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SOCIO-ECONOMIC IMPACT ANALYSIS OF DRAINAGE DEVELOPMENT: A CASE STUDY ON JAMIN GINTING STREET, TITI RANTAI SUBDISTRICT

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ABSTRACT

This study examines the socio-economic impact of drainage development on Jalan Jamin Ginting, Titi Rante Village. Improperly planned or managed drainage projects can disrupt local livelihoods, employment opportunities, social interactions, and environmental conditions, negatively affecting the surrounding community. Using a qualitative descriptive approach, data was collected through interviews, observation, documentation, and literature study. The findings reveal that the drainage development has primarily had negative impacts on the community, including disruptions to livelihoods and social activities, as well as inadequate regulations, unqualified human resources, lack of institutional synergy, financial mismanagement, and outdated technology, all of which have hindered timely and effective implementation.

1. INTRODUCTION

The construction of drainage systems, which can be defined as sets of aquatic-based infrastructure built around the mitigation and reallocation of excess water (Suripin, 2004), in Jamin Ginting, Titi Rantai Village, involves various considerations, particularly social and economic aspects. This development is carried out in stages because adequate infrastructure is a prerequisite for all social and economic activities, especially in the context of cities (Salim, 1997). The social aspect relates to elements of social interaction and the relationship between humans and their environment. A significant issue in the social aspect is the lack of public awareness about maintaining cleanliness in drainage areas, such as the habit of dumping waste into drainage channels.

The construction has caused mixed reactions among the local community. Residents living near the construction site have raised concerns about the slow progress of the project. While they support the drainage construction, they also complain about its delays. Additionally, businesses located along Jamin Ginting Street have reported disruptions caused by the construction, affecting their operations. This study aims to analyze the social and economic impacts of drainage construction on Jamin Ginting Street, Medan Baru, Medan City, North Sumatra.

The Indonesian Ministry of Public Works Regulation No. 12 of 2014 on Urban Drainage Systems is a crucial document regulating the implementation of urban drainage systems in Indonesia. It ensures that drainage systems are developed and managed effectively, efficiently, and sustainably to reduce flooding, improve water quality, and support urban environmental health and comfort, which are crucial parts in all city-planning (Butler, D. & Davies, J.W, 2011). The regulation emphasizes principles such as safety, fairness, sustainability, balance, and community participation. It highlights the importance of integrating technical, environmental, and social considerations in drainage infrastructure development.

However, in practice, drainage construction in many cities often deviates from the ideal planning and implementation outlined in the regulation. Although the primary goal is to reduce flooding, improve the environment, and promote public health, the construction process frequently results in negative impacts, especially on the community's economic activities and social life.

For example, road excavations or restricted access during construction can disrupt businesses and trade. Customers may find it challenging to access shops, deliveries may be delayed, and business revenues may decline. The increased dust and pollution during construction also impact public health. Furthermore, poorly designed drainage systems can lead to stagnant water, creating breeding grounds for disease vectors. Social conflicts may also arise when project execution overlooks community rights, such as compensation and public input.

Preliminary observations and interviews conducted before this study revealed several issues. The local community has been significantly affected by the construction, from property damage they must repair at their own expense to disrupted social activities due to restricted access. Many residents question why the drainage project is being implemented in their area, as they have never experienced flooding along Jamin Ginting Street.

Economically, local businesses have suffered. The restricted access has deterred customers from stopping by, leading to decreased sales and, in some cases, permanent

business closures. For example, Biwana Restaurant, located near PT PAS Station at Jamin Ginting No. 599, had to shut down due to declining revenue during the construction period. Many residents are unaware of their rights to compensation for damages caused by the project, highlighting a lack of public access to information about the planning and execution of the drainage construction.

This problem is not unique to Titi Rantai but is a common issue in many Indonesian cities, particularly for residents and business owners along main roads affected by drainage projects. As part of understanding the local governments and construction, contractors must develop policies and strategies to mitigate the negative impacts of such projects. This could include designing project strategies that minimize disruptions to community activities.

This study builds upon numerous previous researches efforts as a comparative foundation and to establish the originality of the research, including:

1. **Khairunnisa (2019)**: This study examined the implementation of drainage construction programs to reduce flooding in Medan City, using Van Meter and Van Horn's theory. The findings showed that the program aligned with policy standards but was not optimal in addressing flooding due to the need for multi-agency collaboration. While both studies address drainage construction, this research focuses on its social and economic impacts, while Khairunnisa's work emphasized program implementation.
2. **Nova Wulandari (2020)**: Wulandari's research analyzed the management of drainage systems in Pekanbaru City, specifically the drainage on Saleh Abbas Street. The findings indicated that drainage management was ineffective due to unclear responsibilities and a lack of specialized programs. While the previous study focused on system management, this research examines the broader social and economic impacts.
3. **Dwi Rizky Siregar (2023)**: This study evaluated the social and economic impacts of drainage construction in Padang Bulan, Medan City. It found that drainage projects effectively reduced flooding but also affected the local economy. The current research aligns with Siregar's focus on impacts but narrows its scope to Jamin Ginting Street and emphasizes the experiences of local businesses and residents.

These studies highlight the importance of well-planned drainage systems for urban development. The Medan City Government and the Department of Water Resources and Construction have initiated several drainage projects, including one on Jamin Ginting Street, to improve drainage systems and enhance community welfare. However, instead of benefiting the community, the project has caused more harm, such as economic disruptions and restricted social access.

Therefore, this study seeks to analyze the social and economic impacts of drainage construction on the surrounding community, focusing on the Jamin Ginting Street project in Titi Rantai Village. The research aims to provide insights into the challenges and propose solutions to minimize adverse effects and improve future urban infrastructure projects.

2. METHODS

The research method in this study uses a qualitative method with data collection techniques through observation, interviews, and documentation obtained from predetermined research informants. This qualitative research uses a descriptive approach. The descriptive approach used in this research is to describe the problems or phenomena at the time the research was conducted, based on the facts in the field and discussed systematically and in depth.

The research will be conducted at the drainage construction project site on Jalan Jamin Ginting, Titi Rantai Village, Medan Baru District, North Sumatra. This location was selected because it is one of the areas most affected by the project, as highlighted by media coverage. The impact on the Titi Rantai Village community aligns with the research problem, making it an ideal site for this study. The surrounding community is expected to provide valuable insights and data to support the research objectives.

Data reduction, data presentation, and data verification are steps taken in this qualitative research. Data obtained in the field can be extensive, so it will be carefully recorded, summarized, and focused on essential aspects to identify themes and patterns. This process simplifies complex and abundant data, making it easier for researchers to plan subsequent data collection. Once reduced, the data is then presented in concise formats such as summaries of interviews, tables, or categorical relationships. Finally, conclusions are drawn and verified.

3. RESULTS AND DISCUSSION

3.1 Existing Conditions

Titi Rantai is one of six administrative villages in the Medan Baru Subdistrict, located in the city of Medan, North Sumatra Province, Indonesia. Situated in the Padang Bulan area, Titi Rantai is in close proximity to the University of Sumatera Utara, making it a popular residential area for university students. The village is characterized by its integration into the complex urban environment of Medan, encompassing a diverse range of economic and social activities. Notably, Titi Rantai is traversed by Jamin Ginting Street, a major arterial road that connects Medan Baru to other key subdistricts, including Medan Selayang, Medan Johor, and Medan Tuntungan. This strategic location underscores the importance of Titi Rantai within the broader urban and economic framework of the city.

3.1.1 Social Conditions

According to data from the Titi Rantai administrative village, the population is distributed across 10 neighborhoods, totaling 7,806 residents, comprising 3,194 males and 3,918 females. A comparison of population data from 2017 to 2022 indicates a decline in the number of residents in Titi Rantai. Meanwhile, Medan Baru Subdistrict, encompassing six administrative villages—Babura, Padang Bulan, Darat, Merdeka, Titi Rantai, and Petisah Hulu—has a total population of 40,642, with a population density of 7,571 people per square kilometer.

The economy of Medan Baru Subdistrict operates efficiently, with goods and services readily available in local markets. The subdistrict features a variety of economic hubs, including 12 supermarkets, 1 mall/plaza, 109 shops, and 2 traditional markets, all contributing to its economic activities. Medan Baru also offers tourism-related amenities, such as hotels, karaoke venues, and billiard centers, further supporting the subdistrict's economic and social vibrancy.

The population of Medan Baru Subdistrict is composed of individuals from various religious backgrounds, including Islam, Protestantism, Catholicism, Hinduism, and Buddhism. Religious life and devotion to God Almighty continue to flourish, fostering harmonious coexistence among different faiths. This interfaith harmony strengthens the unity and solidarity of the community, reinforcing national cohesion. The subdistrict is home to several places of worship, including mosques, churches, prayer houses, and temples.

Places of worship serve as spaces for the community to pray and practice their faith. Medan Baru Subdistrict has a significant number of religious buildings, dominated by 18 churches. This is followed by 14 mosques, 18 prayer houses (langgar), and 2 temples, reflecting the diverse religious composition of the community.

In the field of education, Medan Baru Subdistrict is recognized as an educational hub. Education is a cultural process aimed at enhancing human dignity and worth. It is a lifelong endeavor carried out within the family, schools, and the community, making it a shared responsibility among these entities. The subdistrict is a student residential area, as it hosts nationally renowned higher education institutions such as the University of North Sumatra, Darma Agung University, and several academies.

The educational infrastructure in Medan Baru Subdistrict has shown significant development, with a total of 83 schools. This ensures a smooth progression of education for future generations, starting from basic education (kindergarten and elementary school) to secondary education (junior and senior high school) and higher education (universities). In the healthcare sector, the subdistrict is equipped with four hospitals and one public health center (Puskesmas), ensuring access to essential medical services for the community.

3.1.2 Project Profile of Drainage Construction on Jamin Ginting Street, Titi Rantai Subdistrict

The drainage construction project along Jamin Ginting Street in Titi Rantai Subdistrict, Medan Baru District, Medan City, North Sumatra, is a large-scale initiative aimed at enhancing the drainage system. The project, funded by the 2023 Medan City Regional Budget (APBD), has an allocated budget exceeding IDR 6 billion and is being executed by PT Kreasibeton Nusapersada. The project contract, registered under Contract Number: 005/SP/6.19/APBD/2023, was signed on May 22, 2023, with a value of IDR 6,884,908,000. The project was initially scheduled for completion by December 2023; however, as of early 2024, construction remains incomplete.

The drainage system covers approximately 1,200 meters along Jamin Ginting Street, spanning from Bunga Cempaka Street to Harmonika Street and vice versa. The work involves 22 personnel from PT Kreasibeton Nusapersada and employs heavy equipment, such as excavators, tractors, cranes, and U-Ditch transport trucks. The project utilizes U-Ditch precast concrete, shaped like a “U,” reinforced with wire mesh and made from high-quality concrete. U-Ditch dimensions are customized to accommodate specific water flow capacities and can be installed with or without covers. Covers are categorized as heavy-duty (for areas traversed by heavy vehicles) or light-duty (for sidewalks or pedestrian zones).

U-Ditch precast concrete offers several advantages:

1. Guaranteed quality due to factory fabrication.
2. High-strength concrete ensures compact and efficient designs.
3. Faster installation minimizes traffic disruption during construction.
4. Smooth and uniform finishes enhance aesthetics and enable immediate utilization.

The installation process involves excavating the site to the desired channel dimensions, laying a sand base and concrete foundation for stability, and placing U-Ditch segments using cranes or other heavy machinery. Segments are connected using joint plates or male-female joints, sealed with cement mortar. The final steps include backfilling and compacting soil around the construction site.

The project is regulated under the Ministry of Public Works and Housing Regulation No. 12 of 2014 on Urban Drainage System Management, which mandates environmentally friendly practices. However, there are no specific municipal or mayoral regulations providing detailed implementation guidelines. Instead, the regulations only cover the formation of operational units, as outlined in Medan Mayor Regulation No. 8 of 2023 concerning the Establishment of Technical Operational Units for Road and Drainage Maintenance under the Public Works Department. This regulation primarily defines the duties and functions of the implementing units.

Institutional collaboration for this project involves local government entities, including Medan Baru District, Titi Rantai Subdistrict, and the Medan West Water Resources, Roads, and Construction Office. The project aligns with the city’s collaborative "Medan Berkah" development initiative.

1.2 Data Presentation and Analysis

3.2.1 Analysis of the Socio-Economic Impact of Drainage Development on Jalan Jamin Ginting, Titi Rantai Subdistrict

Socio-Economic Impact Analysis of Development is an evaluative research effort that is careful after policy choices and steps are chosen to achieve the goals (course of action) that have been set. In analyzing specific policies (specific policy areas) such as infrastructure policies, an analyst certainly cannot be separated from various socio-economic problems. In this study, the researcher used the Socio-Economic Impact Analysis Model of Development Policy according to Jumiati (2016) where there are 4 indicators regarding the socio-economic impact of a development policy, namely; changes in livelihoods, employment opportunities, social interaction, and environmental conditions.

1.2.1.1 Changes in Livelihood

Livelihoods or occupations serve as essential pillars for fulfilling the economic and basic needs of families. By engaging in income-generating work, families can sustain

their daily lives and meet economic demands. Livelihoods are closely linked to income, a fundamental factor in supporting the continuity of community life. Without a stable source of income, individuals and families struggle to meet their basic needs.

The drainage construction project along Jamin Ginting Street, Titi Rantai Subdistrict, has significantly influenced the community's ways of working, particularly in the informal business sector. One of the most affected sectors is local micro-enterprises. The ongoing construction has led to a sharp decline in sales and revenue among businesses located near the project site. This impact is confirmed by key community informants, such as Mrs. Yusniar, who explained that some of her neighbors in Jamin Ginting Pasar 1 have been forced to shut down their businesses due to the economic strain caused by the project. She stated:

"I am deeply disappointed with this construction project. Why? Because I have been severely affected, especially as a trader. I could not operate my business for three months. It's not just me; one of my neighbors who runs a stall at Pasar 1 had to permanently close their business due to this project. The construction process has taken too long, and even waiting for post-construction repairs takes months."

This information was further corroborated by a project supervisor directly involved in the construction on Jamin Ginting Street, who chose to remain anonymous. The supervisor remarked:

"Indeed, some residents have complained about declining sales and income. They expressed dissatisfaction with the delays and requested that the area be restored to its original state. However, for us to act on these requests, we must first send a formal letter to our superiors at the Department of Public Works (PU). If the PU does not approve, they must issue a letter to the subdistrict head, who then informs the village head. The village head must then notify the community through the local neighborhood leader, as they are the ones who know the residents. We, as workers, are outsiders."

From the findings and interviews above, it can be concluded that the drainage construction project has had a negative economic impact on the community's livelihoods. The project has caused a drastic decline in business revenues, leading to permanent closures of some enterprises. As a result, affected individuals have been forced to change their means of livelihood, highlighting the significant socioeconomic consequences of the construction initiative.

3.2.1.2 Changes in Livelihood

Employment opportunities refer to the number of people who can be absorbed into the workforce by a company or institution. They represent the availability of jobs resulting from economic activities, encompassing both existing employment and potential participation in economic development.

The drainage construction project along Jamin Ginting Street, Titi Rantai Subdistrict, Medan Baru District, has had a significant impact on employment opportunities in the surrounding area. This impact is closely related to the economic disruption experienced by local communities. The ongoing construction activities, coupled with decreased economic activity in the area, have led to reduced demand for additional labor. Businesses that are struggling with declining sales or service revenue are unable to retain existing workers, let alone hire new ones.

For example, a printing shop had to reduce its workforce due to a drop in service demand. Similarly, a local restaurant was forced to close its doors and lay off all employees because of a drastic decline in revenue, rendering the business unable to pay wages. This situation is exemplified by the testimony of Mrs. Uni, a local food vendor and key informant:

"Because the construction has taken so long, I can no longer afford to pay my employees. I used to have three workers who helped with cooking and serving customers, but sales have been slow. Revenue has fallen to just one-fifth of what it used to be. I can't even cover rent or operational costs next month. I've used up all my savings over the past four months, and I even had to spend my own money—2.5 million rupiah—to fix the bridge connecting my shop to the road after the construction left it in disrepair."

A similar experience was shared by Mr. Edo Waruwu, a photocopy shop owner along Jamin Ginting Street, who explained:

"Orders have been extremely slow lately. Our regular customers, mostly USU (University of Sumatera Utara) students, no longer come because of the construction. Parking is difficult due to piles of soil in front of the shop, and accessing the entrance is challenging because some pathways are incomplete. I've had to cut down my workforce to just one employee for deliveries. Before this, I had five staff members. It's impossible to sustain four employees with the current lack of orders."

Additionally, Mr. Daniel Sihombing, the neighborhood head (Kepling) of Environment 7 in Titi Rantai Subdistrict and another key informant, acknowledged the economic challenges brought about by the construction:

"The economic impact is undeniable. The businesses along the roadside have been disrupted due to limited access, causing customers to turn to other locations. This, of course, affects their employees. If a shop closes, people lose their jobs. Unfortunately, I cannot offer them jobs on this project because the Department of Public Works has already assigned a 22-person team for construction. My role is limited to monitoring the project."

From these interviews, it is evident that the drainage construction project has negatively affected employment opportunities for the local community. Business disruptions caused by the construction have led to layoffs, reduced workforce absorption, and the permanent closure of some enterprises. This underscores the significant socioeconomic challenges faced by the community as a result of the project.

3.2.1.3 Social Interaction

In the context of analyzing the social impact of the drainage construction project, social interaction becomes crucial as it influences various aspects of community life. First, the project can alter the communication patterns within the community. Second, neighborly relations may change as a result of the project, potentially fostering stronger collaboration in the maintenance of the drainage system, but also triggering conflicts if the construction process deviates

from agreed standards. Third, the level of community participation in the planning and execution of the project plays a key role in determining the community's response, whether through adaptation or through negative outcomes such as conflict.

In the case of the drainage project along Jamin Ginting Street, Titi Rantai Subdistrict, Medan Baru District, the social interaction dynamics are unique. Unlike other communities where drainage projects often provoke public outrage and lead to demonstrations against the government—such as the protests in Medan Sunggal by residents of Asoka Street—residents of Titi Rantai have not engaged in such actions. Social interaction in the area, particularly among residents living along Jamin Ginting Street, remains limited to occasional greetings or business-related visits. One resident from Jamin Ginting Street, Titi Rantai Subdistrict, shared:

"Since I've been living here, and up until now, the social relationships haven't been significantly affected. It's the same as before, because the culture here is not very close-knit; people are mostly focused on their own lives. If someone comes to my shop, I serve them, and I'll attend invitations, but it's impossible to host an event here, especially during or after the construction period. Even just sitting outside was difficult."

This sentiment was supported by Mr. Rian Siahaan, who stated:

"Here, we are more united on social media than in direct neighborly interactions. During the construction, we didn't organize a demonstration, but we went viral on social media to highlight issues with the drainage work that didn't meet the required standards. Some sections of our road still had exposed drainages, and others were damaged. We shared these issues online so they could go viral. Although initially ignored, the government eventually addressed the issues, but only after we made official complaints to the authorities."

A similar perspective was shared by Mr. Rudy Chairuriza Tanjung, Chairman of the North Sumatra Regional Management Board of the JPKP (Network for Development Policy Assistance), who stated:

"At first, the media reported on the construction project, but the Department of Public Works (PU) did not respond. However, after we filed an official complaint, PU took action and carried out repairs. In reality, the repairs were not done directly by PU, but by the company responsible for the construction. After we reported the issues to the prosecutor's office, the problems were addressed."

From the interviews and explanations above, it can be concluded that the drainage construction project has had minimal impact on social interactions in the community. This is evident from the fact that residents engage more actively on social media than in direct face-to-face interactions. However, the project has still disrupted social interactions in cases where individuals wanted to organize events, as the construction made it difficult to hold gatherings due to the surrounding conditions. This situation has had a negative impact on the social cohesion of the community.

3.2.1.4 Environmental Conditions

The environmental condition in the context of urban drainage development refers to the surrounding natural state that changes due to the construction of drainage systems. Several impacts that the community experiences as a result of the drainage development include the loss of valuable land or facilities, environmental disturbances, and general discomfort caused by the construction process. The concept of long-term environmentally-conscious development refers to projects that consider environmental preservation and human ecology, such as air quality and the quality of the drainage systems themselves (Fuad & Nasrudin, 2022).

The drainage construction project in Jamin Ginting Street, Titi Rantai Subdistrict, has inevitably impacted the local environmental condition. The initial goal of the drainage project was to address flooding issues. A project supervisor involved in the construction explained:

"This will be a new drainage system with larger dimensions, 140 x 120 x 100 cm, so there shouldn't be any flooding anymore. But if flooding still happens, it's due to the community's behavior, as they refuse to maintain the cleanliness of the environment."

A similar view was shared by Mr. Daniel Sihombing, the Head of Environment 7 Titi Rantai Subdistrict and a key informant for this study, who stated:

"I think the drainage system is good now. It's up to the community to maintain the cleanliness of the environment so that this development is not in vain. It would be even better if we work together to clean up the Deli River to widen its capacity, allowing it to accommodate more water."

However, this view was contradicted by Ms. Yusniar, a local resident, who shared:

"Before the construction, there was never any major flooding, only a few houses experienced it. But after the project began, the environmental condition worsened because the construction wasn't done in stages. One section was demolished, and then another, which caused a lot of dust. Ideally, they should have tackled one section at a time to avoid piling up debris. There was also the issue of damage caused during construction and the slow repairs. Even when the work was completed, the environmental impact didn't seem significantly improved. It felt the same as before, and the economic impact was more noticeable, in my opinion."

From the explanations and interviews above, it can be concluded that the drainage construction project along Jamin Ginting Street, Titi Rantai Subdistrict, did not have a significant impact on the environmental condition. The area had never experienced major flooding before the project, which suggests that the drainage system itself did not drastically change the environmental conditions. In fact, the negative impact was more heavily felt in the economic conditions of the community.

4. CONCLUSION

Based on the explanations and discussions presented by the researcher, it can be concluded that the socioeconomic impact of drainage construction (case study on Jamin Ginting Street, Titi Rantai Subdistrict) has not yet yielded positive outcomes for the local community. Issues such as changes in

livelihoods, employment opportunities, social interactions, and environmental conditions have not improved or contributed to the welfare of the surrounding population. Additionally, the lack of specific regulations providing clear guidelines for drainage construction, insufficient human resources to ensure timely project implementation, poor institutional synergy resulting in unresolved damages after project completion, inadequate financial realization leading to indications of budget mismanagement, and outdated technology prolonging construction processes have collectively hindered the project's ability to deliver its intended benefits.

To the Medan City Government, Implementers of the Drainage Construction in Medan City, from the Department of Water Resources, Public Works, and Construction of Medan City, we urge the government to give further attention to the implementation of the construction carried out by the contractor PT and to enhance synergy with the relevant departments. This will help minimize the losses experienced by the community as a result of the drainage project in the future.

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