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**EXPLORATORY STUDY ON THE INFLUENCE OF PERSONALITY TRAITS
OF PROJECT MANAGERS IN PUBLIC INFRASTRUCTURE IN MALAYSIA**

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Abstract

Public infrastructure projects have an important role in Malaysia's economic development and increasing gross domestic product (GDP), however, the public infrastructure regularly faces challenges such as delays, overspending, and insufficient quality. The effectiveness of project managers' skills and behaviors plays a crucial role in determining the success or failure of these projects. This study aims to enhance the efficiency and success of infrastructure projects by understanding the influence of project managers' personality traits on project management practice. Thus, the objectives are (1) to identify the personality traits among project managers, (2) to explore the relationship between these traits and project outcomes, and (3) to formulate a framework for implementing these traits into project management practices. Semi-structured interviews were conducted with twelve experienced project managers via a qualitative approach. Five core personality qualities emerged from a thematic analysis of the interview data. These include neuroticism, conscientiousness, extraversion, agreeableness, and openness to new experiences. These traits significantly affect decision-making, stakeholder satisfaction, team dynamics, and flexibility, among other elements of project management. The impact of the findings will be a useful indicator to formulate a framework for developing training programs that are especially suited to the demands of the workforce, conducting ongoing evaluation and monitoring, and including personality assessments in HR procedures. This study provides valuable insights for enhancing project management tactics in public infrastructure projects in Malaysia

Keywords: personality traits, project manager, project management, public infrastructure

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INTRODUCTION

Large infrastructure projects present significant challenges in terms of project management because they are highly complex and fraught with high levels of uncertainty regarding geology, technical solutions, and societal dynamics (Flyvbjerg, 2014; Whyte et al., 2016). Mitigating these obstacles requires managing a suite of stakeholders, sometimes with different and competing priorities and needs. Besides project-related barriers, project actors need to recognize that societal expectations for costs, quality, and sustainability are continuously increasing. Global sustainability goals exert significant pressure, necessitating the integration of sustainable solutions directly into projects. Therefore, effective project management becomes crucial for optimal resource utilization in alignment with industry growth.

Challenges in managing large infrastructure projects are multifaceted. Geology can pose unexpected issues, such as unstable ground conditions or unforeseen underground obstacles, requiring flexible and adaptive technical solutions. Societal dynamics, including community opposition or varying regulatory requirements, further complicate project execution (Whyte et al., 2016). Additionally, sustainability readiness requires project managers to consider environmental impacts and implement eco-friendly practices, adding to the project's complexity and cost (Flyvbjerg, 2014). Project managers must navigate these challenges while balancing the expectations of diverse stakeholders, from government agencies to private investors and the general public. Different stakeholders often have conflicting priorities, making effective communication and negotiation skills essential to align these interests and ensure project success (Toor and Ogunlana, 2010).

Infrastructure projects are essential for the economic growth of Malaysia, significantly contributing to the country's GDP. Despite their importance, these projects often encounter significant challenges, including delays, cost overruns, and quality concerns. According to Ramli et al., (2018), only 20% of government projects in Malaysia adhere to both starting and completion timescales, while 79.5% of government projects and 66.7% of private projects fail to complete as per the specified time. These issues highlight systemic gaps in the way infrastructure projects are managed, resulting in non-completion of numerous infrastructure projects with increased timelines, leading to higher costs.

One of the biggest problems compounding these challenges is the lack of understanding of how the personality traits of project managers affect the success of public infrastructure projects in Malaysia. Consequently, this deficiency in knowledge hinders the application of the capability approach because it limits the identification and activation of the informed project management requirements that lead to effectiveness (Nijhuis et al., 2018). There

is a necessity to develop specific methods in combination with the selection and training, as well as a harmonization of the competencies of well-chosen project managers to cope with the intricate nature of an infrastructure project.

LITERATURE REVIEW

Personal Traits

Personality traits refer to the recurring patterns in thoughts, emotions, and actions that define individual behavior (Diener & Lucas, 2019). These traits are fundamental characteristics along which individuals differ (Matthews et al., 2003). Trait psychologists identify a limited number of these dimensions, such as Extraversion, Conscientiousness, or Agreeableness, and individuals fall somewhere on each dimension, manifesting as low, medium, or high on specific traits. An essential aspect of personality traits is that they denote continuous distributions rather than distinct personality types. In other words, when trait psychologists discuss traits like Introversion and Extraversion, they are not referring to entirely different and qualitative categories of individuals. Personality traits adhere to three defining criteria (Diener and Lucas, 2019): (1) consistency, (2) stability, and (3) individual differences. Firstly, for a personality trait to be present, individuals must exhibit some consistency across different situations in their behaviors related to the trait. For instance, if someone is talkative at home, they tend to display a similar trait of talkativeness at work. Secondly, individuals with a particular trait also exhibit stability over time in behaviors related to that trait. For example, if someone is talkative at age 30, they are likely to maintain a talkative demeanor at age 40. Thirdly, individual differences characterize people in terms of behaviors related to the trait. While activities like speech or walking on two feet are not considered personality traits, as they are nearly universal, differences arise in how frequently individuals talk or their activity levels, leading to the existence of personality traits like Talkativeness and Activity Level.

The trait approach faced a challenge in identifying the fundamental traits on which all individuals differ. Over several decades, scientists generated a multitude of new traits, making it increasingly challenging to manage and comprehend the vast array of traits developed. For example, one psychologist might concentrate on individual differences in "friendliness," while another might delve into the closely associated concept of "sociability." In response to this proliferation of traits, scientists sought systematic methods to streamline the number of traits and uncover the core traits that could account for the majority of individual differences between people.

The Five -Factor Model of Personality

The Big Five personality model has its origins in the lexical hypothesis proposed by Galton (1884), which suggests that significant differences in individual

characteristics are reflected in language. Allport and Odbert (1936) utilized the lexical approach to scrutinize dictionary words associated with personality and personal behaviors, identifying approximately 18,000 such words, with around 4,500 deemed descriptive of personality traits. Cattell (1943) further refined this trait list, ultimately forming 35 personality variable clusters, which, upon factor analysis, resulted in 12 factors. Tupes and Christal (1992) consistently identified a five-factor model; Surgency, Agreeableness, Dependability, Emotional Stability, and Culture while analyzing personality in various samples. Subsequently, Goldberg (1981) introduced the term "Big Five" to describe this five-factor model of personality. Although the exact wording and interpretation of these five personality factors may vary slightly, the Big 5 model and the conceptually similar Five-Factor Model generally encompass openness, conscientiousness, extraversion, agreeableness, and neuroticism. Various scales have been developed to measure these factors, including the Big Five Inventory, different forms of the NEO Personality Inventory, and the Big-Five Factor Markers (Costa Jr. and McCrae, 1992; Goldberg, 1992; John and Srivastava, 1999).

Project Manager Personality Traits (PMPTs)

Belassi and Tukel (1996) highlight that project managers are pivotal to a project's success, particularly in the construction industry, by emphasizing the importance of effective project management for delivering high-quality service. The non-technical skills of a project manager play a vital role in determining success, as highlighted by Cheong and Mustaffa (2017). Despite this importance, past research on project management has given limited attention to the psychological factors influencing project success (Hassan, Bashir and Abbas, 2017). Research indicates that soft skills, especially psychological traits, play a more significant role in determining project success than technical expertise alone. However, the focus on these skills, particularly the project manager's personality, remains insufficient (Noor and Esa, 2021). Thal and Bedingfield (2010) also advocate for a comprehensive examination of how personality traits significantly impact project success. In a different perspective, Cerić (2014) highlights the substantial role of working experience in the success of project managers, a notion supported by Hodgson and Paton (2016), who argue that project managers' experience influences their knowledge, training, and overall project success.

Previous research suggests that high levels of Openness to Experience (O), Conscientiousness (C), and Agreeableness (A) are positively linked to project success (Amoozegar, 2025; Hassan et al., 2017). A meta-analysis by Kang et al., (2023) indicates a strong relationship between (C) and job success. On the contrary, Extraversion (E) and Neuroticism (N), two other personality traits in the "Big Five," have been found to be negatively associated with project success

in various studies (Barrick et al., 2001; Ameer et al., 2022). However, the findings may differ from a study conducted by Masood, Khan and Shaikh (2018), which investigated the impact of personality traits of project managers on project success. The results demonstrated that out of the five traits, only three; Extraversion, Neuroticism, and Openness to Experience had a significant association with project success. Conscientiousness and Agreeableness showed no significant association with project success. Therefore, one of the objectives of this research is to identify the personality traits exhibited by project managers in infrastructure projects.

Association Between Project Manager Personality Traits (PMPTs) and Management Style

Research conducted by Ling, Zhang and Wong (2020) revealed that project managers in the construction industry exhibit high concern for both people and production in their project management styles. The big five personality traits were found to be significantly correlated with "Concern for people". Extraversion, Conscientiousness, Neuroticism, and Openness showing significant correlations with "Concern for production". Additionally, the research adds to personality theory by suggesting that certain traits, such as agreeableness, conscientiousness, and neuroticism, may change with age, while others, like extraversion and openness, remain constant. The study's final contribution lies in demonstrating that personality traits can be used to explain or predict project managers' management styles. The study's final contribution lies in demonstrating that personality traits can serve as valuable indicators for explaining or predicting project managers' management styles. Therefore, in this research, the objective is to explore the relationship between personality traits and project management styles within the realm of infrastructure projects.

Existing studies have established associations between project managers' Big Five personality traits and project success across various industries and international settings. For instance, Hussain et al. (2021) found that extraversion and openness positively predicted project success, while conscientiousness, agreeableness and neuroticism showed no direct relationship. In contrast, Noor and Esa (2021), in the Malaysian small public construction project context, found that conscientiousness and agreeableness were more prominent predictors of project success. These mixed findings indicate that inconsistencies remain regarding which personality dimensions most strongly influence project outcomes, particularly within construction and infrastructure-related environments.

Moreover, recent literature suggests that successful project delivery increasingly depends on behavioural and interpersonal competencies such as leadership, communication, collaboration, adaptability and relationship-building,

rather than technical capability alone (Rehan et al., 2024). This is especially relevant in public infrastructure projects, where stakeholder management, governance complexity and accountability demands are central to project performance (Waris et al., 2022). In the Malaysian context, public-sector construction projects continue to face issues related to planning, monitoring, delivery method selection and project delays, suggesting that managerial behaviour should be examined within its local institutional and regulatory environment. Therefore, this study addresses a contextual and empirical gap by exploring how personality traits influence project management practices and outcomes in Malaysian public infrastructure projects.

METHODOLOGY

This study used a qualitative research technique to collect the primary information necessary to achieve its aims and objectives. A qualitative approach was selected because it offers detailed insights into the complex and nuanced relationships between project managers' personality traits and the success of public infrastructure projects in Malaysia. The main data collection method was semi-structured interviews due to the advantages offered, namely open-ended and flexible, blending structured and unstructured elements. (McCombes and George, 2022). In addition, interviews were employed to gather subjective insights, opinions, and motivations from participants (Busetto et al., 2020). Using snowball sampling, twelve semi-structured interview sessions were conducted. This method is particularly effective for recruiting hard-to-reach participants or those within specific professional networks (Noy, 2008).

Informed consent was obtained from all respondents prior to their participation in the study. The participants were fully informed of the purpose of the research, their voluntary participation, and their right to withdraw at any time without consequence. The targeted respondents were project managers meeting the following criteria: (i) at least five years of experience in project management roles, especially in public infrastructure sectors like transportation, water supply, sewage, and municipal facilities, and (ii) typically holding key decision-making positions such as project leads or senior project managers. The thematic analysis process involves familiarization with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the final report (Braun and Clarke, 2006). It begins with a thorough reading of the updated interview transcripts to familiarize with the data and identify initial ideas and potential patterns. Next, the interview transcripts have been summarized, and identify the keywords. After that, the keywords were then combined into related codes.

Although the qualitative design and thematic analysis are appropriate for the study, several limitations should be acknowledged to enhance the transparency of the methodology. First, the sample size was relatively small, with only twelve participants, which limits the generalizability of the findings. Second, the use of snowball sampling, while effective in reaching hard-to-find participants, may introduce respondent bias, as those recruited may share similar characteristics or perspectives, which could skew the results. Lastly, the absence of triangulation the use of multiple data sources or methods to validate findings means that the findings are based solely on participant interviews, potentially limiting their robustness. Future studies could address these limitations by increasing the sample size, incorporating a wider range of data sources, and employing triangulation to enhance the credibility and generalizability of the results.

RESULTS

The five core personality traits emphasized in the analysis are openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism. Each trait will be presented to provide a clearer view of how these unfold with the management of public infrastructure projects. Table 1 shows the summary of the findings.

Table 1: Summary of Dominant Personality Traits and Their Influence on Public Infrastructure Project Management

Personality Traits	Key Findings
Openness to Experience	-adaptable, innovative, and proactive in embracing new ideas and technologies -facilitate problem-solving and continuous improvement, leading to enhanced project performance
Conscientiousness	- meticulous planning, organization, and a strong sense of responsibility - detail and proactive risk management ensure that projects are completed within defined timelines and budgets, contributing to overall project stability and success
Extraversion	-excel in communication and leadership, fostering a collaborative and motivated team environment -engaging with stakeholders and maintain high levels of team coordination is essential for effective project execution.
Agreeableness	- skilled in conflict resolution and maintaining positive Relationships -empathetic and cooperative nature helps create a harmonious team atmosphere, improving team cohesion and stakeholder satisfaction.
Neuroticism	- present challenges, develop strong stress management techniques and resilience

Personality Traits	Key Findings
	-heightened awareness of potential risks and proactive approach to mitigating them contribute to project stability and success

The Relationship between these Traits and Project Outcomes

This subsection discusses how the project management practices involved by the project managers influence the project outcome for public infrastructure work. They were asked how the project management practices based on their personality traits could affect the project outcome. After that, the thematic analysis began with codes, used to explore the influence of these traits on project outcomes as per Figure 2. This figure visually represents the thematic relationship between personality traits and project outcomes identified through thematic coding analysis.

Openness to Experience

Project managers with high openness to experience significantly influence project outcomes through adaptability, creativity, and a willingness to embrace new technologies. Their ability to implement innovative solutions, such as BIM for project tracking, enhances execution efficiency. Interview responses from R2 and R12 highlight how adopting modern tools improves project success. Research by Müller and Turner (2010) and Lee-Kelley and Kin Leong (2003) supports this, showing that open project managers foster learning environments, drive innovation, and improve adaptability. Dvir et al. (2006) further link openness to higher team performance and project success by encouraging creative problem-solving.

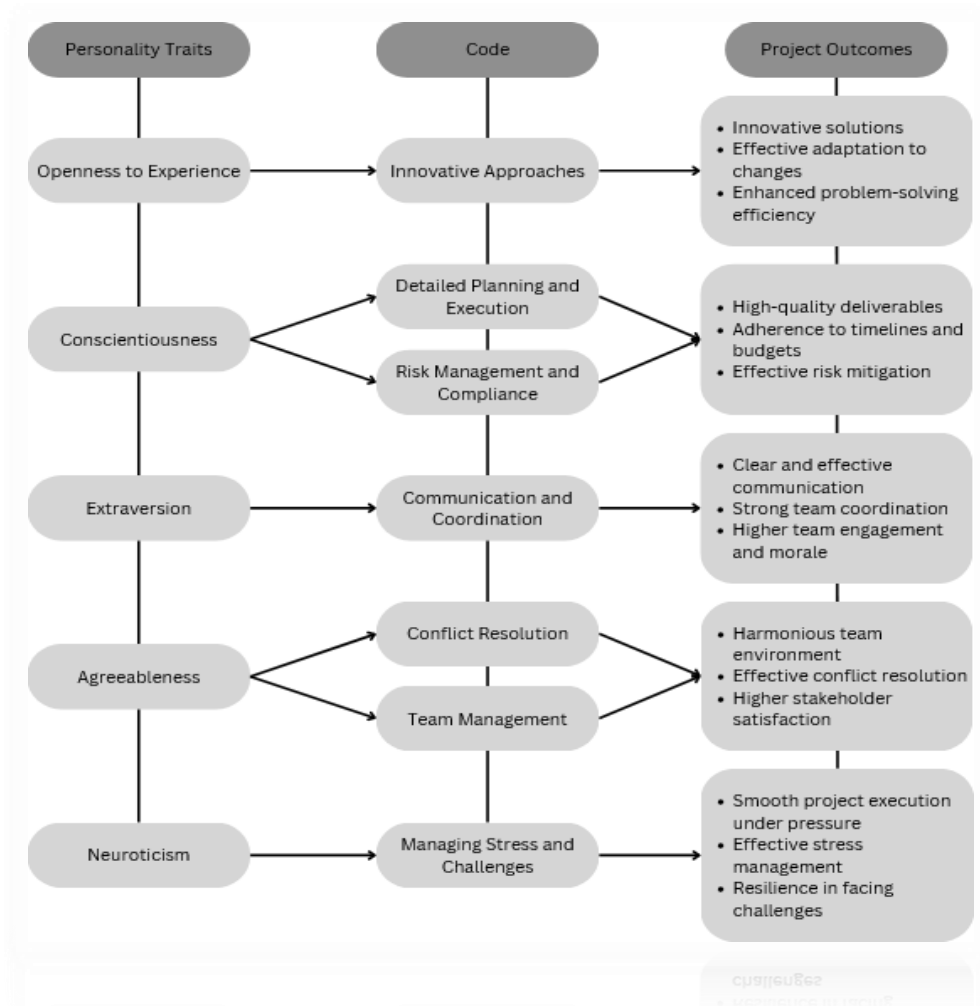


Figure 2: The relationship between these traits and project outcomes

In addition, openness to experience equips project managers to handle complex challenges, improve stakeholder engagement, and create a culture of continuous improvement. DeRue et al. (2012) found that open leaders navigate uncertainties effectively, ensuring well-informed decisions in infrastructure projects. This adaptability allows them to anticipate risks and develop proactive solutions. Openness also enhances team dynamics by fostering collaboration, morale, and innovation. These findings reaffirm openness to experience as a

critical trait for project managers in Malaysia, driving success and innovation in public infrastructure projects.

Conscientious

Conscientiousness plays a vital role in achieving successful project outcomes by ensuring thorough planning, organization, and strict adherence to deadlines.. A conscientious project manager ensures projects stay on schedule and within budget while maintaining quality and reliability. R4 emphasized the importance of clear objectives, comprehensive schedules, and well-planned resources, along with proactive risk management to ensure project stability and success.

These findings align with prior studies by Dulewicz and Higgs (2005), highlighting that the diligence and reliability of conscientious managers, leading to better project performance. Chen et al. (2014) found that conscientious planning reduces uncertainties and improves outcomes. Similarly, LePine et al. (2000) associate conscientiousness with effective risk management, reliability, and minimal project overruns.

A conscientious project manager carefully plans all aspects of a project, reducing the risk of oversight and increasing efficiency. Their reliability fosters trust among stakeholders and team members, ensuring smooth project execution. They proactively identify risks, implement contingency plans, and maintain high-quality standards, particularly in public infrastructure projects where precision is crucial. Ultimately, conscientiousness enhances planning, organization, and risk management in public infrastructure projects in Malaysia, leading to higher project success rates. These findings align with past research, reinforcing the importance of conscientiousness in effective project management.

Agreeableness

Agreeableness significantly influences project outcomes by fostering cooperation and a harmonious team environment. Project managers with high agreeableness effectively mediate conflicts, build strong relationships, and maintain team productivity. For instance, Interviewee R3 facilitated a resolution between engineering and procurement teams, while Interviewee R6 emphasized open communication and mutual respect, reinforcing teamwork and collaboration. Research supports these findings, with Judge and Bono (2000) linking agreeableness to leadership effectiveness and team cohesion. Fisher (2011) highlighted that agreeable project managers enhance interpersonal relationships and conflict resolution, leading to better project performance. Similarly, Hogan and Holland (2003) found that agreeableness improves job performance, particularly in roles requiring teamwork and cooperation. Agreeable project managers promote inclusivity, ensuring all voices are heard and valued, which boosts team morale and innovation. Their empathetic approach strengthens

stakeholder trust and engagement, crucial for public infrastructure projects. By maintaining a supportive work climate and resolving conflicts proactively, they enhance team satisfaction and project success. Ultimately, agreeableness is a key trait for project managers in Malaysia's public infrastructure sector, facilitating conflict resolution, stakeholder management, and team cohesion. Organizations can improve project management practices by leveraging this trait to enhance collaboration and overall project outcomes.

Neuroticism

Neuroticism can have a nuanced effect on project results. Although high levels of neuroticism can pose challenges, project managers who effectively manage it often develop excellent stress management and resilience strategies. They are often more risk-aware and proactive in contingency planning. For instance, Interviewees R5 and R7 emphasized the need for emotional balance and rational decision-making in high-pressure projects, while others highlighted the resilience required for managing complexity. Contrary to literature linking neuroticism to poor job performance (Clarke and Robertson, 2005), this study found that managers with moderate neuroticism can thrive under stress if they develop coping strategies (O'Neill and Allen, 2011). Effective stress management allows neurotic managers to anticipate risks, enhance project stability, and maintain performance. Research by LePine et al. (2000) also supports the idea that neurotics can contribute positively to team performance when given adequate support. Neurotic project managers excel in proactive risk management, contingency planning, and attention to detail, which are crucial in uncertain environments like public infrastructure projects. Their cautious nature helps identify risks early and implement mitigation strategies, fostering stability and stakeholder confidence. This study highlights neuroticism as a potential asset in project management if properly managed. Organizations can leverage this trait to enhance resilience, improve stress management, and optimize public infrastructure project outcomes.

Formulation of Framework for Implementing these Traits into Project Management Practices

This framework is designed to utilize insights into project managers' personality traits to improve the outcomes of public infrastructure projects in Malaysia. This framework integrates insights from the identified personality traits; openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism into practical project management strategies. This framework is composed of three main components: Identification and Assessment of Personality Traits, Tailored Project Management Strategies, and Continuous Development and Support that work collectively to assure that the strengths of different personality traits are put

into consideration to assure the better results of a project. Based on the thematic findings, Figure 3 presents the proposed implementation framework.

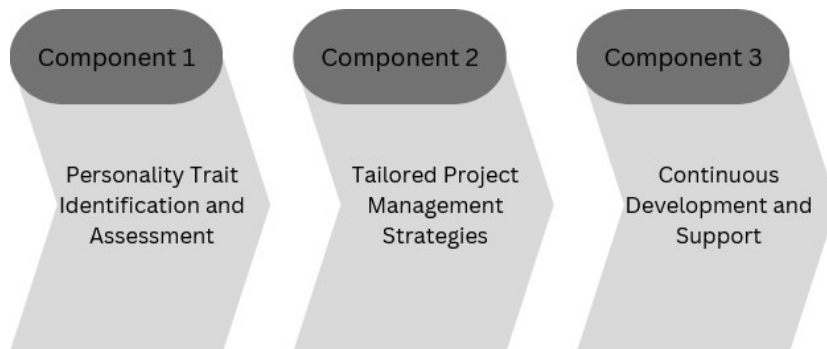


Figure 3: Component of Framework

The anticipated benefits of this framework include enhanced project performance, improved decision-making, better team dynamics, increased adaptability, higher stakeholder satisfaction, and significant personal and professional growth for project managers. These benefits collectively contribute to the successful delivery of public infrastructure projects in Malaysia, ensuring that they meet their objectives and deliver value to the community.

Table 2: Detail of Framework Component

Component	Description	Details
Personality Trait, Identification, and Assessment	Utilizing validated psychometric tools to measure key traits and develop detailed profiles	Psychometric Tools: Big Five Personality Test and other relevant tests. Personality Profiles: Comprehensive reports highlighting strengths and areas for improvement Initial Training: Sessions to help managers understand and leverage their traits
Tailored Project Management Strategies	Aligning project management strategies with individual traits to optimize performance	Openness to Experience: Encourage innovation and flexibility Conscientiousness: Emphasize meticulous planning and organization Extraversion: Focus on team coordination and stakeholder communication Agreeableness: Promote conflict resolution and team harmony

Component	Description	Details
Continuous Development and Support	Ensuring ongoing professional growth through training, mentorship, feedback and performance reviews	Neuroticism: Develop stress management and resilience strategies
		Ongoing Training: Regular workshops, seminars, and training session.
		Mentorship Programs: Pairing less experienced managers with seasoned mentors
		Feedback mechanism: Implement 360-degree feedback and regular check-ins
		Performance review: Conduct formal reviews, create development plans and recognize high performance

CONCLUSION

This study highlights the significant impact of personality traits on project management, with a particular focus on improving the success of public infrastructure projects in Malaysia. By incorporating these traits into project management practices, organizations can optimize strategies, leading to more consistent outcomes. The proposed framework provides a practical guide for improving the selection, development, and performance of project managers, contributing to the successful delivery of infrastructure projects. This research offers both theoretical and practical contributions, emphasizing the integration of personality traits, HR strategies, and training programs to enhance project outcomes. Additionally, the focus on mentorship and peer support systems reinforces the importance of a supportive work environment in achieving success. The study deepens the understanding of project management in Malaysian public infrastructure projects by linking project managers' personality traits with the complexities of governance, stakeholder diversity, and regulatory pressures. Infrastructure projects are marked by multi-layered governance, coordination among multiple agencies, and varying regulatory expectations, all of which elevate project complexity (Omotayo et al., 2024). Effective stakeholder engagement is crucial for success, as diverse stakeholders including government bodies, contractors, and community representatives play significant roles in resource allocation and compliance (Prebanic & Vukomanovic, 2023). Research using the Big Five personality model suggests that traits like extraversion and openness positively predict project success, especially when influenced by external environmental factors such as political, economic, and social conditions (Hussain et al., 2021). Construction managers, in particular, often exhibit higher levels of extraversion, agreeableness, conscientiousness, and openness, which promote collaborative leadership and facilitate complex decision-making (Ling,

Zhang and Wong, 2020). By integrating personality psychology with governance and stakeholder frameworks, this study underscores the importance of adaptive behavioral traits in project management. It suggests that project managers' competencies should extend beyond technical skills to include traits that aid stakeholder engagement, risk management, and regulatory compliance. Future research should aim to broaden the sample size, include diverse data sources to mitigate biases, and explore the role of personality traits across different sectors and types of projects. Additionally, future studies should investigate how organizational culture, economic conditions, and regulatory environments influence project management practices and outcomes.

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