

## AN IMPORTANT MARITIME AND RIVER TRANSPORTATION NETWORK TO SUSTAIN THE SUPPLY CHAIN IN INDONESIA'S BORDER

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### Abstract

Most people in the Indonesia-Malaysia border area have a similar problem, namely the need for more facilities in the transportation sector. Geographical conditions make border crossers more comfortable using sea and river transportation. This paper aims to provide an overview of how smooth border transportation can support the supply chain. The challenge is that the supply chain from the capital or the nearest area is often insufficient due to geographical conditions, and product delivery cannot always be guaranteed. As a result, the price of these goods is higher than the price of goods from the neighbouring country because the shipping costs are lower as the location is closer to the other province that can supply them. This anthropological qualitative descriptive study discovers many transnational socio-cultural characteristics in their cross-border economic activities. This economic activity is bound by the two countries' borders, regulations, and policies. In the case study of Sebatik Island, building a border transportation system is one of the strategic solutions to support the supply chain of border communities. Especially after the COVID-19 pandemic, government policies prioritise sea transportation. The results show that when local transportation is smooth, the border area will remain in touch with the provincial government, and the availability of primary products for the Sebatik community does not always depend on neighbouring countries. A smooth supply chain encourages food self-sufficiency at the border.

*Keywords: Cross-Border Trade, Local Transportation Network, socio-cultural dimension, sustainable supply chain*

## **Introduction**

Our global society is undergoing several disruptive changes involving higher levels of automation and digitalisation. This trend is also affecting maritime transport (Fonseca, 2021). Maritime transport is one of the main activities of the blue economy, which plays an important role (Fratila, 2021). The border area is underdeveloped due to a lack of social facilities and infrastructure, particularly in transportation. The economic and social landscape of the bordering countries has undergone significant change as a result of transportation. Many countries in the world view border transportation from different perspectives. In general, countries in the world build border transportation to overcome development at the border, which is constrained by socio-economic and geographical conditions. Most of the one or two bordering countries take advantage of socio-economic opportunities by building shared transportation. Some countries see border transportation as part of state security. And some other countries, particularly Southeast Asia, see the border area as underdeveloped due to a lack of social facilities and infrastructure, particularly in the supply chain.

In both the United States and Canada, transportation has significantly changed the economy and social. Railway interests have always faced challenges and opportunities across the Canada-U.S. border (Widdis, 2018). It has been demonstrated that state and commercial services for cross-border mobility in EU border areas are now insufficient. The quantity of available cross-border transportation cannot meet the demand for cross-border transportation services. This condition has a detrimental influence on border regions' economic growth and environmental sustainability (Medeiros, 2019). The "Program of Electrification of Railways of Ukraine for 2015-2020 Years" recognises the importance of electrifying the Kovel-Izov-State border with Poland, a component of the international traffic route. As a result, the lack of electrified trains in the Ivano-Frankivsk and Chernivtsi oblasts makes transportation and logistical operations problematic (Senkiv, 2017). Another problem is that maritime piracy resurfaces every few years, especially when vessels and armaments become more sophisticated. Combating maritime piracy necessitates coordinated and planned activities at multiple levels, including domestic, regional, and international (Ahmad, 2020).

Some consider it to be a global issue that affects citizens living near their country's borders and leads to dependency on those nations, as is the case with the Indonesia-Malaysia border (Rudiatin, 2018). Given the intricacy of the issues in Indonesia's border regions, the government must demonstrate a strong commitment to address infrastructure issues, particularly transportation issues.

This situation contrasts with the availability of infrastructure incomparably more developed neighbouring nations, such as Tawau in the district of Sabah Malaysia, a region next to Sebatik Island, Indonesia (Zein, 2020). Sabah is one of the thirteen states in Malaysia, located in the Borneo archipelago. Strategically, the position of this region shares a border between Brunei Darussalam, the Philippines, and the Republic of Indonesia. Sabah's position at the centre of the geo-political system of the border leads to dynamism in terms of the continuity of borders and sovereignty of a country in general, Malaysia and the state of Sabah in particular. This continuity invites a variety of scenarios and phenomena unique to relations between countries (Sarjono, 2022). The challenge of moving goods from within the nation to border villages has been one of the effects. Primer commodities become scarcer and more expensive, which leads border communities to purchase things from nearby countries where prices are cheaper, and the selection of goods is so large. Due to this, border villages heavily depend on importing goods from their neighbours in Malaysia. Instead, people in nearby countries need a lot of domestic goods from Sebatik Nunukan. Almost all of the primary to tertiary commodity demands are the products that become traded commodities among the border people, Sebatik Nunukan and Tawau (Rudiatin, 2018) (Safriadi, 2021).

The value of cross-border trade transactions on Nunukan Island is in the first position, which is USD 677.367, with a role of 21.63 percent of the total transaction value. Nunukan Island consists of two sub-districts, namely Nunukan and South Nunukan Districts, and is the capital of Nunukan District. Customs, Immigration, Quarantine, and Security (CIQS) facilities are completed on this island. Complete CIQS facilities and deal directly with neighbouring countries, making Nunukan Island a transit point for workers working in Malaysia or vice versa. Imports of Nunukan Island in the form of food have become the driving force behind their large role in cross-border trade transactions. The lack of agricultural and industrial products, as well as the lack of supply of goods from other regions, has caused high imports from the border of Sebatik and Nunukan Island.

Economic integration at the border causes the supply of primary products to come into Tawau from outside Sebatik and Northern East Kalimantan. Meanwhile, Sebatik receives finishing products such as food supplies from Tawau. When Tawau traders need raw materials, they go to Sebatik, which is known as the producer of cocoa (Wulandari et al., 2023). The same happened with fisheries items from Sebatik and Nunukan waters, which have considerable demand at Tawau (Veronika, 2016). Ramli Dollah says that this maritime area is formed from the South China Sea in the west and the Sulu Sea in the north of Kudat, as well as extending to the east coast region, which includes the Sulu Sea, and the Celebes

Sea in the districts of Semporna and Tawau (Dollah, 2016). The border region offers great economic potential but also poses a concern, especially to emerging nations (Zein, 2020). Trade traffic in the Nunukan border area not only requires a punitive approach but also has to pay attention to the welfare approach in the region (Iswardhana, 2017).

Across-border commerce Indonesia Malaysia has faced traffic congestion. The cross-border commercial transportation system oversees immigration and legal and illegal matters. Regulations that impede the free flow of goods and services are typically absent from the market. Because no obstacles prevent the flow of products and services, this market offers significant opportunities for economic actors. Economic growth, human resource development, land management, and environmental harmony are all factors that contribute to the area's development via freight transportation (Fithra, 2018).

Meanwhile, the maritime supply chain comprises interconnected and globally distributed organisations involving different entities. Arguably, the maritime supply chain is complex as it involves several types of interactions among supply chain partners, which require effective relationship management (Kashav, 2021). The concept of supply chain management information systems is applied to maritime transport. It will be optional because the business needs to be highly competitive due to increasingly high competition within and outside the country. The purpose of this research is to analyse the transportation needs to be able to adequately supply the raw material chain for communities at the border as a policy brief, especially border transportation in the same condition around the world.

## **Literature Review**

Each border area has its own characteristics and is very influential on the pattern of cross-border trade carried out by the community. These differences in characteristics can be used as a reference in the development of trade in a border area.

### **Transportation system**

Transportation system development takes place in a socio-economic context. Progress is impossible without infrastructure, regardless of the relative worth of physical versus human capital. Dense transportation networks and infrastructure are usually associated with high levels of development. When transportation networks work well, they offer new social and economic opportunities.

Traditional top-down studies in the social sciences on the political and economic elements of border regions have mainly concentrated on state-level operations, notably on how states deal with borders and their inhabitants by exercising control and authority (Reinke de Buitrago, 2017) (Mantilla, 2020) Each mode of evolution of the transport cycle corresponds to a phase of recession and economic expansion. Each new cycle evolution of the mode of transportation does not start from "zero," but from the accumulated results of the previous cycles that have been built and improved and may occur for the next stage. With links to various branches of the economy and public interests, transportation encourages and develops the economy, including its people.

There is a symbiotic relationship between transportation and economic development. An effective transportation system facilitates regional development and economic expansion. The expansion of communities' physical boundaries was also made possible by advancements in the infrastructure or transportation system (Tucho, 2022). Additionally, transportation benefits people's economic activity. These impacts include: (1) can be used to transport agricultural products or move goods; (2) make it easier for people to travel from their place of origin to their destination; (3) facilitate public access to social interactions and political activities; and (4) make it easier for people to carry out economic activities.

The transportation network is viewed as the driving force behind all marketing and market systems in conventional economic theory. The ability of a trade to be interconnected and well-developed is made possible by efficient transportation. Transport connections, like the tunnels connecting England and France, are one of the EU market's biggest and most important strengths since they allow for the development of joint markets. The transportation network tightly binds this common market (O'Donoghue, 2013).

Transport plays a role in the advancement of international trade (Bassa et al., 2021) It is critical always to communicate our respective regions' transportation needs so that we can offer proactive solutions to the challenges that come with expanding economic activity (Taghvaei, 2021) And one of the things that helps to reduce tensions between nations in the border region is the development of transportation infrastructure (Fukunaga, 2014) Transportation is also a means of prosperity, political development, socio-cultural defence, and security. The transportation role as a bridge that facilitates all national economic and logistics activities provides added social-economic value.

## **A Maritime Transport**

In the second half of the 20th century, international maritime transport experienced a prosperous period characterised by the growing integration of

markets, the globalisation of international trade flows, and great advances in technologies (Papa, 2013) Maritime transportation has long been held as the backbone of global trade, with over 80% of the volume of global trade transported by sea (Bai, 2021).

The oceanic supply chain alludes to the development of cargo as well as any related bolster, including two goals and utilising both sea (sea) and land transportation. It is a whole organisation of interconnection frameworks that include cargo forwarders, shipping lines, harbour terminal administrators, and land-based coordination systems.

There are two main types of maritime freight. Bulk cargo freight that has not been packaged, such as minerals (oil, coal, iron ore, and bauxite) and grains. These are dry or liquid bulk products that rely on the use of specialised ships, such as oil tankers or ore ships, and on specialised port and storage facilities. Bulk cargo usually has a single origin and a single destination, with services that are prone to seasonality, with the exception of energy transport. It supports the heavy manufacturing sector. Break-bulk cargo, which has been packaged in bags, boxes, drums, and particularly containers, now represents the dominant break-bulk use of maritime transport. Break-bulk cargo usually has several origins and destinations. It supports manufacturing and retailing. Historically, maritime transport was organised according to conferences, which are formal agreements between shipping companies operating over specific routes (Rodrigue, 2017).

Freight forwarders are companies or people that organise the shipment of products, whereas shipping lines claim and work the vessels that transport the merchandise over the ocean. Harbour terminal administrators claim or rent the harbour space where goods are conveyed, and after that, overseen by land-based coordination's frameworks to induce the products to their last destination. All of these are fundamental foci of contact and must be in steady communication to maintain a strategic distance from delays or misled shipments. Awful climate, oversaturated ports, and swarmed shipping courses can toss a ton of torque into any shipment if it is not carefully arranged, watched, and rerouted in case necessary. The oceanic supply chain has been on a worldwide scale for hundreds of years and has been driven to investigate worldwide as shippers looked for superior courses, different flavours, and valuable materials. Be that as it may, in today's world, the oceanic supply chain has become profoundly energetic and complex because it has developed to suit ever-growing innovation, buyer inclinations, and worldwide exchange patterns (Chansamut, 2023).

## **Supply chain**

Here are the upstream and downstream supply chain kinds of supply chain management. Managing supply chain networks and supplier involvement have become critical for businesses because they are the backbone of operations (Jasmi, 2018).

The activities of a manufacturing business with its suppliers (manufacturers, assemblers, or both) and their interactions with their suppliers are included in the supply chain's upstream section (second-tier suppliers). The supplier relationships might span numerous tiers, starting with the source of the material (e.g., ore, plant growth). The procurement process is the primary activity in the upstream supply chain. Suppliers of raw materials or commodities that have not been processed are considered upstream activities. Suppliers may mine these resources as part of upstream activities to complete orders. Another illustration of an upstream activity is shipping or transporting goods to a plant. The management overseeing items' movement away from the company's direction is known as downstream supply chain management.

Downstream supply chain management refers to the coordination of the flow of information and commodities between clients and customers. Distributors, wholesalers, and retailers all work to maintain sufficient inventory levels to fill client requests without amassing excess inventory. Orders are delivered on time by distributors when business is smooth. Orders are labelled "out of stock" when they cannot be filled promptly, which causes activity to stall (Min, 2019).

## **Sebatik- Indonesia's Supply Chain Transportation**

Markets near the border of Sebatik Nunukan, North Kalimantan Province, rely on the sea and river transportation networks, which have been going on for a very long time there and have even come to dominate cross-border trade. Migration and illegal legal trade also colour the transportation network that facilitates cross-border trade. Both of which promote economic integration (Rudiatin, 2018). In economic integration, the market tends to be free from regulations that hinder the smooth flow of goods and services. Such a market will provide economic actors with a "big" market opportunity because the flow of goods and services does not experience obstacles.

The need for free markets gave rise to illegal transportation routes, as is often the case on the Sebatik-Tawau route to supply goods to the Aji Kuning and Sei Limau villages. Sea and river transportation dominate the characteristics of the service network system and the transportation infrastructure. Logistical movements can only reach the district or sub-district capitals that can be accessed.

Port infrastructure has not functioned properly. The water transportation network has not been utilised optimally. It is necessary to build access to a transportation network connecting port nodes in an integrated internal and external transportation network system (Simpul, 2016). Unfortunately, the goods terminal on the Indonesian border in Kalimantan is only in West Kalimantan (Lewin, 2013).

## **Methodology**

This research applies qualitative methodology with an ethnographic approach. According to Lewin (2013), ethnography is a methodological feature of anthropology. Observation, as the name implies, is a way of collecting data through observation. Creswell (2014) says that ethnography is a research approach that describes and interprets the behaviour and customs of a cultural system or social group. Under ethnography, researchers rely on their judgment to select a member of the informant population based on their research questions—this can take the form of a "big net approach" (Fetterman, 2019) where the researcher blends in with everyone. The researchers spent many months in the Aji Kuning hamlet field on the border between Indonesia and Malaysia. They concentrate on marketplaces and circumstances where players (traders, sellers, buyers, brokers, the governmental apparatus, etc.) interact extensively in economic transactions that need transportation. Taking notes is arguably the most important stage and perhaps the culmination of the whole series of research.

The researcher checked on the members of the informants' families throughout the interview. Continuously information checking contributes to the reliability of the data. To build trustworthiness (trust and credibility), researchers use triangulation. Triangulation controls bias and constructs valid propositions because traditional scientific techniques are no longer compatible with alternative epistemologies. If the same theme emerges from several participants, then the data is said to be credible and trustworthy. Information checking contributes to the reliability of the data. Finally, the researcher conducted a post-checking interview with each participant to confirm the interpretation of the survey data.

## **Findings and Discussions**

The proximity of a national boundary and the immediate and considerable economic, social, and political influence this border has on life in the region define a border region (Eilenberg, 2014). In general, border areas have good prospects for developing the people's socio-economic potential. This is because through the border areas, there will be interactions between the people in making reciprocal

relationships to meet their economic needs and cooperation in the social environment (Khmeleva, 2022). One of the main goals of state regulation is to create optimal conditions for tourism development through legal and economic mechanisms for distributing material and human resources that are considered state's priorities (Khalid, 2022).

On the other hand, the economic interaction of border communities will give birth to cooperation that contributes to creating kinship and social closeness between people who live in the region (Marin, 2019). The practice of free trade in the boundary area cannot be avoided, even if it is carried out illegally. Working in Malaysia, dealing with Malaysians, marrying Malaysians, participating in ethnic holidays in Malaysia, and even utilising Malaysian hospitals are all widespread in Kalimantan's border area (Eilenberg, 2014). According to Walther (2014), a border area is unique in terms of its market potential. Marketing reach is likely to be distorted due to policies and regulations on the border. The policy effect differs by policy type (Xiong, 2022). Cross-border trade between developed and developing countries that are directly linked does not generate a mutually beneficial connection for the two countries; rather, developing countries serve as markets for industrialised countries to enter their commodities or goods on a greater scale. It has an influence on the country's economy since the argument over goods trade is a financial conversation.

Customers throughout the supply chain have grown accustomed to receiving "more advantages for less money" (meaning more value for customers). They also require a higher customisation level to fulfil specific needs and wants. Consumers are less interested in the brand name in experiential consumption and more concerned with the intermediary's ability to control stock availability and provide prompt service throughout their experience. Finally, customers are worried about the overall influence of the consumer experience on their economic well-being, personal well-being, and, more recently (post-COVID-19), their well-being and the environment. They are increasingly aware of the damage that occurs upstream of the supply chain and the ramifications for their health, such as disease outbreaks and sickness (e.g., food contaminated with *Chipotle E. coli*), and injury (e.g., Mattel lead paint toy) (Min Z. a., 2019) (Wong, 2017) Smooth logistics and transportation are paramount to avoid scarcity and include logistics security guarantees.

### **The Sebatik-Tawau Trade Network: A Border Trade System**

The position of Sebatik Island on the Indonesia-Malaysia boundary makes it a critical point in the mapping flow between the two countries, to the north of the

country bordering eastern Malaysia-Sabah and east to the Sulawesi Sea. Despite the fact that it includes Indonesian territory, Aji Kuning's commercial activity mostly centered in Malaysia. For decades, border crossing and migration proceeded peacefully; however, recent border tightening and the construction of the autonomous territory have resulted in several border conflicts, including a conflict of sovereignty and economic and political difficulties. Illicit labour and smuggling are the most often emerging border concerns (Legrand & Leuprecht, 2021; Augustova, 2023).

A steep, hilly topography and multiple canals around the river, a strait, and the sea make transportation development difficult. As a result of restricted availability, customers frequently suffer from an economic scarcity of items. It is an isolated territory, which, according to Plattner's market theory, is a collection of markets that satisfy all needs in a variety of ways, making the area a prosperous region (Rudiatin, 2018). Instead, the city features a market that satisfies all of the needs of the community. Road transportation is the major economic contributor in Africa, accounting for 80% of goods transit and 90% of passenger travel. Sustainable transportation fosters economic growth and poverty reduction by addressing complex issues that need the collaboration of several stakeholders. Sustainable transportation fosters economic growth and poverty reduction by addressing complex issues that require the cooperation of all development sectors, focusing on equity, societal welfare, and environmental preservation. An acceptable mode of transportation is essential to suit the majority's transportation and livelihood needs.

Besides the villages of Aji Kuning in Sebatik, however, they were distant from the city centre. Inadequate ground transportation limits access to trade that can only occur through the straits and the sea. The city in issue is midway between Tarakan and Tawau. Sebatik, notably Aji Kuning, eventually became the closest region to Tawau, acting as a commerce gateway from Tawau. Sebatik's lack of infrastructure has a detrimental influence on economic growth due to a decrease in agriculture and fisheries processing, while the Malaysian government continues to stimulate development in its border areas. Infrastructure conditions and capacity are essential for accommodating the growing demand for container shipments. Besides expanding or building new infrastructure, the optimal use of existing infrastructure is also an important strategy. This optimal use requires strategic planning to properly balance supply and demand and optimally allocate traffic flows over multiple modes of transport by multiple stakeholders. Instead of making small-scale, localised, and incremental changes, long-term, systematic transportation planning on a regional or national scale may achieve a more significant net benefit given limited resources (Liu, 2017).

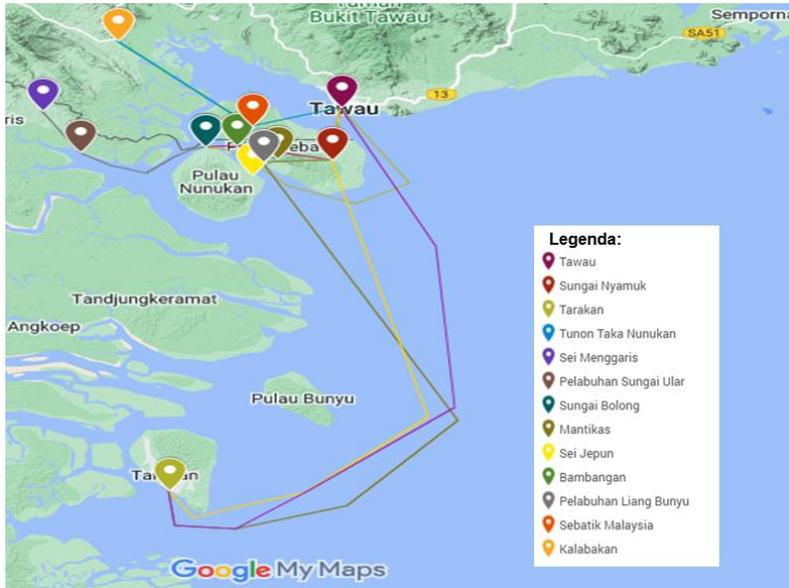
Malaysia will create various structures and facilities, starting with the Center for Commerce and progressing through the palm oil, cocoa, and fish processing industries, hospitals, and entertainment venues. The existing economic difference motivates Aji Kuning residents to visit more regularly (Rudiatin, 2018). This is similar to a mall with a retail and entertainment centre, with the ease of gathering everything needed in one spot appealing to everyone, especially the youth. After the COVID-19 pandemic, there was a slight change in the trend of young people; they preferred to travel to areas full of adventure, and such places are abundant in Eastern and Western Sebatik. Malls and shops are no longer in demand. Boundaries are more filled with cross-country workers.

The topography west of the Sebatik sub-district is a steep hillside with a height of more than 1.500 m above sea level, while the hills in the south are roughly 500 m above sea level, with rough land in the middle. The sloping earth in the eastern portion of Sebatik is not as steep as in West Sebatik. Dompeng (small boats) and long boats are two more kinds of water transportation. The Sedadap dock and the Sei Jepun pier are both part of the Nunukan-Sebatik transit jetty. Since the December 21, 2011 fire, the Sedadap Docks have been closed to passengers and freight. Choose the Sei Jepun docks instead, which are accessible via the transit agency and are judged significantly more appropriate.



**Figure 1 (left) Roundtrip transportation from Sebatik to Tawau, in the Malaysian state of Sabah and Figure 2 (right) roundtrip transport from Sebatik to Nunukan, the district capital in Indonesia**

(Source: Authors)



**Figure 3 Shipping Line (Transportation Line) from Tawau to Nunukan and Tarakan**  
(Source: Authors)

### The Transportation during Covid-19 Pandemic

Before the COVID-19 pandemic, the border area was described as having the characteristics of the socio-economic life of the community and being more oriented towards the neighbouring country's economy. It can be seen from Table 1 that the export of fish and crabs from Sebatik Island to Tawau was significantly higher than the export rate after the pandemic. Meanwhile, during the COVID-19 pandemic, this study shows how important transportation at the border was to supply goods from island to island along the border. As a result of the border closure between Malaysia and Indonesia during the pandemic, transnational economic integration could not be achieved. The border point between Indonesia and Malaysia on the Island of Borneo has received attention from the Indonesian National Military (TNI) to anticipate the spread of COVID-19. The Indonesian National Military is on standby, keeping an eye on the border to break the chain of the spread of Corona. TNI soldiers are anticipating the spread of the Coronavirus at border points. TNI soldiers also monitored the rat or illegal routes.

On the Kalimantan border, there are hundreds of rat routes. Two security agencies from the two countries, the TNI and the Royal Malaysian Army, guard the routes. The Royal Malaysian Army withdrew from posts along the main border earlier than the TNI. Although the Royal Malaysian Army withdrew its

troops at the border, TNI soldiers were still on standby there. There are also Indonesian migrant workers from Malaysia and border traders who pass through rat-travel.

“The care is pretty strict as long as COVID has yet to get the people down to Tawau, but the stuff still comes through the Aji Kuning. My husband, who worked in Tawau, used to come home every week; he has never returned”, said Cahya, a woman farmer from Aji Kuning.

**Table 1: The Value of Export from Sebatik-Indonesia to Tawau**

	Before Pandemic	After Pandemic
The Export Value	Rp. 15,295,334,000 Per Week	Rp. 5,254,396,000 Per Week
The Export of Marine Commodities in the form of Fish and Crabs	Averaged 20 Ton Per Day	Averaged 8 Ton Per Day

(Source: Authors)

Facing the COVID-19 pandemic, all the countries in ASEAN have different strategies (Rudiatin & Hadiwardoyo, 2021). One strategy is to raise the tax rate. Malaysia imposes a 10% VAT rate on goods, which causes the price of goods to rise. The rise in the price of goods in Tawau has led the government of the Nunukan region to look for alternative supplies from Surabaya and Makassar, other cities in the country. In the midst of the COVID-19 pandemic, the national cargo and passenger shipping company of Indonesia (PT Peln) is still trying to maintain that the route of shipping goods throughout Indonesia via sea is not disturbed and complies with health protocols to prevent the spread of COVID-19. This is expected to be a reference for how sea transportation can serve the community while maintaining health protocols. Sea highways are the mainstay, lowering disparity. Two ships serve the sea toll road to the Nunukan area, North Kalimantan, for the transportation of basic needs for residents. In 2021, two sea toll ships will be operating in the Nunukan area, with ports in Makassar and Tanjung Perak, Surabaya. Two ships are ready to serve the sea highway to Nunukan, namely Vessel "Kendhaga Nusantara 6," the port of origin of Makassar, and Vessel "Kawas Mas," the port of origin of Tanjung Perak, Surabaya. In 2021, two ships entered Nunukan. Until this February, four ships had entered Nunukan. From Surabaya, it has operated twice, and from Makassar, it has operated twice. The items below include building materials, wood, iron cement, noodles, flour, mineral water, chicken feed, and other basic necessities. There is an additional route from Barru Regency to Garongkong, South Sulawesi because through

Garongkong, the ship loads Nunukan's basic necessities. Meanwhile, those from Pare-Pare will automatically compete with private ships. Do not let Pare-Pare down. There is competition. That's why the route is longer, so we go to Nunukan twice a month. If from Surabaya, three times a month. The sea highway is a Ministry of Trade and Transportation of the Republic of Indonesia program to minimise disparities in the price of basic goods during the COVID-19 Pandemic.

"The citizens did not very feel the difficulties of transportation from Sebatik to Nunukan during COVID because this condition has been present since 2015 when the Malaysian government closed the transportation route Sebatik-Tawau. As a result of the closure, transportation costs became expensive, our economic opportunities in Sebatik also decreased, and long travel times and basic needs also became more massive", said Amran, a shipwreck officer.

### **Maritime and River Transport (Challenges and Opportunity)**

Building relationships with maritime supply chain partners is essential to the company's survival and competitiveness. The presence of identified relationship-building factors (confidence, commitment, and satisfaction) between supply chain partners will benefit the performance of supply chains. As a result, understanding this fundamental relationship component is vital to developing a successful long-term partnership between maritime supply chain partners (Osobajo et al., 2021). The maritime supply chain (MSC) is a complex system that involves many operational activities such as cargo handling in maritime ports, land transportation, and domestic cargo handling, and partners come from various functions and even other countries with different laws and policies (Kashav, 2021).

Administrative and policy constraints on the border pose various obstacles to cross-border migration. That is why cross-border transport can help reduce the impact of restrictions on citizens' mobility and foster deeper economic integration on the Indonesian-Tawau-Malaysia border. To maintain the sovereignty of each country, each border gate must include security, immigration, customs and exercise, and quarantine facilities, commonly known as CIQS. Customs, Immigration, Quarantine, and Security (CIQS) services at the Integrated National Border Post (PLBN) must comply with national and international operational standards. However, since they must be located on both sides of the border gate, the facilities used vary depending on the requirements of each gate and the agreement between the two countries. The construction of facilities at each border crossing affects the identification of each port. However, since they must be on both sides of the border gate, the facilities used vary depending on the terms of

each gate and the agreement between the two countries. The construction of facilities at each border crossing affects the identification of each port.

Until 2022, the infrastructure of Nunukan District includes three seaports in Kecamatan Nunukan. Tunon-Taka Harbor is sometimes referred to as the new port. The name Tunon Taka is derived from the Tidung language, which means "our village" in the Nunukan area. Jamaker, also known as Inhutani and Sedadap, is another harbour. Tunon Taka has a harbour where ships from Tarakan enter, but Jamaker Port is utilised as a traffic vessel or "dompeng" (traditional boat) from 1.5 to 4 PK, connecting the island of Nunukan with Sembakung, Sebuku, and Lumbis. A massive vessel with a peak speed of around 4 PK can only dock at Peliambangan, the capital sub-district of Sebuku. The next journey will take you to three districts (Sembakung, Sebuku, and Lumbis). Land transportation can be used to reach locations that are not on the river, while "dompeng" continues water transit. "Padau" is the boat name of the Lumbis region, taken from the Dayak language of Agabak, which links predominantly the Lumbis sub-district and a minor sub-district of Sembakung and Sebuku. The trek from Nunukan to Sebatik is really made on the open sea. Can you imagine entering Tawau across the open sea? Small boats become risky, raising concerns among traders utilising "dompeng" boats. "Dompeng" is usually called a wooden boat.

The trek from Nunukan to Sebatik is really made on the open sea. Can you imagine entering Tawau across the open sea? Sailing with small boats is quite risky, raising concerns among traders utilising "dompeng" boats. The Sabah government constructed a transit route from Sebatik to Tawau through East Sebatik in 2015, which is still in use today. If traders can continue utilising the Aji Kuning River, the Sabah government and border traders will benefit more and be safer. The Aji Kuning River trade corridor should be a prominent topic of consideration in the national resilience system. One indicator of a region's development success is easy access to transportation. If there are sectors with the potential to grow economically, ease of transportation access can benefit the regional economy, increase regional trade growth, and stimulate social-economic development in these regions (Chaudhury, 2021).

Many nations regard the river as an important national asset, second only to the sea as a trade route between nations. The Mississippi River has been an important trade route on the western border of the United States since 1783. The domination of the Mississippi River helped farmers and visitors to the northwest. Historically, Indonesians used maritime transportation to move crops and farms around the islands and to India, Africa, and China. Archaeological artefacts found in Indonesia reveal that the people of that period possessed the science and technology of shipping and navigation, enabling them to cross the Indian Ocean

to the Indian Peninsula and even to the Middle East and Africa. The Nusantara people are able to combine land, coastal, and marine ecosystem management, allowing activities in each zone to complement each other. Previous kingdoms that built maritime civilisations included the Kingdom of Kutai (4th century), Sriwijaya, Majapahit, Ternate, Pasai Ocean, and Demak (Rompas, 2011). Cross-border trade from Sebatik to Tawau is part of the history of the Nusantara people's trade in the 4th century.

Seaports are critical to the advancement of international trade. They have functioned as a common path for transporting products and services from one continent to another and linking one mode of transportation to another (Bassa et al., 2021). Sub-Saharan Africa's transportation system is deplorable, failing to address fairness and sustainability. Its analysis considered the existing local settings and socio-economic development limits that contributed to societal transport modal changes and how these variables affect the adoption of current transport modes. Understanding these characteristics aids in developing the necessary policy reforms and institutional adjustments to promote the acceptability of transportation services that meet the needs of local society (Tucho, 2022).

At APEC 2014, China presented its Silk Path Program, which envisions the Chinese Silk Road for economic growth entering Indonesia's marine area, the Malacca Strait, and the Indian Ocean (Putri, 2014). As a result, as its territorial seas become accessible, Indonesia must enhance its marine force. The United States, on the other hand, favours the Trans-Pacific Partnership concept, particularly for nations with established infrastructure. As an APEC member, Indonesia will take part in the programs of the two main nations. Prior to the American and Chinese attempts, Indonesia's border area was already a free trade zone (Rudiatin, 2018).

With the increased intensity of local sea transportation during the pandemic, the supply chain for Sebatik began to flow from Surabaya and Sulawesi. If this is maintained, the supply chain balance from Tawau with those from Surabaya and Makassar will be more competitive. The local government of Sebatik Nunukan has the opportunity to maintain the balance of imports and exports in the supply chain to Sebatik Nunukan.

## **Conclusion and Recommendations**

There have been findings that the settlements of Aji Kuning Sebatik and Nunukan were important for cross-border commerce. The improvement of transportation technology has driven economic integration, making transportation's relevance to

economic activity essential for economic and policy studies. Aji Kuning's strategic position is determined by its location, which allows its people to maintain a highly profitable lane and transportation network. Over time, Aji Kuning has become a cross-border transit point for various trade items as well as a place for its residents to build a transcultural and transnational living environment.

In terms of economics, the trade border between Sebatik and Nunukan is similar to the concept of free trade zones. Years of free trade between border crossers from both nations cannot be confined to countering illicit trade activities that harm the state. The difficulties that arose in the meeting to discuss the Border Trade Agreement highlight the challenges of managing the Indonesia-Malaysia border areas, which are mainly Melayu ethnic and culturally feel like a family.

This document is intended to assist border policymakers with information on managing border regions at the local level based on their uniqueness and specificity. The border is automatically reinforced when local communities are empowered, and their economies are developed. Building local public transit along the border is one strategy for improving the local community and boundaries. The sustainability of supply chains to border areas can slowly eliminate rat routes where illegal transportation often occurs. The Cross-Border Post Sebatik, which has just been built, is an effort by the Indonesian central government to improve supply chain transportation in Sebatik-Nunukan. Therefore, the Indonesian government needs to make a policy to develop the transportation system for the local needs of Sebatik Nunukan to sustain the socio-economic community.

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