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Supervision of Road and Bridge Maintenance by the Department of Water Resources, Highways, and Construction Development of Deli Serdang Regency

Khairani Zahra[1], Februati Trimurni[2]
[1] Universitas Sumatera Utara
[2] Universitas Sumatera Utara

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ABSTRACT

The Water Resources, Highways, and Construction Agency, established in 2022 in Deli Serdang Regency, oversees road and bridge maintenance, succeeding the Public Works and Spatial Planning Agency. This study evaluates the highways sector's performance and public satisfaction using a descriptive qualitative approach. Data were collected through interviews, observations, documentation, and literature reviews, analyzed via method and data triangulation. Findings reveal that supervision involves setting standards, measurements, comparisons, and corrective actions. Standards focus on highway construction performance for road and bridge maintenance. Measurement includes investigation surveys, result reports, rehabilitation activities, progress reports, work calculations, and ratification. Comparisons assess performance against designs, with corrective actions addressing discrepancies. Despite challenges, the road and bridge maintenance sub-coordination staff performed effectively, covering all sections in Deli Serdang Regency, demonstrating optimal service delivery.

Corresponding Author:

Name: Khairani Zahra
Institution: Universitas Sumatera Utara
Email: zkhairani393@gmail.com

1. INTRODUCTION

Road and bridge maintenance is a vital component in the development of regional infrastructure, particularly in Deli Serdang Regency, which has a large area and high population density. The Water Resources, Highways, and Construction Agency is the institution responsible for ensuring the functionality of road and bridge networks spread across 22 sub-districts. This agency was established to enhance the effectiveness of public services in the infrastructure sector [1].

However, the implementation of supervision over road and bridge maintenance still faces various challenges. Survey results indicate that public satisfaction levels are relatively low. There have also been protests from the community regarding the poor condition of roads, including in the administrative center of Lubuk Pakam. Despite this, the budget allocation for maintenance in 2023 reached Rp722.5 billion.

Therefore, this study was conducted to evaluate the implementation of supervision in road and bridge maintenance by the relevant agency.

Road and bridge maintenance involves the management of roads and bridges, encompassing prevention, maintenance, and repairs necessary to maintain the condition of roads so that they continue to function optimally in serving traffic, thereby achieving the designated service life [2].

Road damage in Deli Serdang Regency is widespread across various sub-districts and directly impacts community mobility and local economic activities. Based on direct observations conducted by the researcher, various forms of damage were identified, ranging from small cracks to large potholes that endanger road users' safety. Not only road sections but also several bridges, which are vital infrastructure, show signs of deteriorating quality.

The public satisfaction survey conducted throughout 2023, involving 1,127 respondents, can be seen in the following table [3].

Table 1. 2023 Public Satisfaction Survey Results

No.	Service Component	Public Satisfaction Survey Score	Category
1.	Road and Bridge Construction and Maintenance	79,22	Good
2.	Construction and Maintenance of Public Street Lighting (LPJU)	80,43	Good
3.	Use of Heavy Equipment Vehicles	85,03	Good
4.	Irrigation Construction and Maintenance	79,08	Good

Based on Table 1, road and bridge maintenance by the Deli Serdang Water Resources, Highways, and Construction Agency exhibits lower public satisfaction compared to other service sectors. Despite annual surveys, researchers observed persistent damage to roads and bridges in the field. This prompted an in-depth examination of the agency's performance in road and bridge maintenance, particularly from the public's perspective in 2024.

This study applies Robbins and Coulter's supervision theory, focusing on four core elements: standard-setting, measurement, comparison, and corrective action [4]. Through this framework, the research evaluates the implementation of oversight processes and their effects on public satisfaction and maintenance effectiveness.

2. LITERATURE REVIEW

2.1 Organizational Management

Organizational management is the process of formulating plans, organizing resources, controlling operations, and providing leadership to coordinate, supervise, and train organizational members to achieve collectively established goals [5]. The functions of organizational management include planning, organizing, directing, and controlling [6].

2.2 Supervision Concept

Supervision is the process of ensuring that organizational and managerial objectives are attained. It is a critical component of managerial tasks, encompassing the measurement and correction of the performance of supervised parties to ensure that goals and issued instructions are executed efficiently and seamlessly [7]. The concept of supervision consists of four key aspects: establishing standards, measuring performance, comparing results, and implementing corrective actions [4].

2.3 Road and Bridge Maintenance

Roads must meet several criteria, as outlined below [8]: (1) roads should provide access for users and surrounding structures; (2) roads serve as connectors between regions; (3) roads are designed to facilitate the movement of

people and goods. Bridges, as vital transportation infrastructure, connect regions and road segments within an area. Their critical role necessitates effective management, particularly in budgeting for maintenance, repairs, and replacements throughout their lifecycle [9]. Maintenance involves sequential tasks to preserve or restore existing facilities to meet functional and quality standards [10]. Additionally, maintenance encompasses all activities required to keep roads in good condition or to repair them, thereby preventing rapid deterioration or quality decline immediately following construction [11]. Therefore, road and bridge maintenance entails preventive, routine, and corrective efforts to maintain optimal conditions. These activities, conducted by the Water Resources, Highways, and Construction Agency, ensure roads remain fully functional. Regular preservation is performed to maintain road quality and support smooth traffic flow for users.

2.4 Water Resources, Highways, and Construction Agency

The Highways Division, led by a Division Head, is responsible for leading and formulating technical policies, supporting the implementation of regional government affairs, fostering coordination, and executing programs and activities in the highways sector in accordance with applicable guidelines to ensure operational efficiency.

2.5 Concept Definition

Through concepts, researchers are expected to simplify their thinking by using a single term for several related events. The following are the concept definitions in this study:

a. **Organizational Management** is the process of planning, organizing, controlling, and leading the coordinated, supervised, and trained efforts of organization members to achieve predetermined goals.
b. **Supervisory Activities** are critical actions to identify errors or deviations within an organization. Supervision is also an important task and responsibility of a leader, enabling prompt corrective actions to ensure operations run effectively and efficiently again.
c. **Road and Bridge Maintenance** involves the management of roads and bridges, including prevention, maintenance, and repairs necessary to maintain their condition so that they continue to function optimally.

3. METHODS

3.1 Research Approach

This study employs a qualitative approach, focusing on the collection and analysis of descriptive data to understand the researched phenomenon from diverse perspectives. Data in this study are typically gathered through interviews, observations, document studies, or other methods that yield descriptive information.

3.2 Research Location

The research will be conducted at the Water Resources, Highways, and Construction Agency of Deli Serdang Regency, located at Jalan Mahoni No. 1, Regional Government Complex, Lubuk Pakam Sub-district, North Sumatra. Several issues were identified, including low public satisfaction with the optimization of road and bridge maintenance. The researchers selected this location due to their interest in analyzing organizational issues within public policy related to road and bridge maintenance, particularly as this agency has been operational for only two years.

3.3 Data Sources and Data Collection Techniques

The data collection techniques used in this study are as follows:

a. **Primary Data Collection Techniques**
   1) **Interviews**: Directed conversations and question-and-answer sessions aimed at

achieving specific objectives [12].

2) **Observation**: Observation involves seeking and collecting data and information through direct examination of the research object, assessing the situation in accordance with observation guidelines, and subsequently documenting or describing the actual conditions at the research site [13].

b. **Secondary Data Collection Techniques**

1) **Literature Review**: This technique involves collecting data from books, scholarly works, journals, and other literature relevant to the research problem.

2) **Documentation Study**: This technique collects data based on documentation guidelines. In this study, documentation includes photographs, images, and documents or records related to road and bridge maintenance at the Water Resources, Highways, and Construction Agency.

3.4 Selection of Informants

Informants in this study were selected using the purposive sampling technique. This method involves choosing data sources based on specific considerations [13], such as individuals deemed knowledgeable about the research expectations or those in authoritative positions, facilitating the researcher's exploration of the social situation under study. Staff members were selected as informants because they directly inspect field conditions to align field damage data with received reports. The following are the names of informants holding staff positions in the road and bridge supervision section.

Table 2. Informant Data

No.	Name	Gender	Occupation/Position
1.	Agussalim Lubis, S.T.	Male	Head of the Road Construction Division
2.	Nuriaman, S.T.	Male	Technical Activity Implementing Officer
3.	Rahmat Siddiq, S.T.	Male	Road and Bridge Maintenance Staf
4.	Achmad Syetiawan Arda Koto, S.T.	Male	Road and Bridge Maintenance Staf
5.	Dina Mutia	Female	Administrator

Source: Processed by Researchers, 2024

3.5 Data Analysis Techniques

Data analysis techniques refer to methods used to systematically process and analyze data to obtain meaningful information. In this study, data analysis is conducted qualitatively, utilizing data obtained through observation, interviews, and documentation.

3.6 Data Validity Techniques

Triangulation in qualitative research is defined as the process of cross-verifying data from various sources, using multiple methods and different time points. Thus, triangulation encompasses source triangulation, data collection technique triangulation, and time triangulation. Triangulation can also be performed by cross-checking research findings with other research teams assigned to collect data.

In this study, the triangulation methods employed by the researchers are as follows:

a. **Method Triangulation**, which involves conducting interviews with multiple informants to obtain more accurate information.

b. **Data Triangulation**, which entails collecting data from various sources, such as documents, archives, and

photographs.

This combination of triangulation is carried out concurrently with field activities, ensuring that the collected data can support robust conclusions.

4. RESULTS AND DISCUSSION

4.1 Results

The Water Resources, Highways, and Construction Agency, established in 2022, was previously known as the Public Works and Spatial Planning Agency (PUPR) [1].

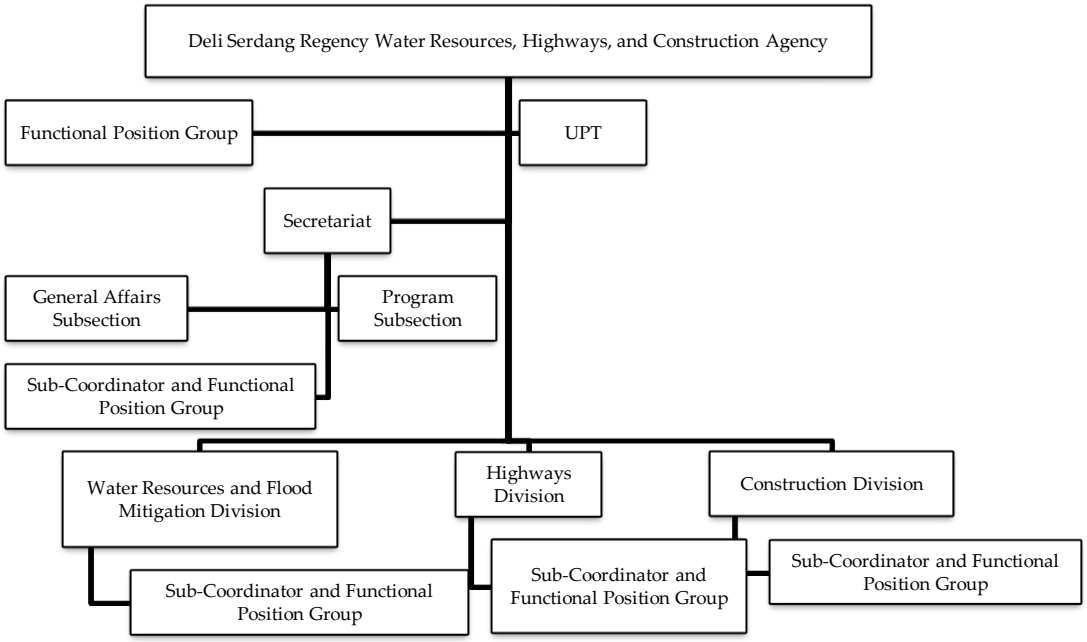

Figure 1. Organizational Structure of the Deli Serdang Regency Water Resources, Highways, and Construction Agency

a. Standard Setting:

The performance standards implemented by the Water Resources, Highways, and Construction Agency are based on the BerAKHLAK principle (Service-Oriented, Accountable, Competent, Harmonious, Loyal, Adaptive, Collaborative), aiming to ensure that all agency personnel work responsibly, transparently, and professionally. The application of this principle emphasizes not only achieving outcomes but also the work process, which involves delivering optimal public services and maintaining accountability in resource utilization.

In the context of road and bridge maintenance, performance standards are established by considering several factors, such as outcomes from development planning deliberations (Musrenbang) involving various stakeholders, including local government and the community. Additionally, the key proposals (POKIR) from the Regional House of Representatives (DPRD), reflecting community aspirations, serve as a basis for prioritizing maintenance activities. Equally important, requests submitted by local villages are also taken into account to ensure that maintenance needs at the village level are addressed.

Based on these inputs, standards for routine or periodic road and bridge maintenance are set, aligned with the urgency level and the existing condition of the infrastructure.

b. Measurement:

Measurement is conducted by a team comprising civil servants

(PNS) and contract workers responsible for ensuring that maintenance activities align with the established plans. This performance measurement is critical to assessing the extent to which maintenance efforts have achieved their predetermined objectives. It includes various aspects, such as physical inspections of road and bridge conditions to identify damage or wear requiring immediate repair, as well as evaluations of the effectiveness of the applied maintenance methods. These measurements are performed periodically to ensure that the entire maintenance process remains on track and adheres to agreed standards.

Moreover, performance measurement extends beyond physical outcomes to include evaluations of budget utilization. This ensures that funds allocated for road and bridge maintenance are used efficiently, with no deviations or wastage. Accurate and detailed measurement is vital to fostering transparency and accountability in managing infrastructure maintenance projects.

c. **Comparison**:

The comparison stage involves assessing actual outcomes against established standards and the Regional Medium-Term Development Plan (RPJMD), where deviations are still observed. This stage is crucial to ensure that every maintenance activity is accountable and aligns with the allocated budget and timeline. The process also allows for the detection of discrepancies between plans and outcomes, providing a basis for adjustments in subsequent maintenance activities. If inconsistencies are found, corrective actions must be promptly implemented to maintain infrastructure quality.

d. **Corrective Actions**:

Corrective actions involve quarterly evaluations and improvements based on reports and community feedback. The primary responsibility for assessing the quality of maintenance outcomes lies with the Water Resources, Highways, and Construction Agency. The agency has the authority to conduct field inspections, clarify completed work, and provide recommendations for improvements if necessary. Additionally, oversight from external institutions, such as the Supreme Audit Agency (BPK), ensures that maintenance activities comply with standards and are free from irregularities. At the beginning of each year, the BPK, in collaboration with the Deli Serdang Inspectorate, conducts field inspections to evaluate the quality of maintained roads and bridges.

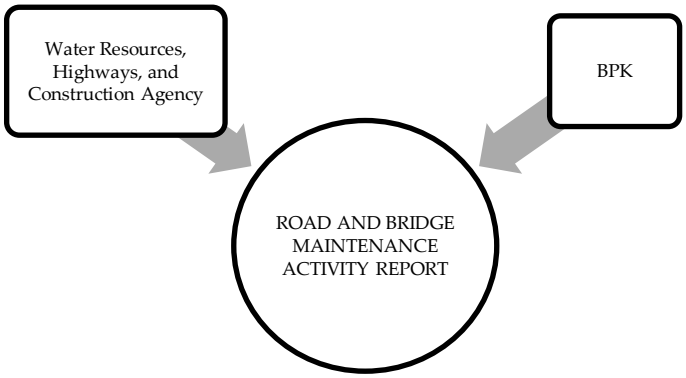

Figure 2. Person Responsible for Supervising Road and Bridge Maintenance Activities

These inspections aim to verify that maintenance meets government-established quality standards and that allocated budgets are used efficiently and appropriately.

4.2 Discussion

Supervision activities for road and bridge maintenance are carried out by teams assigned to specific Technical Implementation Unit (UPTD) locations. Challenges encountered during maintenance include rugged and difficult-to-access terrains and heavy traffic flow, which complicates road closures.

Factors contributing to respondents' dissatisfaction with the performance of the Deli Serdang Water Resources, Highways, and Construction Agency in road and bridge maintenance include recurring damage to previously repaired roads or bridges. The durability of roads is affected by factors such as overloaded vehicles and water pooling, while bridge longevity is impacted by overflowing rivers, flooding, or driver negligence.

Despite comprising only sixteen members, the road and bridge maintenance sub-coordination team has performed optimally in covering all road and bridge segments in Deli Serdang Regency.

5. CONCLUSION

Performance standards for infrastructure maintenance are based on the BerAKHLAK principle, emphasizing outcomes, work processes, public service, and resource accountability. These standards are established through inputs from Musrenbang, DPRD POKIR, and village requests, with maintenance conducted routinely or periodically based on urgency and infrastructure conditions. Performance measurement and evaluation are carried out by a sub-coordinator team of civil servants and contract workers, involving physical inspections for damage or wear and assessments of maintenance method.

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BIOGRAPHIES OF AUTHORS

	**Khairani Zahra** Bachelor's degree student majoring in Public Administration at the Faculty of Social and Political Sciences, University of North Sumatera. Resides in North Sumatra. Email: zkhairani393@gmail.com
	**Februati Trimurni** Works as a lecturer in the Undergraduate Program of Public Administration at the University of North Sumatera. Email: februati@usu.ac.i