 0.001). Successful avoidance, mitigation, transfer and acceptance methods build project resilience, minimise potential losses, make projects more economical and on schedule, and enhance the overall IT project.

5.1.3 Improving early risk management frameworks to enhance project success

Structured procedure, flexibility, continuous monitoring and engaging stakeholders is an effective approach to in which early risk management frameworks can be enhanced. Systematic identification, assessment, response, and monitoring of risks is supported by PMBOK, Contingency Theory and Stakeholder Theory. Incorporating

these practices into project work can enhance preparedness, teamwork, flexibility, risk management, and project success in general.

5.1.4 Role of technology in enhancing early risk management effectiveness

Technologies enhance early risk management by facilitating speedier risk identification, assessment, evaluation, monitoring and mitigation. Decision making and planning are enhanced with digital dashboards, data visualization, predictive analytics, simulations and risk management software. With the backing of TAM, ISO 31010 and the PMBOK, effective technology adoption can help prevent project delays and failures and promote project success.

6. Conclusion and Implications

6.1 Summary of Research Outcome

It is concluded from the study that Early Risk Identification and Risk Response is a significant factor that increases the success of IT projects in Sri Lanka. Good risk management improves delivery time, sticking to budgets, standard of work and satisfaction of stakeholders. To address these challenges, and to enhance training, technology uptake, governance, stakeholder engagement and proactive risk management, organizations should improve their ability.

6.2 Recommendations

Risk registers, stakeholder consultation, and SWOT analysis should be incorporated into Sri Lankan IT organizations and PMBOK and ISO 31000 frameworks should be adopted. It is recommended that continuous professional training, dynamic cybersecurity strategies, improved governance, technological assistance and cross-functional engagement of stakeholders are recommended to enhance risk management and project resilience (Freeman, Dmytriyev and Phillips, 2021).

6.3 Delimitations and Future Research

The study is confined to a specific context of IT projects in Sri Lanka and relies on cross sectional quantitative research methodology with special concern to Early Risk Identification and Risk Response. Research in the future should go in the direction of longitudinal, qualitative, mixed methods and include the following elements: organizational culture, stakeholder relationships, artificial intelligence, predictive analytics, and comparisons with international studies.

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Ethics Declaration: The study was carried out following the proper ethical principles of the research. The data was collected through voluntary participation, and the respondents were informed about the purpose of the study. The confidentiality and anonymity of the participants were ensured and the data collected was only used for academic research. No personally identifiable information was released in reporting the finding.

AI Declaration : Some support in refining the language, grammar, structure and presentation of the research was provided using Generative Artificial Intelligence (AI) tools. Research data, participants and statistical results and findings were not fabricated using AI tools. The researcher has read and confirms the final content and assumes responsibility for its accuracy, originality and academic integrity.

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