

# Strengthening Project Delivery Quality through Accountability and Performance Monitoring: An Open Systems Theory Perspective

Muhamad Ghazali Mamat @ Mansor., Yusri Hazrol Yusoff\*, Muhammad Nazmul Hoque,  
Nurhidayah Yahya., Azmeer Nasri.

Faculty of Accountancy, Universiti Teknologi MARA, Cawangan Selangor, Kampus Puncak Alam,  
42300 Bandar Puncak Alam, Selangor, Malaysia.

**\*Correspondence Author**

DOI: <https://doi.org/10.47772/IJRISS.2026.100900363>

Received: 18 September 2026; Accepted: 23 September 2026; Published: 11 October 2026

## ABSTRACT

Effective accountability is widely recognised as a fundamental principle of public sector governance; however, limited empirical evidence explains how accountability is translated into improved project delivery during the post-award contract management phase. This study addresses this gap by examining the mediating role of Performance Monitoring in the relationship between Accountability and Project Delivery Quality within the Malaysian public sector. Guided by Open Systems Theory, the study conceptualises Accountability as the organisational input, Performance Monitoring as the transformation process, and Project Delivery Quality as the organisational output. Data were collected from 462 public sector officers involved in post-award contract management across Malaysian federal ministries and analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM). The findings reveal that Accountability significantly enhances Performance Monitoring, while Performance Monitoring significantly improves Project Delivery Quality. Furthermore, Performance Monitoring was found to significantly mediate the relationship between Accountability and Project Delivery Quality, demonstrating that accountability improves project outcomes through systematic monitoring processes rather than through direct governance mechanisms alone. The study extends the application of Open Systems Theory to post-award contract management by providing empirical evidence of the organisational processes through which governance mechanisms influence project performance. The findings offer practical guidance for strengthening accountability frameworks and institutionalising performance monitoring to enhance project governance and improve public sector project delivery.

**Keywords:** Accountability; Performance Monitoring; Project Delivery Quality; Open Systems Theory; Post-Award Contract Management; Public Sector Governance; PLS-SEM

## INTRODUCTION

Public sector organisations worldwide invest substantial financial resources in infrastructure and development projects to stimulate economic growth, improve public service delivery, and generate long-term societal benefits. Despite these investments, public projects continue to experience persistent implementation challenges, including delays, cost overruns, quality deficiencies, contractual disputes, and implementation failures. Recent empirical evidence suggests that effective project governance plays a pivotal role in improving project performance by strengthening organisational oversight, coordination, and managerial support throughout project implementation (Fareed & Su, 2022).

Likewise, recent studies indicate that contractual and relational governance strengthen project performance by improving coordination, collaboration, and governance effectiveness throughout project implementation (Yi & Nie, 2024). These findings reinforce the importance of strengthening governance throughout the post-award contract management phase to maximise public value and improve project delivery outcomes.

Within the Malaysian public sector, these governance challenges remain evident despite continuous efforts to strengthen public sector governance and project management practices. Successive reports issued by the National Audit Department and the Implementation Coordination Unit (ICU), Prime Minister's Department, continue to highlight recurring weaknesses in project implementation, including delays, implementation deficiencies, and weaknesses in contract administration. These observations suggest that the existence of formal governance and accountability frameworks alone does not necessarily guarantee successful project delivery. Rather, governance effectiveness depends on how accountability is translated into systematic organisational processes capable of supporting project implementation throughout the post-award contract management phase.

Accountability is widely recognised as a fundamental principle of public sector governance because it promotes transparency, organisational responsibility, ethical decision-making, and effective stewardship of public resources (OECD, 2023). Within the context of post-award contract management, accountability extends beyond regulatory compliance by ensuring that contractual obligations are effectively executed, implementation progress is systematically monitored, and responsible parties remain answerable for project performance. Nevertheless, governance deficiencies continue to occur despite the presence of formal accountability mechanisms, suggesting that accountability alone may be insufficient to produce consistent improvements in project delivery quality (Scott & Davis, 2015). This observation indicates that the effectiveness of accountability depends not only on governance structures but also on the organisational processes through which governance mechanisms are implemented during project execution.

Although previous studies have consistently demonstrated the positive influence of accountability on organisational performance and governance effectiveness, existing research has largely examined its direct relationship with organisational or institutional outcomes. Comparatively limited attention has been devoted to understanding the organisational processes through which accountability is translated into improved project delivery during the post-award contract management phase (Aguinis, 2019; DeNisi & Murphy, 2017). More specifically, the mediating role of Performance Monitoring remains insufficiently explored, despite its theoretical importance in transforming governance capability into operational performance. Consequently, existing governance literature provides only limited empirical evidence explaining how accountability is operationalised throughout project implementation to achieve superior project delivery quality.

Open Systems Theory provides an appropriate theoretical lens for addressing this limitation because it conceptualises organisational effectiveness as a dynamic process in which organisational inputs are transformed into desirable outputs through internal organisational processes (Katz & Kahn, 1978; Scott & Davis, 2015). From this perspective, Accountability represents the organisational input, Performance Monitoring functions as the transformation process, and Project Delivery Quality constitutes the organisational output. The theory therefore provides a coherent explanation of how governance capabilities are translated into successful project implementation through systematic monitoring and organisational control, thereby offering a stronger theoretical understanding of the mechanisms linking governance practices with project outcomes.

Against this background, the present study examines the relationships among Accountability, Performance Monitoring, and Project Delivery Quality within the context of post-award contract management in the Malaysian public sector. Specifically, the study investigates the mediating role of Performance Monitoring in explaining how accountability is translated into improved project delivery outcomes. The study makes two important contributions to the project governance literature.

First, it extends the application of Open Systems Theory by demonstrating how governance inputs are transformed into organisational outcomes through internal monitoring processes within post-award contract management. Second, it provides empirical evidence that systematic performance monitoring constitutes the organisational mechanism through which accountability enhances project delivery quality, thereby offering practical guidance for strengthening governance practices and improving project implementation across the public sector.

## Theoretical Background and Hypothesis Development

Effective project governance requires not only well-defined governance structures but also organisational capabilities that ensure governance principles are consistently translated into successful project implementation. Within the context of post-award contract management, Accountability and Performance Monitoring represent two interrelated governance capabilities that influence the quality of project delivery. Guided by Open Systems Theory, this section reviews the theoretical and empirical literature underpinning these constructs, explains their interrelationships within post-award contract management, and develops the study's hypotheses. The section concludes by identifying the research gap that provides the foundation for the proposed research model.

### Open Systems Theory

Open Systems Theory (OST), originally developed by Katz and Kahn (1978), conceptualises organisations as dynamic systems that continuously interact with their external environment while transforming organisational resources into desired outcomes through internal organisational processes. Unlike closed-system perspectives that emphasise internal structures alone, OST argues that organisational effectiveness depends on an organisation's ability to acquire inputs, adapt to environmental changes, manage transformation processes, and respond to feedback from multiple stakeholders. This perspective has been widely adopted in organisational management and public administration because it explains how governance capabilities are translated into organisational performance through interconnected organisational processes (Katz & Kahn, 1978; Scott & Davis, 2015).

The application of OST is particularly relevant to public sector project governance, where project implementation occurs within a complex environment characterised by multiple stakeholders, regulatory requirements, contractual obligations, audit scrutiny, and changing policy priorities. Public organisations are therefore required to continuously adapt their governance practices to ensure that project objectives are achieved despite evolving operational challenges. From an open systems perspective, governance effectiveness is not determined solely by formal rules or organisational structures but by the organisation's capacity to coordinate governance mechanisms, process performance information, and respond appropriately to implementation feedback (Scott & Davis, 2015; OECD, 2023).

The Input–Process–Output (IPO) logic embedded within OST provides a robust theoretical foundation for explaining governance relationships in post-award contract management. According to this framework, organisational inputs represent governance capabilities and institutional resources, organisational processes describe the managerial activities that transform these inputs into operational performance, while outputs reflect the quality of project outcomes achieved through these transformation processes (Katz & Kahn, 1978; Scott & Davis, 2015). Rather than viewing governance as a collection of isolated administrative functions, the IPO framework emphasises that successful project delivery depends on the effective interaction between governance inputs and organisational processes that continuously generate feedback and corrective actions throughout project implementation.

Recent governance research reinforces this systems perspective by demonstrating that organisational accountability and performance monitoring are mutually reinforcing rather than independent governance mechanisms. Mayne (2017) argues that accountability becomes effective only when supported by meaningful performance monitoring and reporting systems that enable managers to evaluate implementation progress and make informed corrective decisions. Similarly, recent studies on public sector performance measurement report that governance frameworks frequently underperform when accountability mechanisms are not accompanied by systematic monitoring, reliable performance information, and continuous organisational learning, resulting in weaker project implementation and reduced service delivery outcomes (Hutahaeen et al., 2025). These findings suggest that governance effectiveness depends on the integration of governance principles with organisational processes rather than on accountability structures alone.

Drawing upon this theoretical foundation, the present study conceptualises Accountability as the organisational input because it establishes responsibility, transparency, and managerial commitment throughout post-award contract management. Performance Monitoring represents the transformation process through which governance inputs are converted into effective implementation through continuous oversight, contract compliance, performance evaluation, and timely corrective action. Project Delivery Quality constitutes the organisational output because it reflects the extent to which governance processes achieve contractual objectives, meet quality standards, and deliver intended public value. This conceptualisation extends the application of Open Systems Theory to post-award contract management by proposing that organisational processes, particularly performance monitoring, constitute the critical mechanism through which accountability is translated into superior project delivery outcomes.

Recent empirical studies further support the systems perspective by demonstrating that governance effectiveness depends on the interaction between organisational governance mechanisms and internal management processes. For example, project governance has been shown to significantly improve project performance when supported by organisational leadership and structured governance arrangements (Fareed & Su, 2022). Similarly, governance mechanisms that integrate contractual and relational dimensions contribute to sustainable project outcomes by strengthening coordination, trust, and adaptive project management practices (Yi & Nie, 2024). These findings are consistent with the Open Systems Theory proposition that organisational inputs are transformed into desirable outcomes through effective internal organisational processes.

### **Performance Monitoring in Project Governance**

Performance monitoring is widely recognised as a core governance function that enables organisations to assess implementation progress, evaluate project performance, and initiate timely corrective actions throughout the project lifecycle. In public sector project management, performance monitoring extends beyond measuring project outputs to encompass the continuous collection, analysis, and utilisation of performance information for decision-making, accountability, and organisational learning. Effective monitoring systems provide managers with reliable information on project progress, contractual compliance, resource utilisation, quality achievement, and implementation risks, thereby facilitating informed managerial interventions before project deviations become critical (Project Management Institute [PMI], 2021; Kohtamäki & Olsson, 2023).

Within post-award contract management, performance monitoring plays a particularly significant role because governance effectiveness depends largely on how contractual obligations are implemented after contract award rather than on procurement decisions alone. During project execution, monitoring activities include tracking work progress, verifying contractual compliance, evaluating contractor performance, identifying implementation risks, and ensuring that project milestones are achieved according to agreed schedules and quality standards. Continuous monitoring also generates feedback that enables project managers to identify implementation deficiencies, address emerging issues promptly, and maintain alignment between contractual requirements and project objectives. Consequently, performance monitoring functions as the operational mechanism through which governance intentions are translated into effective project implementation (PMI, 2021; Drewry et al., 2005).

Previous studies consistently demonstrate that effective performance monitoring contributes positively to project performance, organisational accountability, and contract management effectiveness. In the public sector, monitoring systems improve managerial oversight by providing objective performance information that supports evidence-based decision-making and strengthens organisational accountability. Performance measurement has also been shown to enhance contract implementation by enabling government agencies to evaluate contractor performance, monitor service quality, and detect implementation problems before they escalate into significant governance failures (Amirkhanyan, 2010; van der Kolk, 2022).

Despite these recognised benefits, the literature also suggests that the effectiveness of performance monitoring depends on the quality of governance arrangements within which monitoring activities are embedded.

Monitoring systems that merely collect performance data without integrating the information into managerial decision-making provide limited value for improving project outcomes. Similarly, highly formalised monitoring mechanisms may satisfy compliance requirements but fail to promote organisational learning or adaptive governance if performance information is not used to support timely corrective actions. Consequently, contemporary public governance research increasingly emphasises that performance monitoring should be viewed as a continuous governance process that facilitates organisational learning, adaptive decision-making, and continuous improvement rather than as a compliance-oriented administrative exercise (Mayne, 1997; Kohtamäki & Olsson, 2023).

From the perspective of Open Systems Theory, performance monitoring represents the organisational transformation process through which governance inputs are converted into desirable organisational outcomes. Continuous monitoring enables organisations to generate feedback, evaluate operational performance, and adjust managerial actions in response to changing implementation conditions. Through this feedback mechanism, performance monitoring strengthens organisational adaptability, improves governance responsiveness, and enhances the likelihood of achieving superior project delivery outcomes (Katz & Kahn, 1978; Scott & Davis, 2015). Furthermore, recent governance research indicates that organisations integrating performance monitoring with accountability mechanisms and continuous feedback are better positioned to improve implementation quality and overall project performance.

Collectively, the theoretical and empirical literature suggests that effective performance monitoring constitutes a critical organisational capability for achieving successful project implementation. By strengthening implementation oversight, facilitating timely managerial interventions, promoting organisational learning, and reinforcing contractual compliance, performance monitoring contributes directly to higher levels of project delivery quality. Accordingly, the following hypothesis is proposed:

**H2: Performance Monitoring has a positive and significant effect on Project Delivery Quality.**

### **Hypothesis Development**

The preceding discussion suggests that accountability and performance monitoring are not independent governance mechanisms but complementary organisational capabilities that collectively influence project implementation. While accountability establishes the governance environment through clearly defined responsibilities, transparency, and managerial commitment, performance monitoring operationalises these governance principles by providing continuous oversight, performance feedback, and timely corrective actions throughout project execution. Consistent with Open Systems Theory, organisational inputs are expected to influence organisational outcomes through internal transformation processes rather than through direct relationships alone (Katz & Kahn, 1978; Scott & Davis, 2015).

Previous governance research consistently supports the proposition that accountability strengthens organisational control by promoting transparency, managerial responsibility, and effective reporting systems (Mayne, 1997; OECD, 2023). However, empirical evidence also suggests that accountability alone is insufficient to improve implementation performance unless it is accompanied by systematic monitoring mechanisms capable of translating governance commitments into operational actions. Effective accountability therefore creates the organisational conditions necessary for establishing robust performance monitoring practices, enabling managers to monitor implementation progress, evaluate contractual compliance, and respond proactively to implementation challenges (Amirkhanyan, 2010; van der Kolk, 2022). Accordingly, the following hypothesis is proposed:

**H1: Accountability has a positive and significant effect on Performance Monitoring.**

Similarly, performance monitoring has been consistently recognised as a critical determinant of successful project implementation because it enables organisations to identify implementation deviations, evaluate contractor performance, manage emerging risks, and implement timely corrective actions. Recent empirical studies further demonstrate that effective governance structures significantly enhance project performance

through stronger managerial support, governance coordination, and organisational control mechanisms (Fareed & Su, 2022). In addition, contractual and relational governance have been found to improve sustainable project performance by strengthening collaboration and implementation effectiveness throughout the project lifecycle (Yi & Nie, 2024). Therefore, organisations with more effective monitoring systems are expected to achieve higher levels of Project Delivery Quality.

## **H2: Performance Monitoring has a positive and significant effect on Project Delivery Quality.**

Open Systems Theory further proposes that organisational outcomes are achieved through transformation processes that convert governance inputs into organisational outputs. Applying this perspective to post-award contract management suggests that accountability is unlikely to influence project delivery quality directly without an effective organisational process responsible for implementing governance practices. Performance monitoring provides this transformation mechanism by translating accountability into continuous oversight, performance evaluation, organisational learning, and corrective managerial action. This theoretical proposition is supported by governance studies emphasising that accountability generates meaningful organisational improvements only when supported by effective monitoring and performance management systems (Mayne, 1997; OECD, 2023). Therefore, Performance Monitoring is expected to function as the organisational mechanism through which accountability enhances project delivery quality. Accordingly, the following hypothesis is proposed:

## **H3: Performance Monitoring mediates the relationship between Accountability and Project Delivery Quality.**

### **Research Gap and Conceptual Framework**

Despite the growing body of literature on public sector governance, accountability, and performance monitoring, several important gaps remain. First, previous studies have predominantly examined accountability and performance monitoring as independent governance constructs, with limited attention given to their integrated role within post-award contract management. Existing research has largely focused on procurement governance, financial accountability, or organisational performance, while comparatively fewer studies have investigated governance mechanisms operating during the contract implementation stage, where project outcomes are ultimately realised (OECD, 2023; PMI, 2021).

Second, although prior studies have reported positive relationships between accountability and organisational performance, the organisational mechanisms through which accountability influences project delivery quality remain insufficiently understood. Much of the existing empirical evidence assumes a direct relationship between governance capability and organisational outcomes without adequately considering the role of internal governance processes. From the perspective of Open Systems Theory, organisational inputs are expected to influence organisational outputs through transformation processes rather than through direct causal relationships alone (Katz & Kahn, 1978; Scott & Davis, 2015). Consequently, the mediating role of Performance Monitoring has received relatively limited empirical attention within the context of post-award contract management.

Third, existing governance studies have predominantly examined accountability and performance monitoring within general public administration or organisational management settings. Comparatively fewer empirical investigations have focused specifically on Malaysian public sector development projects, despite the increasing importance of strengthening governance during project implementation to improve project delivery quality and minimise implementation deficiencies. This contextual limitation restricts the generalisability of existing findings to the Malaysian public sector, where governance arrangements, institutional structures, and project implementation practices differ from those reported in many international studies.

Addressing these limitations, the present study develops and empirically tests an Open Systems Theory-based governance model in which Accountability is conceptualised as the organisational input, Performance Monitoring as the organisational transformation process, and Project Delivery Quality as the organisational

output. By examining the mediating role of Performance Monitoring, the proposed model extends existing project governance literature and provides a more comprehensive explanation of how governance capabilities are translated into successful project outcomes during post-award contract management. Figure 1 illustrates the conceptual framework underpinning the study.

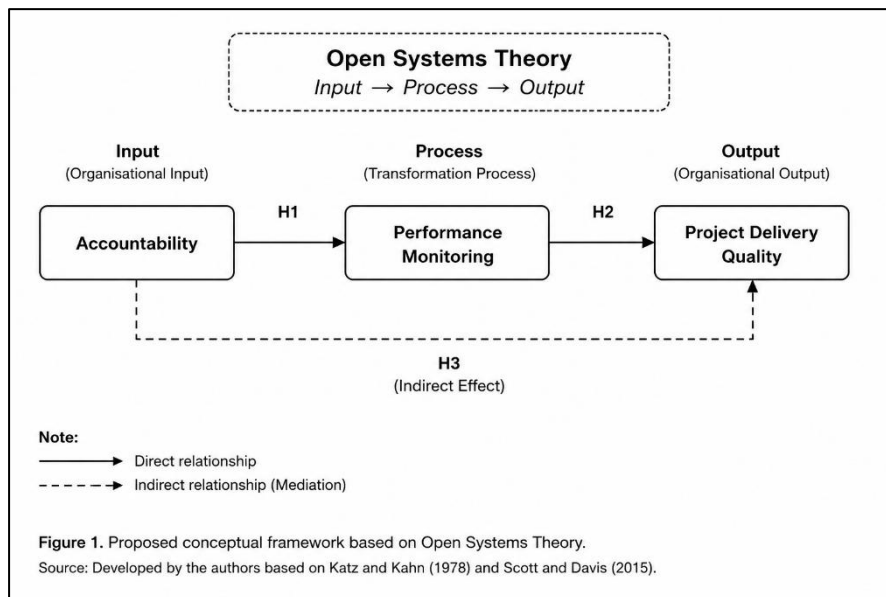


Figure 1 Proposed conceptual framework based on Open Systems Theory.

Figure 1 presents the proposed conceptual framework underpinning this study. Drawing upon Open Systems Theory, the framework conceptualises Accountability as the organisational input, Performance Monitoring as the transformation process, and Project Delivery Quality as the organisational output. The model further proposes that Performance Monitoring mediates the relationship between Accountability and Project Delivery Quality.

## Research Methodology

This study employed a quantitative research design to examine the relationships among Accountability, Performance Monitoring, and Project Delivery Quality in the context of post-award contract management within the Malaysian public sector. A cross-sectional survey approach was adopted because it enables the collection of standardised data from a relatively large number of respondents at a single point in time, making it appropriate for testing theoretical relationships using structural equation modelling (Hair et al., 2022). The research framework was grounded in Open Systems Theory, with Accountability conceptualised as the organisational input, Performance Monitoring as the transformation process, and Project Delivery Quality as the organisational output.

## Research Design

This study adopted a quantitative research design to examine the relationships among Accountability, Performance Monitoring, and Project Delivery Quality in the context of post-award contract management within the Malaysian public sector. A quantitative approach was considered appropriate because the study sought to empirically test the proposed theoretical model and examine the hypothesised relationships among latent constructs using statistical techniques. This approach enables objective measurement of organisational phenomena and facilitates theory testing through the analysis of numerical data (Creswell & Creswell, 2023; Hair et al., 2022).

A cross-sectional survey design was employed, whereby data were collected from respondents at a single point in time using a structured questionnaire. Cross-sectional surveys are widely applied in organisational and public administration research because they enable researchers to obtain standardised responses from a

relatively large population while providing an efficient means of examining relationships among multiple constructs (Bryman, 2021). In the present study, the survey design was particularly appropriate because it allowed the collection of empirical data from officers directly involved in post-award contract management across Malaysian federal ministries.

The study was guided by Open Systems Theory (OST), which conceptualises organisational effectiveness as a dynamic process in which organisational inputs are transformed into organisational outputs through internal transformation processes (Katz & Kahn, 1978; Scott & Davis, 2015). Consistent with this theoretical perspective, Accountability was conceptualised as the organisational input, Performance Monitoring as the transformation process, and Project Delivery Quality as the organisational output. This theoretical foundation informed both the development of the research framework and the empirical testing of the proposed hypotheses.

To examine the proposed relationships, the study employed Partial Least Squares Structural Equation Modelling (PLS-SEM) using SmartPLS 4. PLS-SEM was selected because it is well suited for testing complex causal relationships involving latent constructs, including mediation effects, while accommodating non-normal data distributions and predictive research models (Hair et al., 2022). The analytical procedure comprised two stages: assessment of the measurement model to establish reliability and validity followed by an evaluation of the structural model to examine the proposed hypotheses and mediation effect.

### **Population and Sampling**

The target population comprised public officers directly involved in post-award contract management across Malaysian federal ministries. These officers were responsible for overseeing contract implementation, monitoring project progress, coordinating project execution, and ensuring compliance with contractual requirements. As they are actively engaged in project governance throughout the implementation phase, they were considered the most appropriate respondents for evaluating accountability, performance monitoring, and project delivery quality.

A stratified random sampling technique was employed to ensure adequate representation across ministries. Stratified sampling is particularly appropriate when the target population consists of distinct organisational groups because it enhances sample representativeness and reduces sampling bias by ensuring that each ministry is proportionately represented (Sekaran & Bougie, 2020). In this study, respondents were selected from 28 federal ministries, with each ministry constituting an individual sampling stratum.

The minimum sample size was determined using established recommendations for Structural Equation Modelling (SEM). According to Hair et al. (2022), PLS-SEM requires an adequate sample size to ensure reliable estimation of path coefficients and robust hypothesis testing. Following these recommendations, the study obtained 462 valid responses, which exceeded the minimum sample size required for the proposed structural model. The final sample therefore provided sufficient statistical power to evaluate the direct and indirect relationships among Accountability, Performance Monitoring, and Project Delivery Quality.

The respondents consisted of officers holding managerial, professional, and executive positions who possessed direct experience in managing post-award government contracts. Their practical involvement in project implementation ensured that the data reflected informed assessments of governance practices and project delivery performance within the Malaysian public sector.

### **Measurement Instrument**

Data were collected using a structured questionnaire developed from validated measurement scales reported in previous studies. The instrument was designed to measure the three latent constructs of the proposed conceptual framework, namely Accountability, Performance Monitoring, and Project Delivery Quality. To ensure contextual relevance, the original measurement items were carefully adapted to reflect the post-award

contract management environment within the Malaysian public sector while maintaining their underlying conceptual definitions.

The questionnaire consisted of two sections. The first section captured respondents' demographic and organisational information, whereas the second section measured the three study constructs. All measurement items were assessed using a five-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The five-point Likert scale is widely recognised as an effective approach for measuring perceptions and attitudes in organisational and public management research because it provides sufficient response variation while remaining straightforward for respondents (Hair et al., 2022; Sekaran & Bougie, 2020).

To establish content validity, the questionnaire was reviewed by experts in public sector governance, project management, and research methodology. Their feedback was incorporated to improve the clarity, wording, and contextual suitability of the instrument without altering the theoretical meaning of the constructs. Prior to the main survey, a pilot study was conducted to evaluate the reliability and comprehensibility of the questionnaire. The results confirmed that the instrument was appropriate for subsequent data collection and empirical analysis.

### **Data Collection Procedure**

Data collection was conducted using a structured questionnaire administered to public officers involved in post-award contract management across 28 Malaysian federal ministries. Prior to the main survey, approval to conduct the study was obtained from the relevant authorities, and respondents were informed of the purpose of the research. Participation was entirely voluntary, and respondents were assured that all information provided would be treated with strict confidentiality and used solely for academic research purposes.

The questionnaire was distributed electronically using an online survey platform over the designated data collection period. Respondents were selected based on their direct involvement in post-award contract administration, project implementation, contract monitoring, and project governance activities. Completed questionnaires were screened for completeness and consistency before analysis. After the data screening process, 462 valid responses were retained for subsequent statistical analysis using SPSS and SmartPLS 4.

### **Data Analysis**

The collected data were analysed using IBM SPSS Statistics (Version 29) and SmartPLS 4. SPSS was employed to perform data screening and descriptive statistical analyses, including the examination of missing data, response completeness, and respondents' demographic characteristics. Preliminary data screening was undertaken to ensure that the dataset met the requirements for subsequent multivariate analysis.

To test the proposed research model, Partial Least Squares Structural Equation Modelling (PLS-SEM) was performed using SmartPLS 4. PLS-SEM was selected because it is suitable for examining complex relationships among latent constructs, assessing mediation effects, and supporting prediction-oriented research (Hair et al., 2022). In addition, PLS-SEM is robust when analysing behavioural and organisational data and is widely applied in project management and public administration research.

The data analysis followed the two-stage approach recommended by Hair et al. (2022). The first stage involved evaluating the measurement model by assessing indicator reliability, internal consistency reliability, convergent validity, and discriminant validity using indicator loadings, Cronbach's alpha, composite reliability (CR), average variance extracted (AVE), and the heterotrait–monotrait ratio (HTMT). The second stage involved evaluating the structural model through the assessment of collinearity, path coefficients, coefficients of determination ( $R^2$ ), effect sizes ( $f^2$ ), predictive relevance ( $Q^2$ ), and hypothesis testing. The significance of the direct and indirect relationships was determined using the bootstrapping procedure with 5,000 resamples, following the recommendations of Hair et al. (2022).

## RESULTS

This section presents the assessment of the measurement and structural models using Partial Least Squares Structural Equation Modelling (PLS-SEM). The measurement model was evaluated by examining indicator reliability, internal consistency reliability, convergent validity, and discriminant validity. Subsequently, the structural model was assessed through hypothesis testing, effect size, explanatory power, and mediation analysis to examine the proposed relationships among Accountability, Performance Monitoring, and Project Delivery Quality.

### Measurement Model Assessment

The measurement model was evaluated by examining indicator reliability, internal consistency reliability, convergent validity, and discriminant validity. Internal consistency reliability was assessed using Cronbach's alpha and Composite Reliability (CR), while convergent validity was evaluated using Average Variance Extracted (AVE). Discriminant validity was subsequently assessed using the Heterotrait–Monotrait ratio (HTMT), following the recommendations of Hair et al. (2022).

| Construct                      | Cronbach's Alpha | rho_A | Composite Reliability | AVE   |
|--------------------------------|------------------|-------|-----------------------|-------|
| Accountability (ACC)           | 0.740            | 0.743 | 0.821                 | 0.434 |
| Performance Monitoring (PM)    | 0.644            | 0.696 | 0.754                 | 0.364 |
| Project Delivery Quality (QPD) | 0.842            | 0.859 | 0.883                 | 0.559 |

Table 1. Measurement Model Assessment

| Construct                      | ACC   | PM    | QPD |
|--------------------------------|-------|-------|-----|
| Accountability (ACC)           | —     |       |     |
| Performance Monitoring (PM)    | 0.787 | —     |     |
| Project Delivery Quality (QPD) | 0.816 | 0.634 | —   |

Table 2. Discriminant Validity (HTMT)

The results indicate satisfactory internal consistency reliability across all constructs, with Composite Reliability values ranging from 0.754 to 0.883, exceeding the recommended threshold of 0.70. Cronbach's alpha values ranged from 0.644 to 0.842, indicating acceptable reliability for exploratory research. Although

the AVE values for Accountability (0.434) and Performance Monitoring (0.364) were below the conventional threshold of 0.50, convergent validity was considered acceptable because all constructs achieved Composite Reliability values above 0.70, consistent with the recommendations of Hair et al. (2022). Furthermore, all HTMT values were below the conservative threshold of 0.85, confirming adequate discriminant validity among the study constructs.

### Structural Model Assessment

The structural model was evaluated by examining the significance of the proposed structural relationships, effect sizes ( $f^2$ ), and the model's explanatory power ( $R^2$ ). The results of the structural model assessment are presented in Table 3.

| Hypothesis               | Relationship                                      | $\beta$        | $t$            | $p$    | $f^2$ | Decision  |
|--------------------------|---------------------------------------------------|----------------|----------------|--------|-------|-----------|
| H1                       | Accountability → Performance Monitoring           | 0.610          | 13.464         | <0.001 | 0.593 | Supported |
| H2                       | Performance Monitoring → Project Delivery Quality | 0.515          | 10.974         | <0.001 | 0.362 | Supported |
|                          |                                                   |                |                |        |       |           |
| Endogenous Construct     | $R^2$                                             | Adjusted $R^2$ | Interpretation |        |       |           |
| Performance Monitoring   | 0.372                                             | 0.371          | Moderate       |        |       |           |
| Project Delivery Quality | 0.266                                             | 0.264          | Moderate       |        |       |           |

Table 3. Structural Model Assessment

The structural model demonstrated satisfactory explanatory power, with Accountability explaining 37.2% of the variance in Performance Monitoring ( $R^2 = 0.372$ ) and Performance Monitoring explaining 26.6% of the variance in Project Delivery Quality ( $R^2 = 0.266$ ). Both structural relationships were statistically significant and exhibited large effect sizes, indicating that Accountability substantially influenced Performance Monitoring, while Performance Monitoring contributed meaningfully to improved Project Delivery Quality. Overall, the structural model demonstrated adequate explanatory capability and provided empirical support for subsequent hypothesis testing.

### Hypothesis Testing

Hypothesis testing was conducted using the bootstrapping procedure in SmartPLS to examine the significance of the proposed structural relationships. The path coefficients ( $\beta$ ),  $t$ -values,  $p$ -values, and corresponding decisions are presented in Table 4.

| Hypothesis | Relationship                                      | $\beta$ | $t$ -value | $p$ -value | Decision  |
|------------|---------------------------------------------------|---------|------------|------------|-----------|
| H1         | Accountability → Performance Monitoring           | 0.610   | 13.464     | <0.001     | Supported |
| H2         | Performance Monitoring → Project Delivery Quality | 0.515   | 10.974     | <0.001     | Supported |

Table 4. Hypothesis Testing Results

The results indicate that both hypothesised relationships were positive and statistically significant. Accountability exerted a strong positive effect on Performance Monitoring ( $\beta = 0.610$ ,  $t = 13.464$ ,  $p < 0.001$ ), supporting H1. Similarly, Performance Monitoring significantly enhanced Project Delivery Quality ( $\beta = 0.515$ ,  $t = 10.974$ ,  $p < 0.001$ ), providing support for H2. These findings suggest that stronger accountability mechanisms contribute to more effective performance monitoring, which subsequently improves project delivery quality.

### Mediation Analysis

The mediating effect of Performance Monitoring on the relationship between Accountability and Project Delivery Quality was assessed using the bootstrapping procedure. The indirect effect results are presented in Table 5.

| Hypothesis | Indirect Relationship                                              | $\beta$ | $t$ -value | $p$ -value | Decision  |
|------------|--------------------------------------------------------------------|---------|------------|------------|-----------|
| H3         | Accountability → Performance Monitoring → Project Delivery Quality | 0.315   | 6.536      | <0.001     | Supported |

Table 5. Mediation Analysis Results

The mediation analysis revealed that Performance Monitoring significantly mediated the relationship between Accountability and Project Delivery Quality ( $\beta = 0.315$ ,  $t = 6.536$ ,  $p < 0.001$ ), providing support for H3. The significant indirect effect indicates that improvements in accountability contribute to higher project delivery quality through enhanced performance monitoring.

## DISCUSSION

This section discusses the empirical findings in relation to the research objectives, proposed hypotheses, and Open Systems Theory. The discussion focuses on the direct effects of Accountability and Performance Monitoring on Project Delivery Quality, followed by the mediating role of Performance Monitoring. The theoretical and practical implications of the findings are subsequently presented, together with the study's limitations and recommendations for future research.

### Accountability and Performance Monitoring

The findings demonstrate that accountability significantly strengthens performance monitoring, supporting the proposition of Open Systems Theory that organisational inputs shape internal processes and influence organisational effectiveness. Within the context of post-award contract management, accountability provides the governance foundation that encourages systematic oversight, reinforces role clarity, and promotes adherence to contractual responsibilities throughout project implementation. This interpretation is further supported by recent evidence showing that governance practices mediate the relationship between organisational capabilities and project performance in public infrastructure projects, reinforcing the importance of governance processes as the mechanism through which organisational resources are translated into successful project outcomes (Nusriadi et al., 2024). These governance mechanisms enable organisations to establish more structured and effective performance monitoring practices.

These findings are also consistent with recent studies demonstrating that project governance significantly improves project performance through stronger governance arrangements and organisational support (Fareed

& Su, 2022). Similarly, contractual and relational governance have been shown to enhance sustainable project performance by improving communication, coordination, and governance effectiveness throughout project implementation (Yi & Nie, 2024).

The findings are consistent with previous studies that identify accountability as a fundamental governance mechanism for improving organisational performance and decision-making. Recent empirical evidence also demonstrates that governance structures supported by effective managerial oversight significantly strengthen project performance by enhancing organisational coordination and monitoring capabilities (Fareed & Su, 2022).

From the perspective of Open Systems Theory, accountability functions as a critical organisational input that facilitates effective transformation processes through performance monitoring. Rather than influencing project outcomes directly, accountability enhances the organisational capability to monitor project progress, identify implementation issues, and initiate timely corrective actions. This finding extends the application of Open Systems Theory to post-award contract management by demonstrating that governance mechanisms improve organisational performance through internal monitoring processes rather than through direct administrative control alone.

### **Performance Monitoring and Project Delivery Quality**

The findings indicate that Performance Monitoring significantly improves Project Delivery Quality, highlighting its central role in translating governance mechanisms into successful project outcomes. Effective performance monitoring enables project managers to systematically track implementation progress, identify deviations from contractual requirements, and implement timely corrective actions. Consequently, continuous monitoring contributes to improved project quality by ensuring that project objectives, schedules, and contractual obligations are consistently achieved throughout the post-award phase.

This finding is consistent with previous studies that identify performance monitoring as a critical determinant of project success. Effective monitoring enhances project control, supports informed decision-making, and facilitates early identification of implementation risks, thereby improving project efficiency and delivery performance. The findings are aligned with the Project Management Institute (2021), Aguinis (2019), and Serrador and Turner (2015), who emphasise that systematic performance monitoring is fundamental to achieving successful project outcomes through continuous evaluation and corrective intervention.

From the perspective of Open Systems Theory, Performance Monitoring represents the organisational transformation process through which governance inputs are converted into tangible project outcomes. The findings demonstrate that governance mechanisms alone are insufficient to improve project delivery unless they are supported by systematic monitoring practices that enable organisations to evaluate project performance and respond proactively to implementation challenges. This finding extends the application of Open Systems Theory by demonstrating that effective monitoring serves as the critical organisational process linking governance capability with superior project delivery quality.

### **The Mediating Role of Performance Monitoring**

The findings confirm that Performance Monitoring significantly mediates the relationship between Accountability and Project Delivery Quality, demonstrating that accountability alone is insufficient to improve project outcomes without effective implementation through systematic monitoring processes. This finding suggests that accountability functions as a governance mechanism that establishes organisational responsibility and oversight, while Performance Monitoring operationalises these governance principles into measurable project management practices that ultimately enhance Project Delivery Quality.

This finding is consistent with previous governance and project management literature, which argues that governance mechanisms produce organisational benefits only when supported by effective monitoring and control systems. Accountability strengthens organisational discipline by promoting responsibility,

transparency, and compliance, whereas Performance Monitoring translates these governance attributes into continuous evaluation, timely corrective actions, and improved implementation performance. Similarly, recent studies have shown that effective project governance enhances project performance through structured governance arrangements and coordinated management processes, reinforcing the importance of governance mechanisms in achieving successful project outcomes (Fareed & Su, 2022; Abdullah et al., 2024). Consequently, accountability contributes to superior Project Delivery Quality indirectly by strengthening the effectiveness of organisational monitoring processes rather than influencing project outcomes independently.

From the perspective of Open Systems Theory, the mediation effect reinforces the input–process–output logic of organisational systems. Accountability represents the organisational input that provides governance capability, Performance Monitoring functions as the transformation process that converts governance capability into operational actions, and Project Delivery Quality reflects the resulting organisational output. This finding extends Open Systems Theory by providing empirical evidence that governance inputs generate superior project outcomes through internal organisational processes rather than through direct governance interventions alone. The findings therefore contribute to the post-award contract management literature by demonstrating that effective Performance Monitoring constitutes the critical organisational mechanism through which Accountability is translated into successful project delivery.

### **Theoretical Implications**

This study contributes to the literature by extending the application of Open Systems Theory within the context of post-award contract management in the Malaysian public sector. While previous studies have primarily applied the theory to explain organisational adaptation and effectiveness, the present findings demonstrate its relevance in explaining how governance inputs are transformed into superior project outcomes through internal organisational processes. Specifically, the study empirically validates Accountability as a governance input, Performance Monitoring as the organisational transformation process, and Project Delivery Quality as the resulting organisational output.

The study also contributes to the project governance literature by demonstrating that governance mechanisms do not directly improve project outcomes but operate through effective organisational processes. The significant mediating role of Performance Monitoring provides empirical evidence that accountability enhances project delivery by strengthening systematic monitoring and organisational control throughout the post-award contract management phase. This finding advances current understanding of governance effectiveness by clarifying the organisational mechanism through which accountability is translated into improved project performance.

### **Practical Implications**

The findings provide important practical implications for public sector organisations responsible for post-award contract management. First, strengthening accountability mechanisms should be prioritised to establish clear roles, responsibilities, and reporting structures throughout project implementation. A robust accountability framework promotes greater organisational discipline and enhances oversight, thereby creating an enabling environment for effective performance monitoring.

Second, public sector organisations should institutionalise systematic performance monitoring as a core governance practice rather than treating it solely as a compliance requirement. Regular performance reviews, timely reporting, and continuous monitoring enable project managers to identify implementation issues early, initiate corrective actions, and improve project delivery quality. These practices are particularly relevant for large-scale public projects, where effective monitoring is essential to minimise delays, cost overruns, and implementation deficiencies.

The findings also provide practical guidance for policymakers and senior public sector administrators in strengthening governance reforms. By integrating accountability with structured performance monitoring, government agencies can enhance project governance, improve implementation effectiveness, and achieve

higher-quality project outcomes. Consequently, the study offers an evidence-based governance framework that supports ongoing public sector transformation initiatives aimed at improving project performance and accountability.

The present findings are also consistent with evidence from the Malaysian construction sector, where effective project governance supported by organisational commitment and top management involvement has been shown to strengthen project performance management and governance effectiveness (Abdullah et al., 2024). These findings suggest that public sector organisations should integrate accountability, performance monitoring, and governance leadership into a comprehensive project governance framework to achieve sustainable improvements in pr

## **LIMITATIONS AND FUTURE RESEARCH**

This study should be interpreted in light of several limitations. First, the findings are based on cross-sectional data collected from Malaysian public sector organisations, which may limit the generalisability of the results to other institutional or national contexts. Future studies may employ longitudinal research designs to examine how accountability and performance monitoring influence project delivery quality over different stages of the project lifecycle.

Second, this study focused exclusively on the mediating role of Performance Monitoring within the Open Systems Theory framework. Future research could extend the proposed model by incorporating additional organisational or governance variables, such as digital governance capability, organisational culture, leadership effectiveness, or stakeholder engagement, to provide a more comprehensive understanding of post-award contract management governance.

Finally, future studies are encouraged to validate the proposed governance framework across different sectors, project types, and institutional settings using larger and more diverse samples. Comparative studies involving public and private sector organisations or cross-country analyses would further strengthen the external validity and broader applicability of the proposed model.

## **CONCLUSION**

This study examined the relationships among Accountability, Performance Monitoring, and Project Delivery Quality within the context of post-award contract management in the Malaysian public sector. Guided by Open Systems Theory, the study proposed and empirically tested a governance model in which Accountability represents the organisational input, Performance Monitoring functions as the transformation process, and Project Delivery Quality constitutes the organisational output. The findings confirmed that Accountability significantly enhances Performance Monitoring, while Performance Monitoring has a significant positive effect on Project Delivery Quality. Furthermore, the study established that Performance Monitoring significantly mediates the relationship between Accountability and Project Delivery Quality, indicating that governance inputs improve project outcomes through effective organisational processes.

The study contributes to the project governance literature in several important ways. Theoretically, it extends the application of Open Systems Theory by providing empirical evidence that governance effectiveness is achieved through the interaction between organisational inputs and internal transformation processes rather than through direct governance mechanisms alone. By identifying Performance Monitoring as the key organisational process linking Accountability to Project Delivery Quality, the study offers a more comprehensive explanation of how governance capabilities are translated into successful project implementation during the post-award contract management phase. These findings enrich the growing body of knowledge on public sector project governance and provide additional empirical support for the application of systems-based perspectives in project management research.

From a practical perspective, the findings highlight the importance of strengthening accountability frameworks while institutionalising systematic performance monitoring throughout project implementation.

Public sector organisations should view accountability and performance monitoring as complementary governance mechanisms that collectively enhance project oversight, improve implementation effectiveness, and support the delivery of high-quality public projects. As governments continue to pursue governance reforms and greater value for public expenditure, the proposed framework provides a practical and evidence-based approach for improving post-award contract management and achieving more effective and sustainable project delivery.

## REFERENCES

1. Abdullah, F. C. B., Indiran, L., Krishnan, A., & Pavithran, S. N. (2024). The impact of moderation analysis between effective project governance and project performance management in Malaysia's construction industry. *GATR Global Journal of Business and Social Science Review*, 12(3), 114–124. [https://doi.org/10.35609/gjbssr.2024.12.3\(2\)](https://doi.org/10.35609/gjbssr.2024.12.3(2))
2. Aguinis, H. (2019). *Performance management* (4th ed.). Chicago Business Press.
3. Amirkhanyan, A. A. (2010). Monitoring across sectors: Examining the effect of nonprofit and for-profit contractor ownership on performance monitoring in state and local contracts. *Public Administration Review*, 70(5), 742–755.
4. Bryman, A. (2021). *Social research methods* (6th ed.). Oxford University Press.
5. Creswell, J. W., & Creswell, J. D. (2023). *Research design: Qualitative, quantitative, and mixed methods approaches* (6th ed.). Sage.
6. DeNisi, A., & Murphy, K. R. (2017). Performance appraisal and performance management: 100 years of progress? *Journal of Applied Psychology*, 102(3), 421–433. <https://doi.org/10.1037/apl0000085>
7. Drewry, G., Greve, C., & Tanquerel, T. (2005). *Contracts, performance measurement and accountability in the public sector*. IOS Press.
8. Fareed, M. Z., & Su, Q. (2022). Project governance and project performance: The moderating role of top management support. *Sustainability*, 14(5), 2516. <https://doi.org/10.3390/su14052516>
9. Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2022). *A primer on partial least squares structural equation modeling (PLS-SEM)* (3rd ed.). Sage.
10. Implementation Coordination Unit, Prime Minister's Department. (2025). *RMK-12 project monitoring report*. Prime Minister's Department.
11. Katz, D., & Kahn, R. L. (1978). *The social psychology of organizations* (2nd ed.). Wiley.
12. Kohtamäki, V., & Olsson, Å. (2023). Performance management in public administration. In A. Farazmand (Ed.), *Global encyclopedia of public administration, public policy, and governance*. Springer.
13. Mayne, J. (1997). Accountability for program performance: A key to effective performance monitoring and reporting. In J. Mayne & E. Zapico-Goñi (Eds.), *Monitoring performance in the public sector* (pp. 157–176). Transaction Publishers. <https://doi.org/10.4324/9781315124681-8>
14. National Audit Department Malaysia. (2025). *Auditor General's Report 2025: Series 3*. National Audit Department Malaysia.
15. Nusriadi, L., Avianti, I., Tanzil, N. D., & Parikesit, D. (2024). The role of good project governance in PPP projects for toll road infrastructure in Indonesia. *Journal of Infrastructure, Policy and Development*, 8(4). <https://doi.org/10.24294/jipd.v8i4.3259>
16. Organisation for Economic Co-operation and Development. (2023). *Government at a glance 2023*. OECD Publishing. <https://doi.org/10.1787/3d5c5d31-en>
17. Project Management Institute. (2021). *A guide to the Project Management Body of Knowledge (PMBOK® Guide)* (7th ed.). Project Management Institute.
18. Scott, W. R., & Davis, G. F. (2015). *Organizations and organizing: Rational, natural, and open systems perspectives* (2nd ed.). Routledge.
19. Sekaran, U., & Bougie, R. (2020). *Research methods for business: A skill-building approach* (8th ed.). Wiley.
20. van der Kolk, B. (2022). Performance measurement in the public sector: Mapping 20 years of survey research. *Financial Accountability & Management*, 38(5), 703–729.

- 
22. Yi, B., & Nie, N. L. S. (2024). Effects of contractual and relational governance on project performance: The role of BIM application level. *Buildings*, 14(10), 3185. <https://doi.org/10.3390/buildings14103185>.
  23. Nusriadi, L., Avianti, I., Tanzil, N. D., & Parikesit, D. (2024). The role of good project governance in PPP projects for toll road infrastructure in Indonesia. *Journal of Infrastructure, Policy and Development*, 8(4). <https://doi.org/10.24294/jipd.v8i4.3259>.
  24. Yi, B., & Nie, N. L. S. (2024). Effects of contractual and relational governance on project performance: The role of BIM application level. *Buildings*, 14(10), 3185. <https://doi.org/10.3390/buildings14103185>