

Analysis of Socio-Economic Activity Changes in the Urban Fringe Area of Tuntungan, Medan

Adi Sabar Ginting, Abdi Sugiarto

Abstract

The phenomenon of urban fringe areas has become an important issue in regional and urban planning studies in Indonesia. These areas function as transitional zones between dense urban centers and semi-rural areas that are still developing. This study aims to analyze the changes in socio-economic activities in the Tuntungan Urban Fringe Area, Medan, which is undergoing spatial and social transformation as a result of urbanization pressures. The research employed a SWOT analysis with a qualitative approach, involving field observations, community interviews, and secondary data from official institutions. The findings indicate that the Tuntungan area has experienced a shift in economic activities from the agricultural sector to small-scale trade and services, accompanied by increased daily mobility and diversification of income sources. The area's main strengths lie in its strategic geographic location and the adaptive potential of its human resources, while weaknesses include the dominance of the informal sector and weak local institutions. Development opportunities arise from the expansion of community-based economic activities; however, they are challenged by uncontrolled urbanization and the conversion of productive land. This study contributes to the development of sustainable regional planning strategies in urban fringe areas through a comprehensive understanding of the community's socio-economic dynamics.

Keywords: Urban Fringe, Socio-Economic Activities, Swot, Spatial Transformation

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Introduction

The development of urban fringe areas, or the transitional zones between urban and rural regions, has become a strategic issue in regional and urban planning studies in Indonesia. These areas function as transitional zones between densely populated urban areas and rural regions that still maintain agrarian characteristics. Urbanization pressures and the spatial expansion of cities have led to rapid social, economic, and spatial structural changes [1]. Medan City, as the largest metropolitan area outside Java, has experienced significant population growth, reaching 2.51 million people with an annual growth rate of 0.97%, while population density in the city core has exceeded 8,000 people per km² [1]. This situation has encouraged the expansion of activities toward the periphery, including the Medan Tuntungan District.

The Tuntungan Urban Fringe Area exhibits dynamic patterns of socio-economic transformation. According to data from BPS [2], the area has experienced increasing residential density and a shift in livelihoods from the agricultural sector to services and small-scale trade. High population mobility along the Letda Sujono corridor has made this area one of the most active economic routes in the southwestern part of Medan City [3]. This situation reflects the emergence of new interaction patterns between local communities and increasingly intense urbanization flows.

The socio-economic transformation occurring in this urban fringe area brings both opportunities and challenges. On one hand, the growth of economic activities creates new opportunities for communities to diversify income sources and improve their welfare. On the other hand, these changes exert pressure on land availability, increase land prices, cause traffic congestion, and reduce green open spaces. Moreover, the lack of local institutional preparedness in managing spatial changes and weak interregional coordination exacerbate the complexity of urban problems [4], [5].

Previous studies on Medan's urban fringe areas have primarily focused on spatial aspects and land-use change [4], [5], but few have specifically examined the socio-economic dimensions of communities in the Tuntungan area using a strategic analysis approach. Therefore, this study focuses on analyzing socio-economic activity changes in the Tuntungan Urban Fringe Area, Medan, by applying SWOT analysis to identify the strengths, weaknesses, opportunities, and threats faced by communities amidst ongoing territorial transformation.

This research is expected to provide deeper insights into the socio-economic characteristics of communities in urban fringe areas and to generate strategic recommendations for sustainable regional development. Consequently, the findings can serve as a scientific contribution to planning and managing transitional areas that are adaptive to urbanization pressures, while also supporting inclusive and competitive urban development.

Literature Review

The theoretical review serves as the conceptual foundation that explains the direction and basis of the research. In the context of this study, the theories employed focus on the dynamics of socio-economic activities in urban fringe areas, or transitional zones between urban and rural regions. Examining the urban fringe phenomenon is crucial because it reflects the complex interaction between social, economic, and spatial factors within the urbanization process [6]. Areas such as Tuntungan I and II in Medan Tuntungan District exhibit distinctive dynamics: increasing residential density, high population mobility, and increasingly diverse economic activities. Therefore, a strong theoretical understanding is needed to analyze the relationships between socio-economic variables, residential density, and population mobility, as well as how strengths, weaknesses, opportunities, and threats (SWOT) can be utilized to formulate sustainable management strategies for urban fringe areas.

1.1 The Concept of Urban Fringe and Socio-Economic Dynamics

Socio-economic activities in urban fringe areas reflect changes in spatial structure and community adaptation patterns in response to urbanization pressures. According to Soetomo (2023), these areas exhibit socio-economic transformations characterized by the emergence

of trade, service, and small business activities that replace traditional agrarian livelihoods [7]. This phenomenon aligns with the findings of Pohan, Milanie, and Nuraini [3], who state that Medan's peri-urban areas have experienced a significant increase in the informal sector, particularly in daily trading and transportation services. Therefore, analyzing socio-economic activity changes is essential to assess the balance between economic growth and the social quality of communities.

1.2 Residential Density and Changing Settlement Patterns

Residential density reflects spatial pressure resulting from population growth and land conversion. Sitompul, Nuraini, and Abdiyanto [4] note that Medan's suburban areas have experienced a 25% increase in density over the past five years, accompanied by land-use changes from agricultural to commercial functions.

In Tuntungan I and II, similar trends are observed through the emergence of new residential developments along the main transportation corridors. High population density affects the availability of public spaces, drives up land prices, and reduces environmental carrying capacity. In the context of urbanization theory, this condition illustrates a shift from spaces of production to spaces of consumption, where land functions not only as a place of residence but also as an economic asset [8].

1.3 Population Mobility and Regional Accessibility

Population mobility is a key indicator in understanding the integration between urban fringe areas and urban cores. Milanie and Nuraini [5] explain that improved accessibility due to road infrastructure development strengthens interregional economic linkages.

In Medan Tuntungan, connectivity to the city center through the Letda Sujono corridor has created a high daily commuting pattern. This phenomenon indicates that the urban fringe functions as an intermediation space—not merely a passive hinterland—but as a dynamic hub of social and economic exchange [9]. However, high mobility also places pressure on transportation systems and increases the demand for adequate public facilities.

1.4 SWOT Analysis in Regional Planning Studies

SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) is used to systematically understand the internal and external conditions of a region. According to Rangkuti (2022), SWOT can integrate various social, economic, and environmental factors into a single strategic framework for regional development [10].

In the context of this research, SWOT is applied to identify strengths such as local economic potential, weaknesses such as infrastructure limitations, opportunities related to regional integration, and threats in the form of urbanization pressures. This approach is relevant for formulating development strategies for the Tuntungan urban fringe area to balance growth and sustainability. Fringe Tuntungan to be able to balance growth and sustainability.

1.5 Previous Studies

Research on urban fringe areas in Medan City, particularly in Medan Tuntungan District, has been conducted using various approaches. Sitompul, Nuraini, and Abdiyanto [4] examined land-use changes in Medan's suburban areas and found that the conversion of agricultural land into residential areas has increased rapidly over the past five years. Meanwhile, Milanie and Nuraini [5] studied spatial structure transformation in Medan's urban fringe and concluded that linear development patterns along main transportation corridors are the dominant characteristic of these areas.

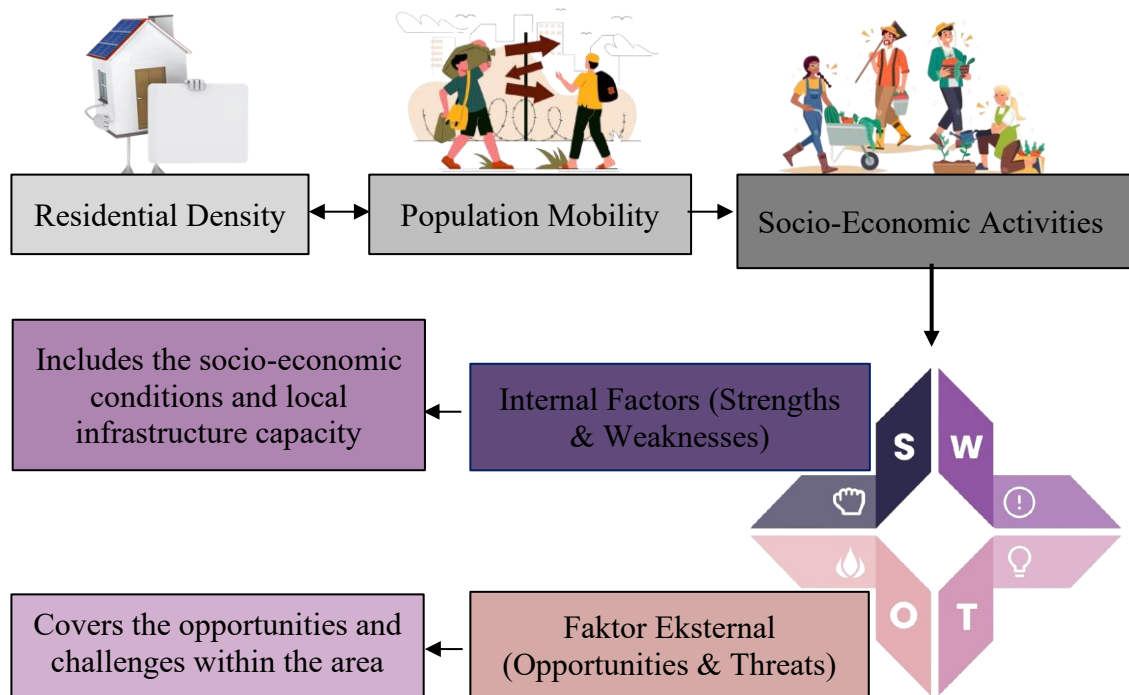
Furthermore, Pohan, Milanie, and Nuraini [3] highlighted the dynamics of economic activities in Medan's peri-urban areas, especially the growth of the informal sector driven by urbanization pressures. However, these studies have not specifically analyzed the socio-economic dimensions of communities in the Tuntungan urban fringe using a strategic

approach that comprehensively integrates internal and external factors. Therefore, this research offers a new contribution by mapping the socio-economic dynamics of the Tuntungan urban fringe area through SWOT analysis, enabling the identification of strengths, weaknesses, opportunities, and threats that influence the area's development direction.

1.6 Conceptual Framework

The Tuntungan urban fringe is characterized by intense social and economic interactions resulting from the expansion of activities from Medan's urban core. The development of socio-economic activities drives changes in residential density and increases population mobility. This reciprocal relationship creates a distinctive spatial dynamic, in which land-use changes, settlement patterns, and socio-economic structures interact and influence one another.

In the context of regional planning, a conceptual framework is required to systematically integrate internal and external aspects. This is illustrated in the following flow diagram:



Source: Author, 2025

Figure 1. Conceptual Framework of the Study

Conceptually, part A of the figure illustrates the relationships among variables, showing that the increase in socio-economic activities in urban fringe areas is inseparable from residential density and population mobility. These three elements form a complex pattern of interaction, where every social or spatial change has implications for the region's carrying capacity. Furthermore, part B of the figure demonstrates that through the SWOT approach, this study seeks to formulate development strategies based on local potential and the mitigation of urbanization pressures, enabling the Tuntungan area to develop sustainably.

Research Methodology

This study employs a descriptive qualitative approach aimed at gaining an in-depth understanding of the phenomenon of socio-economic activity changes among communities in the Tuntungan urban fringe area of Medan. This approach was chosen because it is considered the most suitable for describing social and economic dynamics contextually while taking into account the interaction between internal and external factors that shape the characteristics of the area [6], [7]. The study seeks to identify strengths, weaknesses, opportunities, and threats

affecting socio-economic development through the application of SWOT analysis as a strategic tool in regional planning [11].

The research location is situated in the urban fringe area of Medan Tuntungan District, which administratively forms the suburban zone of Medan City and borders Deli Serdang Regency [2]. This area has undergone rapid development due to the expansion of urban activities from Medan's city center. Such changes are reflected in the increasing conversion of land, the growth of new residential areas, and the shift of economic activities from the primary sector to services and trade [4], [5]. These conditions make the Tuntungan area representative for examining the socio-economic transition processes occurring in urban fringe regions.

Data collection was conducted using three main techniques: field observation, in-depth interviews, and document studies. Observations were carried out to directly observe the community's social and economic activities, including patterns of land use and interactions among economic actors. Interviews were conducted with community representatives, small business owners, and local government officials to gather insights regarding their perceptions and experiences of ongoing socio-economic changes. Secondary data were obtained from official publications of Statistics Indonesia (BPS), such as Medan Tuntungan District in Figures 2024 and Medan City in Figures 2023 [1], [2], as well as from academic literature on urban fringe areas and socio-economic transformations [3], [8], [9].

Data analysis was conducted using the SWOT approach to identify internal and external factors influencing socio-economic changes within the community. Internal factors include strengths and weaknesses derived from local socio-economic conditions, such as business structures, labor availability, education levels, and social network potential. External factors refer to opportunities and threats originating from outside the community, such as development policies, investment, infrastructure, and urbanization pressures from the city center [10], [11]. These four elements were organized into a SWOT matrix to provide a strategic overview of the area's development direction.

The analysis process involved three stages: (1) identifying relevant factors, (2) classifying them into SWOT elements, and (3) interpreting the results descriptively. The interpretation aims to understand how strengths and opportunities can be leveraged to promote socio-economic development, and how weaknesses and threats can be minimized through appropriate policies [6], [11]. The results of this analysis then serve as the foundation for formulating sustainable socio-economic development strategies suited to the characteristics of the Tuntungan urban fringe area.

To ensure data validity, triangulation of sources and methods was applied by comparing findings from observations, interviews, and secondary data to ensure consistency and reliability. The validity of results was further strengthened by comparing field data with previous studies on socio-economic transformation in peri-urban areas [3], [4], [8]. This step ensures that the interpretation is not subjective but grounded in strong empirical evidence.

Through the combination of a descriptive qualitative approach and SWOT analysis, this study aims to provide a comprehensive understanding of socio-economic activity changes in the Tuntungan urban fringe area. This approach also serves as a basis for formulating regional development strategies that are adaptive to urbanization pressures while enhancing local community welfare. Consequently, the findings can serve as valuable input for sustainable transitional area development policy planning in Medan City.

Results

The Tuntungan Urban Fringe Area represents a transitional zone between the center of Medan City and Deli Serdang Regency, which has undergone significant transformation over the past two decades. This area exhibits distinctive spatial and social transition characteristics, marked by the rapid development of new residential housing, the growth of commercial facilities, and the conversion of agricultural land into mixed residential areas [12].

Geographically, Medan Tuntungan occupies a strategic position along the southern corridor of Medan City, functioning as a gateway to the hinterland area. According to BPS data [2], the population has grown by an average of 2.1% per year between 2019 and 2024, with the most significant increase occurring among the productive-age population. This demographic shift has driven a growing demand for residential space and service-based economic activities.

From a socio-economic perspective, the local community has experienced a shift in livelihood from the agricultural sector to informal trade, transportation services, and household-based economic activities. This phenomenon aligns with McGee's [7] explanation of the development of *desakota* regions in Southeast Asia, where peri-urban areas function as transitional spaces that combine both rural and urban characteristics. Moreover, the Tuntungan area serves as a buffer zone for Medan City's economic activities, reflecting a pattern of functional integration between the urban core and peri-urban regions [13].

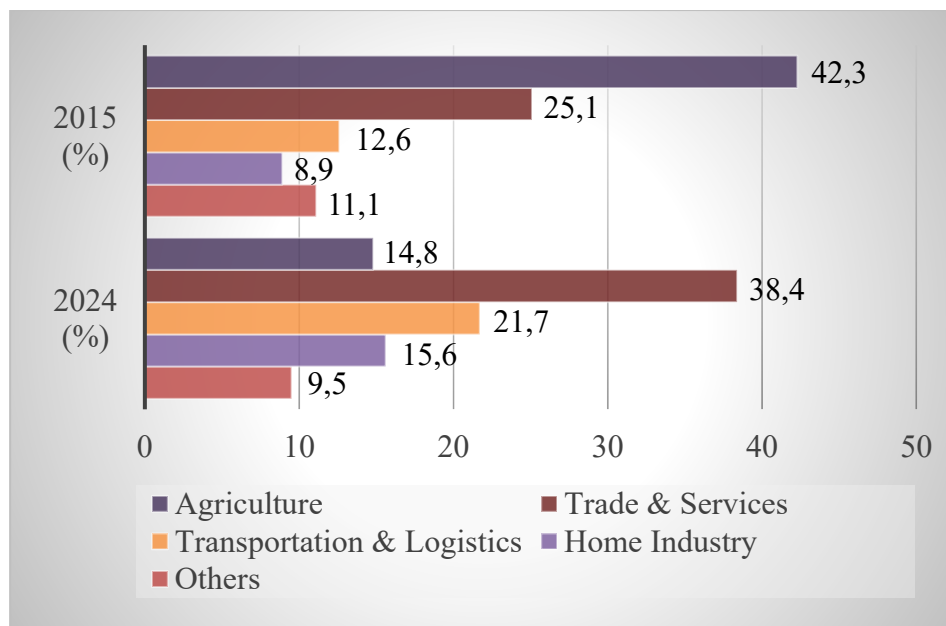
3.1 Results of the Analysis of Changes in Socio-Economic Activities

This analysis is based on field survey data, interviews, and BPS publications (2023–2024). The findings indicate that the transformation of economic activities in Tuntungan has occurred rapidly over the past ten years. The agricultural sector, which previously dominated, now accounts for less than 15% of the total workforce, replaced by the service, trade, and local transportation sectors [14].

Table 1. Changes in the Economic Activity Structure of the Tuntungan Urban Fringe Community (2015–2024)

Economic Sector	2015 (%)	2024 (%)	Change (%)
Agriculture	42.3	14.8	-27.5
Trade & Services	25.1	38.4	+13.3
Transportation & Logistics	12.6	21.7	+9.1
Household Industry	8.9	15.6	+6.7
Others	11.1	9.5	-1.6

Source: Processed by the author, 2025



Source: Processed by the author, 2025

Figure 2. Graph of Changes in the Economic Activity Structure of the Tuntungan Urban Fringe Community (2015–2024)

The table and figure above illustrate an intensive process of functional urbanization. The community has begun leveraging its proximity to Medan City as a new economic opportunity [15]. However, this increase in activity also exerts pressure on basic infrastructure such as local roads, sanitation, and drainage, which remain inadequate [16].

Furthermore, interview results reveal changes in social patterns, including increased daily commuting to the city center and weakening traditional social ties. This phenomenon aligns with Tacoli's [9] findings, which highlight shifts in village–city relationships in the context of urban fringe areas.

3.2 SWOT Analysis of Socio-Economic Activities in the Tuntungan Urban Fringe

The SWOT analysis was conducted to assess the socio-economic conditions of the community in the Tuntungan urban fringe by examining internal factors (strengths and weaknesses) and external factors (opportunities and threats). Based on observations, interviews, and secondary data, the area shows signs of structural transformation from an agrarian region to one dominated by services and small-scale trade. This shift has generated new dynamics, such as increased economic activity and land value, but also pressures on space and basic infrastructure.

Tuntungan's main strengths lie in its strategic geographic location as the southwestern gateway to Medan City and its strong transportation connectivity through the Letda Sujono corridor. The local population is adaptive to change, with growing service and trade activities supported by adequate educational and health facilities. However, weaknesses are still evident, including the dominance of the informal sector, low productivity, limited access to capital and training, and weak coordination among institutions. In addition, spatial planning policies are insufficiently integrated, hindering comprehensive management of area development.

In terms of opportunities, Medan City's development focus on border areas presents an important momentum for Tuntungan to grow as a new economic hub. The potential for creative economy initiatives and digitalization of public services can expand business access for the community. However, threats include uncontrolled urbanization, conversion of productive land, income inequality, and potential social conflicts due to population pressures without adequate infrastructure support.

Overall, the socio-economic dynamics in the Tuntungan urban fringe reflect a rapid but not fully controlled urbanization process. The following figure summarizes the results of the SWOT analysis:

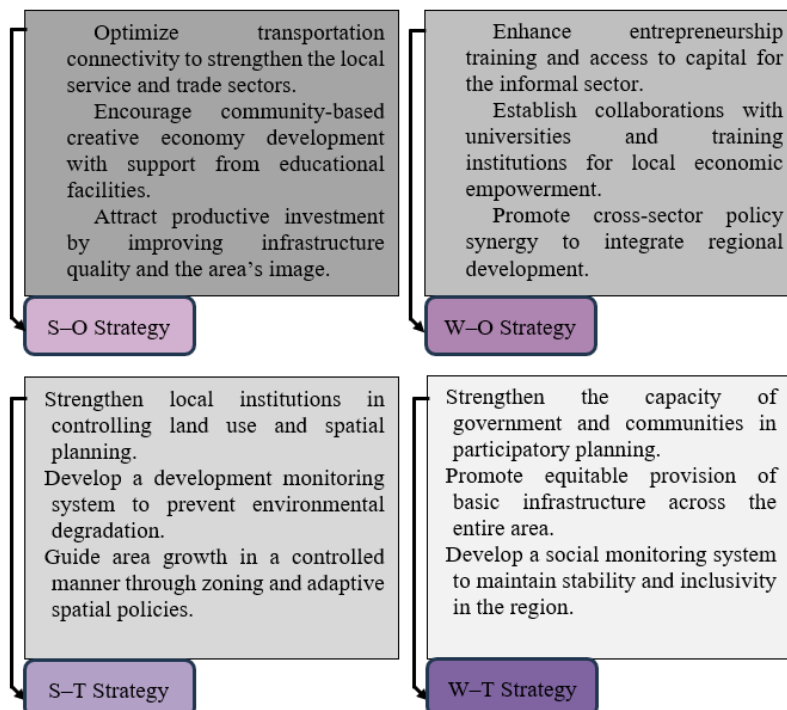
Table 2. SWOT Analysis of Socio-Economic Activities in the Tuntungan Urban Fringe

	Strengths	Weaknesses
Internal Factors	<ul style="list-style-type: none"> ● Strategic location in the southwestern corridor of Medan City with access to major transportation routes. ● Local economic growth supported by service activities and small-scale trade. ● Availability of relatively complete educational and health facilities. ● Community adaptability to socio-economic changes and innovations. 	<ul style="list-style-type: none"> ● Dominance of the informal sector with low productivity. ● Limited access to capital and skills training. ● Weak local institutions in regulating land use. ● Lack of policy integration between city government and local communities. ● Suboptimal environmental and spatial management.

	<ul style="list-style-type: none"> • Adequate basic infrastructure such as roads and utility networks. 	
External Factors	Opportunities <ul style="list-style-type: none"> • Supportive policies for the development of Medan City's border areas. • Growing potential for creative economy and community-based services. • Improved transportation connectivity and digitalization of public services. • Engagement of universities in research and community empowerment. • Rising land values that can encourage productive investment. 	Threats <ul style="list-style-type: none"> • Pressure from urbanization and high conversion of productive land. • Increasing population density without adequate infrastructure support. • Income inequality and emerging social gaps. • Potential conflicts over land use among community groups. • Environmental degradation due to uncontrolled development.

Source: Processed by the author, 2025

The visualization of the SWOT analysis results is also presented in the form of a conceptual diagram to clarify the relationships between the factors.



Source: Processed by the author, 2025

Figure 3. Conceptual Diagram Visualizing the Results of the SWOT Analysis

The SWOT analysis figure illustrates that the success of socio-economic development in the Tuntungan urban fringe depends on the ability to leverage existing strengths and opportunities while anticipating emerging weaknesses and threats. The synergy between

government, local communities, and economic actors is a key factor in ensuring inclusive and sustainable development. These findings form the basis for formulating development strategies that are adaptive to urbanization dynamics.

Changes in socio-economic activities in the Tuntungan urban fringe reflect distinctive spatial and functional transformations typical of urban transitional areas. Based on the SWOT analysis, the dynamics observed indicate a shift in the area's role from an agrarian suburban zone to an increasingly integrated part of Medan's urban system. This phenomenon aligns with Li and Zhang (2022) [12], who stated that peri-urban areas in Southeast Asia are rapidly developing due to urban expansion and increased population mobility as well as non-agricultural economic activities.

Socially, the transformation in Tuntungan is characterized by a shift in the community's social structure from a homogeneous rural composition to a more heterogeneous one due to migration and the development of new residential areas. This process strengthens interactions among social groups but also has the potential to create spatial segregation if not accompanied by inclusive policies (Abdulrahman & Sari, 2021) [13]. The community's openness to social and economic innovations is a major strength in facing rapid urbanization, consistent with the findings of Nuraini et al. (2024) [14], which indicate that Medan's urban fringe communities exhibit a high level of social adaptation to changing land functions.

Economically, community activities have shifted significantly toward the service sector, small-scale trade, and transportation. These findings support the theory proposed by Milanie and Pohan (2023) [15], which states that economic growth in transitional areas is driven by increasing demand for daily services from urban residents migrating to the suburbs. Moreover, more diversified land-use patterns have contributed to the area's economic value, particularly along major transportation corridors. This aligns with Zhang et al. (2022) [16], who found that land value growth in peri-urban areas is directly correlated with improved accessibility and transportation connectivity.

However, these positive dynamics are accompanied by emerging socio-economic challenges. Inequality between long-term residents and newcomers in economic opportunities is becoming apparent, largely due to weak local institutional capacity in regulating land use and controlling land conversion. Kusumo and Widyastuti (2021) [17] argue that weak local institutional capacity is a primary obstacle in managing rapidly growing border areas. Similarly, Rahmawati and Indriani (2023) [18] note that collaboration between local governments and communities often remains ineffective in supporting sustainable economic development.

Spatially, the distribution of economic activities in Tuntungan tends to follow major transportation networks. The Letda Sujono corridor and surrounding areas have become new activity centers dominated by service and trade enterprises. This phenomenon is consistent with the findings of Setiawan and Mulia (2024) [19], which emphasize the significant role of physical connectivity in forming new economic centers in peri-urban areas. However, linear growth along main roads also increases pressure on land use, potentially causing spatial fragmentation and lowering environmental quality if not properly managed (Wijaya, 2023) [20].

Future development opportunities for Tuntungan are considerable, particularly with support from the Medan City government, which encourages the growth of border areas as new development zones. Investments in transportation infrastructure and the digitalization of public services are key factors in enhancing the area's competitiveness (Latif & Gunawan, 2023) [21]. Additionally, strengthening human resource capacity through training and local economic empowerment has the potential to sustainably improve community productivity, as suggested by Handayani et al. (2024) [22] in their study on community-based creative economies in urban fringe areas.

Nevertheless, uncontrolled urbanization remains a major threat. The conversion of productive land into residential and commercial use must be strictly regulated to maintain environmental carrying capacity. According to Prasetyo and Nurdin (2022) [23], without

effective spatial control mechanisms, peri-urban areas risk ecological and social imbalance. Therefore, development strategies for the Tuntungan area should focus on managed growth, emphasizing a balance between economic development and the preservation of green spaces.

In terms of implementation, the S–O and W–O strategies derived from the SWOT analysis can serve as primary references for policy-making. Strengthening transportation infrastructure, enhancing community capacity, and integrating governance across administrative levels are key priorities. Furthermore, spatial data-based monitoring mechanisms are necessary to ensure that the area's development follows sustainability principles. As Douglas (2023) [24] states, the success of peri-urban management largely depends on a city's ability to establish an adaptive planning system responsive to local socio-economic dynamics. Thus, policy directions for the Tuntungan urban fringe must prioritize a balance between growth and sustainability. A collaborative approach involving government, academics, and the community is essential for formulating inclusive and adaptive development strategies. This aligns with Milanie and Nuraini (2025) [25], who emphasize that the success of urban transitional area development depends on the alignment between spatial planning, social capacity, and resilient economic systems.

Conclusion

This study was conducted to analyze changes in socio-economic activities in the Tuntungan Urban Fringe Area, Medan, and to identify the strengths, weaknesses, opportunities, and threats through a SWOT analysis approach. Based on the findings, it can be concluded that the Tuntungan urban fringe is undergoing a significant socio-economic transformation. This transformation is driven by the expansion of urban activities, which has led to changes in livelihood structures, population mobility patterns, and land use intensity.

The results show that most residents in the area have shifted their livelihoods from the agricultural sector to services, small-scale trade, and transportation. While the increase in economic activity has positively contributed to regional growth, it has also created pressure on land availability and basic infrastructure. This reflects the distinctive dynamics of a transitional zone that is adapting to urban development while simultaneously facing complex social, economic, and spatial challenges.

Strategically, the Tuntungan area's location along the connecting corridor between Medan City and Deli Serdang Regency serves as a major driver of local economic activity. The area's main strengths lie in its accessibility, human resource potential, and the growing role of the service sector. However, several structural weaknesses remain, including low productivity in the informal sector, weak institutional coordination, and limited planning capacity to integrate local needs with broader urban policies.

The study also reveals promising development opportunities, particularly in the creative economy, service industries, and community-based trade sectors. Strengthening transportation infrastructure and improving digital access are crucial elements for enhancing the area's competitiveness. On the other hand, the main threats that need to be addressed include rapid urbanization pressures, the conversion of productive land, and the growing potential for social inequality.

Overall, this research emphasizes that the development direction of the Tuntungan urban fringe should focus on adaptive and sustainable growth strategies. Strengthening institutional capacity, improving community skills, and implementing inclusive spatial governance are strategic measures to balance economic interests with environmental sustainability.

From these findings, the practical implication is the need for cross-regional policy integration between Medan City and Deli Serdang Regency in managing the border area. Local governments are expected to design community-based development policies supported by active public participation. In addition, the academic implication of this research lies in strengthening the conceptual framework of urban fringe area management in Indonesia, which can serve as a reference for future research and spatial planning.

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