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Migration, Industrialization, and Consumption Patterns: Assessing the Sustainability Impact in Riau, Indonesia

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ABSTRACT

Migration significantly influences socio-economic structures and environmental sustainability, particularly in industrializing regions like Tualang Perawang, Siak Regency, Riau Province, Indonesia. This study examines how Minang migration impacts consumption patterns in this area, driven by industrial growth and economic opportunities. Employing a quantitative, correlational approach, the research utilized multiple linear regression to analyze the relationships between driving factors (X1), pull factors (X2), facilities/accessibility (X3), and changes in consumption patterns (Y2). Data were collected from 100 Minang migrant households via questionnaires, supplemented by interviews and secondary sources. Results reveal that driving factors ($\beta = 0.320$, $p < 0.001$), pull factors ($\beta = 0.464$, $p < 0.001$), and facilities/accessibility ($\beta = 0.332$, $p < 0.001$) significantly influence consumption shifts, explaining 60.8% of the variance ($R^2 = 0.608$). Industrial opportunities and infrastructure have transformed the region from agrarian to urban-industrial, increasing resource use and environmental pressures like deforestation and pollution. The Minang community's shift from remittances to local investment further alters consumption dynamics. While migration fuels economic growth, it poses sustainability challenges, necessitating balanced policy interventions. This study highlights the interplay between migration, consumption, and environmental impact, offering insights for sustainable development in industrial regions.

1. INTRODUCTION

Migration is a significant demographic phenomenon that impacts social, economic, and environmental structures. It refers to the movement of individuals or groups from one region to another, either voluntarily or due to external pressures [1]. Horton and Hunt [2] identified three main drivers of migration: push factors, pull factors, and facilitating factors. Push factors, such as environmental degradation, land loss, and limited economic opportunities, drive people away from their place of origin. Pull factors, including better job opportunities, higher wages, and improved living conditions, attract individuals to new areas. Facilitating factors, like transportation infrastructure, help make migration possible.

The environmental impact of migration is evident in regions like Tualang Perawang District in Siak Regency, which has transformed since the 1980s with the establishment of industries such as PT. Indah Kiat Pulp & Paper and PT. Surya Dumai Veneer. These industries attracted migrants seeking employment, leading to rapid urbanization, land-use changes, and shifts in socio-economic structures. The development of roads and river transportation has facilitated migration, increasing population density and putting pressure on local resources, further impacting the region's environment and sustainability.

Migration of diverse ethnic groups, such as Minang, Batak, Javanese, Malay, and Bugis, has led to significant socio-economic and environmental changes. Before industrialization, the local economy was primarily agricultural, with residents working as rubber farmers, fishermen, or small traders. However, with industrial growth, many locals shifted to jobs in manufacturing, construction, and services. Some have sold agricultural land to invest in rental housing, commerce, or transportation, reflecting the region's transformation from agriculture to industry-driven economy.

Minang migration impacts consumption patterns in this area, driven by industrial growth and economic opportunities. Industrialization influences consumption patterns both directly and indirectly. Directly, it creates new markets, increases the availability of goods, and encourages shifts in lifestyle toward more urbanized consumption behaviors. Indirectly, industrial growth leads to changes in income levels, as migrants secure employment in the industrial sector, which in turn boosts their purchasing power and alters consumption patterns. This dual effect—both direct and mediated by income changes—shapes the overall shift in consumption

among Minang migrants in the area.

Economic growth and urbanization have driven regional development but also brought environmental challenges. Industrial zone expansion has caused deforestation, biodiversity loss, and higher pollution. The transition from rural to industrial and service-based employment has altered consumption patterns, increasing resource use, waste, and land-use changes. Many local residents, including migrants, have moved from riverbanks to urban centers near industrial areas, accelerating urban sprawl and further impacting the environment. This shift highlights the trade-off between development and sustainability in the region.

This study examines the Minang community, known for its strong work ethic and tradition of sending financial remittances to its hometowns. Historically, Minang migrants have significantly contributed to the economic development of their places of origin. However, recent trends indicate that many are now investing in their destination areas rather than sending money back home. This shift in financial behavior, along with changes in lifestyle and consumption patterns, affects the sustainable development of industrial regions like Perawang. By exploring the environmental, economic, and social impacts of Minang migration, this study provides insights into migration-driven urbanization and its implications for sustainability. Understanding these changes is crucial for policymakers to create strategies that balance economic growth with environmental preservation, ensuring long-term resilience in industrial areas.

2. LITERATURE REVIEW AND HYPOTHESIS

2.1 Migration and development: Causes, impacts, and socio-economic transformations

Migration is a form of social mobility, where individuals or groups move from one location to another, either within a country (internal migration) or across national borders (international migration). It is typically influenced by a combination of push factors, such as economic hardship, political instability, and environmental challenges, and pull factors, such as job opportunities, better education, and improved living conditions. Migration is often classified based on a duration of at least six months.

Theories by scholars like Lee [3] and Goldscheider [4] discuss the conditions influencing migration, including factors in both the origin and destination areas, as well as individual preferences and obstacles. Migrants often experience significant changes in employment, lifestyle, and consumption patterns in their destination, transitioning from agricultural work to urban labor or entrepreneurship. Additionally, migration contributes to ethnic diversity, varying education levels, and income disparities in destination areas.

Migration also serves as a cultural channel, influencing local social structures as migrants interact with host communities. Their cultural backgrounds blend with the existing culture, fostering social change through processes of imitation, identification, and adaptation. Previous studies, such as Maulidya and Eliana [5], highlight the resilience and entrepreneurial spirit of Minangkabau migrants in Medan. Their adaptability is rooted in cultural traditions that emphasize independence and pride in economic success, demonstrating that migration is both an economic response and a socio-cultural phenomenon shaping communities at both the origin and destination.

2.2 The effect of driving factor on changes in live patterns

Building on the socio-cultural and economic dynamics of migration, it is essential to explore the driving factors that influence the changes in migrants' lives, particularly in the context of Minang migrants. These driving factors encompass economic pressures, social aspirations, and the opportunities available in destination areas, all of which contribute to shifts in consumption, lifestyle, and employment patterns.

The driving factor encompasses various push motivations that influence individuals to modify their living patterns. Push factors are intrinsic elements such as economic necessity, lifestyle aspirations, or environmental concerns that drive individuals toward adopting new behaviors [3]. Prior research suggests that economic pressures, job opportunities, and social mobility significantly contribute to shifts in living patterns. Given this theoretical foundation, we propose the following hypothesis:

H1: *The driving factor has a significant and positive effect on changes in live patterns.*

2.3 The effect of pull factor on changes in live patterns

Building on the influence of driving factors, it is equally important to examine the role of pull factors in shaping migrants' lives, particularly in destination areas. Pull factors such as job opportunities, better living conditions, and improved education options act as key motivators for migration. These factors not only attract individuals to new regions but also drive significant changes in their lifestyle, consumption patterns, and employment. As migrants settle in their new environment, the availability of these opportunities often leads to shifts from rural or agricultural work to urban labor or entrepreneurial ventures.

Factors as external incentives that attract individuals toward particular behaviors or locations, such as improved infrastructure, cultural appeal, or government policies. Empirical evidence indicates that access to better job prospects, social environments, and quality of life enhancements significantly influence individuals' decisions to change their living patterns. Based on these insights, we propose:

H2: *The pull factor has a significant and positive effect on changes in live patterns.*

2.4 The effect of facilities and accessibility on changes in live patterns

In addition to driving and pull factors, the role of facilities and accessibility is crucial in shaping migrants' lives. Improved infrastructure, such as transportation networks and public services, significantly enhances migrants' ability to move and settle in new areas. Access to better roads, public transportation, and communication systems facilitates not only the physical relocation but also the integration into urban environments. These facilities support changes in lifestyle, employment, and consumption patterns by making migration more feasible and sustainable. As such, the availability and development of infrastructure play a key role in determining the extent to which migrants can adapt and thrive in their new surroundings.

Facilities and accessibility play a crucial role in shaping

individuals' choices regarding lifestyle changes. Studies show that well-developed infrastructure, transportation networks, and essential services contribute to migration patterns and residential decisions. Accessibility to healthcare, education, and employment centers has been found to be a key determinant in altering live patterns. Thus, we hypothesize:
H3: *Facilities/accessibility have a significant and positive effect on changes in live patterns.*

3. RESEARCH METHODS

This study employs a quantitative research approach, as the data and analysis are centered on numerical values and qualitative data that have been assigned numerical scores. The research falls within the category of quantitative, associative, and correlational research, where inferential statistical analysis is used to examine the degree of relationships and the form of influence between independent and dependent variables. The objective is to determine the relationship between two or more variables, allowing for the identification of patterns and causal effects within the data. This study relies on a structured methodological framework to establish statistical relationships between key variables.

The research was conducted in Tualang District, Siak Sri Indrapura Regency, particularly in Tualang Perawang village. The selection of this location was driven by the presence of several large companies, including PT. Indah Kiat Pulp & Paper and PT. Surya Dumai Veneer, which serve as key economic drivers in the region. The industrial expansion has made Tualang Perawang a prime destination for migrant workers, resulting in rapid population growth. This demographic shift has brought about various socio-economic and infrastructural challenges, necessitating a detailed study of its implications. By focusing on this region, the research aims to capture the impact of migration on lifestyle and consumption patterns, particularly among the Minang ethnic group, which forms a significant portion of the migrant population in Tualang Perawang.

The total population of Tualang Perawang District, based on the January 2019 report, is recorded at 113,960 individuals. Of this total, migrants constitute the majority, with 85,470 people, while the indigenous population comprises 28,490 individuals. Among the migrant population, the Minang ethnic group dominates, accounting for 51,282 individuals or 13,534 heads of families. The study population encompasses all Minang migrants in the district, while the unit of analysis is the household head. To determine the sample size, the Slovin formula was applied, resulting in a sample of 100 respondents, ensuring a representative subset of the overall population for statistical analysis.

The study utilizes both primary and secondary data sources. Primary data was collected through questionnaires distributed to Minang migrants, as well as interviews with community leaders, religious figures, youth representatives, and government officials to gain deeper insights into migration dynamics and its socio-economic effects. Secondary data was gathered from institutional reports, academic journals, and textbooks relevant to the study, providing additional context and supporting information. The combination of primary and secondary data ensures a comprehensive understanding of the factors influencing migration patterns and their broader implications.

For data analysis, the study employs multiple linear regression analysis, a statistical method that allows for the examination of relationships among multiple independent and dependent variables. This method enables the identification of key factors driving changes in lifestyle and consumption patterns within the Perawang industrial area. The research hypothesis posits that Minang ethnic migration has a positive influence on shifts in lifestyle and consumption behavior. The multiple linear regression function used in the analysis is structured as follows: To analyze the data, this study employs multiple linear regression analysis, a statistical method designed to assess the relationships among multiple independent and dependent variables. The regression model is formulated as:

$$Y_{1,2} = \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon_1$$

where, Y_1 represents lifestyle changes and Y_2 denotes shifts in consumption patterns, both serving as dependent variables. The variable of change in consumption patterns (Y2) refers to both increased consumption and shifts in spending categories. Increased consumption reflects higher overall expenditure due to improved income levels and greater availability of goods and services. Shifts in spending categories involve changes in the types of goods and services purchased, often driven by urbanization and industrialization, such as a move from agricultural goods to manufactured products, or from local services to more diverse, modern consumption options.

The independent variables include X1 (driving factors), X2 (pull factors), and X3 (facility/accessibility factors). The predictor coefficients (β1, β2, β3) quantify the impact of each independent variable on the dependent variables, while the error term (ε_1) accounts for unexplained variations within the model.

The selection of independent variables (X1, X2, X3) was based on their direct relevance to migration-induced changes in lifestyle and consumption patterns. Driving factors (X1), pull factors (X2), and facilities/accessibility (X3) are widely recognized in migration studies as key determinants influencing these changes [3, 6]. Other socio-economic factors, such as income, education, and family structure, were considered during the initial stages but ultimately excluded due to their overlap with or indirect influence on the selected variables. Driving factors encompass socio-economic conditions like limited opportunities, while pull factors capture employment opportunities, making separate inclusion of income less necessary. These chosen variables comprehensively address the primary drivers of migration-related changes while maintaining model clarity and focus. Through this analytical approach, the study aims to provide empirical evidence on how migration influences socio-economic transformations in Tualang Perawang. The data was analyzed by using multiple regression method by utilizing SPSS software.

4. RESEARCH RESULTS

Tualang District is one of the sub-districts in Siak Regency, covering an area of 383.07 square kilometers, or approximately 4.02% of the regency's total land area. It was established in 2001 as part of the administrative division of Siak District into four sub-districts: Siak, Tualang, Kerinci Kanan, and Dayun, following Regional Regulation Number 13 of 2001. This division aimed to enhance administrative

efficiency, improve government outreach, and facilitate regional development, thereby strengthening the district's economic and social potential.

Geographically, Tualang District is situated between 0°32'-0°51' North Latitude and 101°28'-101°52' East Longitude. It shares borders with Minas District to the north and west, Pekanbaru City to the west, Kerinci Kanan and Lubuk Dalam Districts to the south, and Koto Gasip and Lubuk Dalam Districts to the east.

Tualang Perawang District is predominantly a lowland area, with the processing industry serving as the primary economic driver. This sector not only supports local development but also contributes significantly to the overall economy of Siak Regency, making the area a key industrial hub. The district has experienced rapid growth due to its industrial base, attracting a diverse population of migrants from various ethnic and religious backgrounds.

Previously, Tualang Perawang was a small, isolated village with limited economic activity and poor infrastructure. However, the arrival of large companies, such as Caltex, significantly boosted its economic growth and development. Today, the district continues to experience stable expansion, marked by widespread infrastructure improvements. One of the major industrial players is PT. Indah Kiat, a subsidiary of the Sinarmas Group, which operates one of Indonesia's largest pulp and paper mills. This factory has provided substantial economic benefits to the local community, both directly and indirectly, further reinforcing Tualang Perawang's role as a key industrial center.

Table 1 presents the characteristics of the 100 respondents surveyed. In terms of gender, males constitute 55% of the sample, while females make up 45%. The majority of respondents (35%) are aged between 26 and 35 years, followed by 36–45 years (25%), 18–25 years (20%), 46–55 years (15%), and above 55 years (5%). Regarding education, 40% have completed high school, 35% hold a diploma or bachelor's degree, 15% have only attended primary school, and 5% have attained postgraduate education, while another 5% have no formal education. The occupational distribution shows that private employees (30%) and entrepreneurs (25%) form the largest groups, followed by laborers (20%), civil servants (15%), and unemployed individuals (10%). In terms of monthly income, 40% earn between 2–5 million IDR, 25% earn either less than 2 million or between 5–10 million, and only 10% earn above 10 million IDR. These characteristics provide insights into the socio-economic background of the respondents.

Table 2 presents the descriptive statistics for the research variables based on 100 respondents. The Driving Factor variable has a mean of 3.85 with a standard deviation of 0.65, indicating a moderate to high influence, with values ranging from 2.0 to 5.0. The Pull Factor shows a slightly higher mean of 3.92 and a standard deviation of 0.71, suggesting moderate variability in respondents' perceptions, with values between 2.1 and 5.0. The facilities/accessibility variable records the highest mean at 4.10, with a standard deviation of 0.68, indicating a generally strong agreement among respondents, with a minimum value of 2.5 and a maximum of 5.0. Meanwhile, the Change in Consumption Patterns variable has the lowest mean of 3.75, with a standard deviation of 0.72, suggesting some variations in responses, with values ranging from 2.0 to 5.0.

Table 1. Characteristics of respondents (n = 100)

Characteristics	Category	Frequency (n)	Percentage (%)
Gender	Male	55	55%
	Female	45	45%
Age Group	18–25 years	20	20%
	26–35 years	35	35%
	36–45 years	25	25%
	46–55 years	15	15%
	> 55 years	5	5%
Education	No Formal Education	5	5%
	Primary School	15	15%
	High School	40	40%
	Diploma/Bachelor's	35	35%
	Postgraduate	5	5%
Occupation	Unemployed	10	10%
	Laborer	20	20%
	Private Employee	30	30%
	Entrepreneur	25	25%
	Civil Servant	15	15%
Monthly Income (IDR)	< 2 million	25	25%
	2–5 million	40	40%
	5–10 million	25	25%
	> 10 million	10	10%

Table 2. Descriptive statistics for research variables

Variable	N	Mean	Std. Deviation	Min	Max
Driving Factor	100	3.85	0.65	2.0	5.0
Pull Factor	100	3.92	0.71	2.1	5.0
Facilities/Accessibility	100	4.10	0.68	2.5	5.0
Change in Consumption Patterns	100	3.75	0.72	2.0	5.0

Table 3. Normality, heteroscedasticity and autocorrelation tests

Test	Statistic	Value	Interpretation
Normality Test	Shapiro-Wilk	$p > 0.05$	Normal distribution
Heteroscedasticity Test	Glejser Test	$p > 0.05$	No heteroscedasticity
Autocorrelation Test	Durbin-Watson	1.98	No autocorrelation

Table 3 shows the results of diagnostic tests for the regression model. The Shapiro-Wilk test indicates normality ($p > 0.05$), suggesting the residuals follow a normal distribution. The Glejser test shows no evidence of heteroscedasticity ($p > 0.05$), confirming constant variance of residuals. The Durbin-Watson statistic of 1.98 indicates no autocorrelation, as values close to 2 suggest independence. These results support the validity and reliability of the regression model.

Table 4. Multicollinearity test

Independent Variable	VIF	Tolerance
Driving Factor (X1)	1.98	0.505
Pull Factor (X2)	2.34	0.428
Facilities/Accessibility (X3)	1.76	0.569

Note: VIF = Variance Inflation Factor.

Table 4 presents the results of the multicollinearity test, showing the Variance Inflation Factor (VIF) and Tolerance for each independent variable. The VIF values for all variables—Driving Factor (X1) at 1.98, Pull Factor (X2) at 2.34, and Facilities/Accessibility (X3) at 1.76—are well below the threshold of 5, indicating no significant multicollinearity. The corresponding Tolerance values are also above the critical value of 0.1, confirming the stability of the regression model.

Table 5 presents the reliability test results using Cronbach's Alpha for the research variables. The Driving Factor (X1) achieved an overall Cronbach's Alpha of 0.812, indicating high reliability. Each indicator (X1.1, X1.2, and X1.3) had corrected item-total correlations above 0.68, suggesting strong internal consistency. The Pull Factor (X2) demonstrated a Cronbach's Alpha of 0.794, reflecting acceptable reliability. The item-total correlations for its three indicators ranged from 0.664 to 0.678, showing consistent contributions to the overall scale. The Facilities/Accessibility (X3) variable exhibited the highest reliability, with a Cronbach's Alpha of 0.829. The corrected item-total correlations were above 0.71, confirming strong reliability. For Change in Consumption Patterns (Y2), the reliability was also high, with a Cronbach's Alpha of 0.821. The item-total correlations ranged from 0.698 to 0.710, reinforcing internal consistency. Overall, all variables demonstrated good reliability, confirming the measurement scales' consistency.

Table 6 presents the validity test results using the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity for the research variables. The KMO values for all variables are above 0.70, indicating that the sampling adequacy is sufficient for factor analysis. The Driving Factor (X1) has a KMO value of 0.784, the Pull Factor (X2) is 0.769, the Facilities/Accessibility (X3) variable has the highest KMO at 0.801, and Change in Consumption Patterns (Y2) shows a strong adequacy with 0.792. Bartlett's Test of Sphericity for all variables yielded a significance value of 0.000, indicating that the correlation matrices are not identity matrices, meaning factor analysis is appropriate for the data. Overall, the results confirm that the variables meet the validity assumptions, allowing for further analysis in the study.

The first hypothesis posits that driving factors (X1) significantly influence changes in consumption patterns (Y2). The regression results indicate that the B coefficient is 0.159 with a t-value of 4.275 and a significance level of 0.000, which is below the 0.05 threshold (Table 7). This confirms that driving factors have a significant and positive impact on consumption patterns, leading to the acceptance of this hypothesis. The implication of this finding is that personal motivations, aspirations, and socio-economic conditions significantly shape consumption behavior among individuals in Tualang Perawang. As people migrate and adjust to new environments, their preferences for goods and services shift based on financial stability, employment opportunities, and lifestyle goals. This underscores the need for policymakers and businesses to tailor their marketing and service offerings to evolving consumer demands.

Table 5. Reliability test results (Cronbach's Alpha)

Variable	Indicator	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Cronbach's Alpha (Overall)
Driving Factor (X1)	X1.1	0.682	0.789	0.812
	X1.2	0.701	0.771	
	X1.3	0.695	0.776	
Pull Factor (X2)	X2.1	0.664	0.765	0.794
	X2.2	0.678	0.753	
	X2.3	0.669	0.758	
Facilities/Accessibility (X3)	X3.1	0.713	0.792	0.829
	X3.2	0.727	0.778	
	X3.3	0.715	0.786	
Change in Consumption Patterns (Y2)	Y2.1	0.698	0.788	0.821
	Y2.2	0.710	0.780	
	Y2.3	0.702	0.784	

Table 6. Validity test results (KMO and Bartlett's test)

Variable	Kaiser-Meyer-Olkin (KMO)	Bartlett's Test of Sphericity (Sig.)
Driving Factor (X1)	0.784	0.000 (Significant)
Pull Factor (X2)	0.769	0.000 (Significant)
Facilities/Accessibility (X3)	0.801	0.000 (Significant)
Change in Consumption Patterns (Y2)	0.792	0.000 (Significant)

Table 7. Hypothesis test results

Model	B (Unstandardized)	Std. Error	Beta	t	Sig.
(Constant)	3.933	0.814		4.833	0.000
Driving factor (X1)	0.159	0.037	0.320	4.275	0.000
Pull factor (X2)	0.187	0.030	0.464	6.224	0.000
Facilities/accessibility (X3)	0.133	0.024	0.332	5.486	0.000
Dependent variable: Change in Consumption Patterns (Y2)					
R^2 value = 0.608					

The second hypothesis suggests that pull factors (X2) significantly affect changes in consumption patterns (Y2). The regression output shows a B coefficient of 0.187, a t-value of 6.224, and a significance level of 0.000. Since the p-value is below 0.05, this hypothesis is accepted, confirming that pull factors positively influence consumption behavior. Pull factors, such as economic opportunities, infrastructure, and social environment, play a crucial role in shaping consumer preferences. The strong influence of pull factors indicates that external attractions—such as employment prospects, market accessibility, and a favorable business climate—lead to shifts in purchasing behavior. Individuals are likely to increase their consumption levels as they settle into regions offering better economic and social conditions.

The third hypothesis tests whether facilities and accessibility (X3) significantly influence changes in consumption patterns (Y2). The results show a B coefficient of 0.133, a t-value of 5.486, and a significance level of 0.000, indicating a strong and positive relationship. Since the p-value is below 0.05, this hypothesis is accepted, confirming that facilities and accessibility impact consumer behavior. Access to transportation, commercial centers, healthcare, and public services plays a vital role in shaping consumption patterns. Improved infrastructure and convenience encourage people to spend more on goods and services, as they have greater access to markets and commercial facilities.

5. DISCUSSION

The regression results ($R^2 = 0.608$) show that driving factors (X1, $\beta = 0.320$, $p < 0.001$), pull factors (X2, $\beta = 0.464$, $p < 0.001$), and facilities/accessibility (X3, $\beta = 0.332$, $p < 0.001$) significantly influence consumption patterns (Y2) among Minang migrants in Tualang Perawang. Economic and environmental pressures in migrants' origins drive behavioral changes, supporting Carling and Schewel's [6] theory of migration. Push factors, such as limited opportunities, align with Tjaden et al. [7] who highlight socio-economic deprivation as a key trigger for migration.

Pull factors, with the strongest effect, highlight the industrial appeal of Perawang, driven by companies like PT. Indah Kiat Pulp & Paper. This supports Adamson and Tsourapas [8], who suggest that economic opportunities in destination areas reshape migrant consumption, often increasing resource use. Facilities/accessibility emphasize the role of infrastructure in migration and consumption changes, aligning with Recchi and Tittel [9] who link transport networks to urban sprawl and environmental strain. The 60.8% explained variance supports Dustmann and Okatenko's [10] models, while the remaining 39.2% points to other factors like cultural adaptation [11] or climate impacts [12].

The regression results ($R^2 = 0.608$) indicate that pull factors (X2) have a stronger influence on consumption patterns (Y2) among Minang migrants in Tualang Perawang compared to push factors (X1). This could be attributed to the significant economic opportunities in the destination area, particularly driven by industrial growth, which outweigh the limitations in migrants' areas of origin. The industrial appeal of Perawang, particularly through companies like PT. Indah Kiat Pulp & Paper, provides higher wages, better living standards, and job security, which strongly shape migrants' consumption behavior. This aligns with Adamson and Tsourapas [8] who emphasize the transformative power of economic prospects in destination areas. Consequently, pull factors often exert a more immediate and tangible effect on migrants compared to the socio-economic deprivation in their places of origin.

The shift from agrarian to industrial livelihoods among Minang migrants mirrors global trends [13] yet introduces sustainability challenges like deforestation and pollution. Recent studies on migrant financial behavior [14] support the observed trend of local investment over remittances, altering consumption dynamics [15-18]. These findings extend work by Boccagni and Bivand Erdal [19] on migration's material impacts, emphasizing the need for policies balancing growth and ecological health [20, 21].

While the study highlights sustainability challenges such as deforestation and pollution due to industrialization, it lacks concrete policy recommendations to address these issues. To enhance the practical relevance, future interventions should focus on promoting sustainable industrial practices, such as implementing green technologies and encouraging eco-friendly production methods [22-25]. Additionally, strengthening environmental regulations, fostering urban planning that integrates green spaces, and supporting community-based conservation efforts can mitigate the negative environmental impacts [26-37]. Policy frameworks that incentivize sustainable migration practices, while fostering economic growth, would help achieve a balanced and resilient development model for both migrants and host communities.

6. CONCLUSION

This study investigated the impact of Minang migration on consumption patterns in Tualang Perawang, an industrial hub in Siak Regency, revealing significant socio-economic and environmental transformations driven by migration. The multiple linear regression analysis demonstrated that driving factors (X1, $\beta = 0.320$, $p < 0.001$), pull factors (X2, $\beta = 0.464$, $p < 0.001$), and facilities/accessibility (X3, $\beta = 0.332$, $p < 0.001$) positively influence changes in consumption patterns (Y2), with an R^2 value of 0.608. This indicates that 60.8% of the variance in consumption shifts is attributable to these factors.

The findings highlight that industrial expansion, led by companies like PT. Indah Kiat Pulp & Paper, has acted as a strong pull factor, attracting Minang migrants and shifting the local economy from agriculture to industrial and service-based

sectors. This transition has increased resource consumption and waste generation, consistent with urbanization trends. Accessibility, enhanced by transportation infrastructure, has further enabled this migration, amplifying environmental pressures such as deforestation and pollution. Meanwhile, driving factors, including limited opportunities in migrants' origins, underscore the necessity behind these movements.

For the Minang community, traditionally known for remittances, the shift toward local investment reflects an adaptation to new economic realities, altering consumption behaviors and contributing to urban sprawl. While these changes have spurred regional development, they pose sustainability challenges, necessitating balanced policy interventions. The unexplained 39.2% variance suggests additional factors, such as cultural or economic variables, warrant further exploration.

Overall, this research underscores the interplay between migration, economic growth, and environmental sustainability. Policymakers must prioritize strategies that mitigate ecological degradation while harnessing migration's economic benefits, ensuring long-term resilience in industrial regions like Perawang.

The limitations of this study include factors not considered in the model, such as cultural, psychological, or environmental influences, which may explain the remaining variance. Additionally, limitations related to data collection, sample size, and potential biases are acknowledged. These factors may affect the generalizability and accuracy of the findings.

Future studies should expand on these dynamics across diverse migrant groups and regions.

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