Infrastructure Project Implemented by DPWH Samar 2nd District Engineering Office: An Evaluation

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Abstract — This study evaluated infrastructure projects implemented by the DPWH Samar 2nd District Engineering Office to develop recommendatory strategies for improvement. The research employed a descriptive-correlational design with stratified sampling of 30 respondents (10 contractors, 10 project engineers, and 10 stakeholders). Data were collected through validated questionnaires with very good reliability (α=0.81–0.89) and analyzed using descriptive and inferential statistics. Results revealed distinct demographic patterns: contractors were predominantly middle-aged males with 5–10 years of experience; engineers were younger with increasing female representation; and stakeholders showed balanced gender distribution. Significant challenges identified across project phases included permit delays and limited stakeholder involvement in planning, unforeseen weather conditions and site adjustments during implementation, and inadequate feedback mechanisms in evaluation. Years of experience and educational attainment significantly correlated with perceived challenges across all phases ($p<0.05$), while age and sex showed no significant relationships. No statistically significant differences were found between contractors' and engineers' perceptions of challenges ($p>0.05$), suggesting shared understanding of implementation difficulties. Stakeholders prioritized improved communication channels and strengthened involvement in planning as key recommendations.
In response to these findings, the study developed the Framework for Infrastructure Project Implementation Enhancement (FIPIE), a strategic model with five core components addressing climate resilience, administrative efficiency, stakeholder engagement, resource management, and knowledge systems. The framework seeks to bridge existing implementation gaps by aligning project processes with contextual realities and stakeholder expectations. This model offers a practical tool for government agencies and project implementers to ensure more adaptive, participatory, and sustainable infrastructure development in the Samar region, contributing to long-term regional progress and service delivery.

Keywords — Infrastructure Project Management, DPWH, Project Implementation Challenges, Stakeholder Engagement, Climate Resilience

I. Introduction

Infrastructure development serves as the cornerstone of national progress and economic advancement, providing essential services that improve quality of life and facilitate business activities. The Department of Public Works and Highways (DPWH) Samar 2nd District Engineering Office, as the primary government agency responsible for implementing

infrastructure projects in the area, plays a crucial role in the development of the region through the planning, implementation, and evaluation of various infrastructure initiatives. However, despite the significance of these projects, numerous challenges persist throughout their implementation cycle, affecting the timely and efficient delivery of public works projects.

Global trends in infrastructure development reveal persistent challenges across developing nations. The World Bank estimates that inadequate infrastructure reduces global GDP growth by approximately 2 percent annually and negatively impacts business productivity by as much as 40 percent in some developing regions. Mejía, Sánchez, Castañeda, and Pellicer (2020) highlighted significant delays in road infrastructure projects in developing countries, including the Philippines, attributing these delays to inefficient project management practices and poor contractor performance. Their research provides a critical baseline for understanding the magnitude and nature of these challenges across comparable economies. Researchers employed a system dynamics approach to demonstrate how various risk factors contribute to schedule delays in infrastructure projects, offering a valuable framework for assessing the effectiveness of mitigation measures implemented by agencies like the DPWH (Wang and Yuan, 2017).

Within the Philippine context, infrastructure development faces substantial hurdles despite its prioritization in national development plans. Patalinghug (2017) examined planning and programming issues in Philippine capital projects, revealing how poor planning processes, political interference, and budget constraints hinder the efficient implementation of infrastructure initiatives nationwide. This research highlighted systemic weaknesses in project preparation and feasibility studies that directly impact the quality and timelines of public works projects. It was further demonstrated how political interference patterns disrupt national roadworks implementation, weakening the effectiveness of technical mitigation strategies and compromising the integrity of infrastructure development processes (Batalla et al., 2018).

The Eastern Visayas region, particularly Samar Province, presents unique challenges for infrastructure development due to its geographical characteristics, vulnerability to natural disasters, and socioeconomic context. The region has consistently lagged behind national averages in infrastructure development metrics, with project completion rates approximately 15 percent lower than the national average according to DPWH regional reports. Local researchers corroborate these difficulties, with Pantalunan et al. (2021) investigating delays in construction management at the DPWH Aurora District Engineering Office. Their findings, while focused on Aurora, provide relevant insights for understanding similar operational challenges in Samar and expose persistent inefficiencies despite the implementation of various mitigation efforts.

The DPWH Samar 2nd District Engineering Office has implemented several mitigation strategies to address these challenges, including enhanced planning procedures, improved oversight mechanisms, and better contractor coordination protocols. However, community feedback received through social media platforms and official complaint hotlines highlights persistent gaps in these approaches. Common questions from the public such as “Why are good

roads being destroyed while damaged ones are not prioritized? and "Why are roads excavated if work will not commence immediately?" point to unresolved issues in project scheduling, prioritization, and resource allocation that require systematic evaluation.

While numerous studies have explored the causes of project delays and potential mitigation strategies in various contexts, a significant research gap exists in evaluating the effectiveness of these strategies specifically within the operational context of the DPWH Samar 2nd District Engineering Office. Existing research identifies causes of delays but does not assess whether the specific mitigation measures implemented by the DPWH Samar 2nd DEO adequately address these issues in practice. This study aimed to fill this critical gap by comprehensively evaluating the current mitigation measures and identifying areas for strategic improvement based on empirical evidence from stakeholders directly involved in the implementation process.

This study offers significant contributions to infrastructure development practice and theory, particularly in the context of regional public works administration. For practitioners–including DPWH officials, project engineers, and contractors, the research provides evidence-based insights into effective mitigation strategies that can improve project delivery timelines and enhance resource utilization. For policymakers, the findings offer a foundation for developing more responsive infrastructure development policies that address the specific challenges encountered in the Eastern Visayas region. Academically, the study contributes to the body of knowledge on infrastructure project management in disaster-prone and resource-constrained environments by offering a framework for evaluating mitigation strategies that may be applicable in similar contexts. Local communities stand to benefit from potential improvements in infrastructure project implementation that may result from the application of enhanced mitigation strategies identified through this research, ultimately supporting economic development and improving quality of life in affected areas.

Literature Review

Infrastructure development is a cornerstone of economic and social progress, particularly in developing regions like Samar Province in the Philippines. The review of literature presented here examines various aspects of infrastructure project implementation, challenges, and strategies for improvement, with specific emphasis on road construction and public works projects.

Infrastructure projects require thorough post-development evaluation to ensure their effectiveness and sustainability. Unfortunately, such evaluations are often inadequately conducted due to limited capacity of regional planning bureaucrats (Wirjodirdjo et al., 2021). Capacity building initiatives for planning officials are essential to strengthen post-project evaluation processes and ensure that infrastructure investments achieve their intended benefits. Similarly, approaches for evaluating road infrastructure projects suggest that comprehensive evaluation frameworks can significantly improve project outcomes and long-term sustainability (Arshad et al., 2021). These evaluation methodologies incorporate multiple dimensions of sustainability,

including environmental impact, social benefits, and economic viability. The implementation of structured evaluation protocols enables project managers to identify areas of improvement and apply lessons learned to future infrastructure initiatives.

Local studies on infrastructure projects in the Philippines provide valuable insights into regional contexts similar to Samar. For example, an evaluation of road widening projects implemented by the DPWH in the 2nd Congressional District of Sorsogon found that while these projects generally improved transportation efficiency, several implementation challenges affected overall satisfaction levels (Encinares, 2019). These challenges included coordination issues with utility companies, right-of-way acquisition delays, and inadequate communication with affected communities. In a related study on the Second District of Nueva Ecija, researchers found that infrastructure development had significant positive effects on transportation, travel time, and market access for farm families, though the impact on agricultural production and income remained limited (Vana et al., 2021). This research highlighted the need for more integrated development approaches that connect physical infrastructure improvements with complementary economic and social programs to maximize benefits for local communities.

II. Methodology

This study employed a descriptive-correlational research design to evaluate infrastructure projects implemented by the DPWH Samar 2nd District Engineering Office. The descriptive component enabled the researcher to gather comprehensive data about the profile of respondents, including contractors, project engineers, and stakeholders, and to identify the challenges encountered during infrastructure project implementation across planning, implementation, and evaluation phases. The correlational aspect allowed for examination of relationships between respondent profiles and challenges encountered, as well as differences in identified challenges among respondent groups (Burns, 2019).

The descriptive-correlational approach was particularly appropriate for this study as it provided a systematic method for describing the characteristics of the respondents and the challenges they encountered, while also allowing for statistical analysis of relationships between variables. This design aligned perfectly with the research problems, which sought to profile respondents, identify implementation challenges, examine relationships between profiles and challenges, and analyze differences in perceptions among respondent groups (Miksza & Elpus, 2018).

The study documented the profiles of contractor-respondents (age, sex, years of experience), project engineer-respondents (age, sex, highest educational attainment, years of experience), and stakeholder-respondents (age, sex, years of experience, geographical location). Through survey questionnaires, the research explored challenges encountered in infrastructure project implementation across three key phases: planning, implementation, and evaluation.

Statistical analysis complemented the data collection methods, employing appropriate tests to determine significant relationships between respondent profiles and challenges encountered, as well as significant differences in identified challenges among the three groups of respondents. Descriptive statistics including frequency, percentage, weighted mean, and ranking were used to organize and present the data, while inferential statistics such as Point Biserial Correlation, ETA Correlation, and t-test for independent samples were employed to test the study's hypotheses regarding relationships and differences among variables.

This methodological approach ensured alignment with the research problems and provided a robust framework for gathering, analyzing, and interpreting data to develop evidence-based recommendatory strategies for improving infrastructure project implementation at the DPWH Samar 2nd District Engineering Office.

III. Results and Discussion

The study revealed distinct demographic patterns among the three respondent groups. Contractors were predominantly middle-aged males (100%) with 5-10 years of experience (80%). Project engineers were notably younger (60% in their 20s), with higher female representation (30%) compared to contractors, moderate educational attainment (60% with bachelor's degrees), and 5-10 years of experience (60%). Stakeholders showed a balanced gender distribution (50% male, 50% female), were primarily middle-aged (70% over 30 years old), had relatively shorter residence duration (80% less than 20 years), and were concentrated in three specific barangays within Catbalogan City (Guinsorongan, Maulong and Mercedes).

The study identified significant challenges across planning, implementation, and evaluation phases. In planning, securing permits and approvals was the most critical challenge (Mean=4.60 for contractors, 4.48 for engineers). During implementation, unforeseen weather conditions were unanimously identified as the most significant challenge (Mean=4.80 for contractors, 4.52 for engineers), followed by unforeseen site conditions and material availability. In the evaluation phase, both groups strongly agreed that systematic processes for incorporating evaluation results into future planning needed improvement (Mean=4.40 for contractors, 4.32 for engineers). Stakeholders ranked weather-related delays, limited stakeholder consultation, and communication gaps as their top three concerns.

The study found significant correlations between certain demographic factors and perceived challenges. Contractors' years of experience significantly correlated with challenges across all phases, with the strongest relationship in implementation ($r=0.524$, $p=0.008$). For project engineers, educational attainment and years of experience showed significant positive correlations with perceived challenges across all phases, with the strongest relationship between educational attainment and planning challenges ($r=0.526$, $p=0.007$). However, age and sex did not significantly correlate with perceived challenges for either group.

The comparative analysis revealed no statistically significant differences between contractors and project engineers in their perception of challenges across planning (p=0.872), implementation (p=0.498), and evaluation (p=0.666) phases. Both groups consistently rated challenges within the "Agree" category, with slightly higher mean scores reported by contractors across all phases, though these differences were not statistically significant. This consistency suggests that despite different roles, contractors and project engineers share similar perceptions of infrastructure project challenges.

Stakeholders prioritized communication and engagement improvements, with "Improve real-time communication channels during implementation" (f=9) and "Strengthen stakeholder involvement in planning" (f=8) as their top recommendations. Technical solutions such as "Establish systematic feedback loops" (f=5), "Introduce capacity-building sessions" (f=4), and "Introduce advanced monitoring tools" (f=3) received moderate support. This prioritization pattern emphasizes the importance of human factors and relational aspects in addressing infrastructure project challenges, aligning with stakeholders' identification of communication gaps as a key challenge.

IV. Conclusion

The demographic composition of key project participants significantly shapes infrastructure project dynamics in the Samar 2nd DEO. The predominantly middle-aged, exclusively male contractor workforce brings substantial experience but lacks gender diversity, potentially limiting perspective diversity in implementation approaches. The younger engineering team with moderate education levels and increasing female representation offers a blend of contemporary technical knowledge and growing gender balance, though limited deep experience may affect complex problem-solving. The balanced stakeholder demographics provide comprehensive community representation but relatively recent community settlement may limit historical context for infrastructure development.

Infrastructure projects in the Samar 2nd DEO face significant challenges across all implementation phases, with external factors (weather conditions, permit processes) and systemic issues (limited stakeholder engagement, inadequate risk assessment) most prominently affecting outcomes. The consistency of challenges identified across respondent groups confirms these are systemic rather than role-specific issues. The particularly high ratings for weather-related delays highlight the region's vulnerability to climatic conditions, requiring specialized adaptation strategies beyond standard project management approaches.

Professional experience and educational attainment significantly influence how project participants perceive and articulate infrastructure challenges. The consistent positive correlation between years of experience and perceived challenges suggests that experiential knowledge enhances awareness of potential difficulties rather than diminishing them. Similarly, higher

educational attainment correlates with increased identification of challenges, indicating that theoretical knowledge enhances critical assessment of project implementation processes. These relationships highlight the importance of both experiential and academic knowledge in comprehensive challenge identification and resolution.

Despite their different roles and perspectives, contractors and project engineers demonstrate remarkable consistency in their assessment of infrastructure project challenges. This shared understanding of implementation difficulties suggests that challenges are inherent to the project environment rather than role-specific, creating potential for collaborative problem-solving approaches. The lack of significant differences between these key implementer groups indicates that targeted interventions should address systemic issues rather than focusing on group-specific perceptions or needs.

Stakeholder perspectives clearly indicate that relationship-oriented factors, particularly communication and engagement processes, are perceived as most critical for improving infrastructure project outcomes. The prioritization of communication channels and stakeholder involvement over technical solutions demonstrates that community members value participatory processes and information transparency above specialized methodologies or tools. This emphasis on human factors aligns with contemporary infrastructure development approaches that recognize the social dimensions of project success alongside technical execution.

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