**WATERS TOWARDS RICE TRADE FLOW IN 14TH CENTURY OF JAVA**

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**Abstract:**

Waters in the forms of many, such as ocean, seas, as well as rivers are peculiarities found within Southeast Asia. These waters has been drawing exclusive unique region compared to others. Waters that happen to be found almost everywhere, possess significant contribution towards Southeast Asia maritime routes. It connects between shorelines upon landmass, while wide islands nearbly of Southeast Asia. Water also separates the shores between Southeast Asia Mainland. Water existence had given significant impact towards rice, as original plantation of Asia. Rice within Southeast Asia history possess its own particular history. One of the biggest producers was Java island. Geographically, Java obtains a range of mountains that supporting the soil. While, Java was also getting help of several rivers both as transportation amenities or field irrigation, as well as annual rain. This condition directly affects how trade occurred in 14th century, that Majapahit Kingdom reaches its golden ages.

**Keywords**: trade, Majapahit, Java

**INTRODUCTION**

Exchange or lately we call it as trade is one of the most primitive manner human being ever did, since prehistoric until now. It emphasizes human as homo economicus which always counts between advantage and disadvantages. It also considered as one of the oldest activities upon human development history. Many aspect of civilization embraces exchange manner in cope with needs. Exchange routes and martime paths forming trade network that has always been the matter of academic research (Curtin, 1998; Castillo, 2016). This is similar compare up to the civilization formation, in which trading activies had also transformed and evolved in a dynamic line. Resources availability differences has emerged exchanging between groups, then composing further contact (Curtin, 1998). Trade activity according to Christie (in Boomgard, 2007) has become major stuff towards financial circumstance that holds power in controlling other aspect as well.

Trade, in different forms were occurred in most civilization in anytime and anywhere. Trade as an attempt is mainly performed for granted as human being origin expression to exchange and gain money. The commodities transportation is considered to require participation of professional merchants. Merchants are those who were capable to gain significant role towards communities and giving significant upon regulation formulation of old societies (Surya, 2020; Morley, 2007; Parkins, 1998).

Trade routes taking not only goods nor commodities, as well as community establishment and thoughts (Curtin, 1998). Trade was a unique kind of economic business, monetization created society established communities with various occupations, social stratification, and the division between the chief and commoners. Trade had transformed into a valuable part that inseparable, due to geographical location and particular remarks which closed by sea traffic path and passes maritime route between west and east regions. This region under the wind has always been affecting both domestic and international trade (Surya, 2020; Reid, 1998).

Region of Southeast Asia is geographically unique territory that lays between Indian Ocean region. As Reid’s state that this region strangely similar with Mediterranian. This similarity based on the isolated location in which separates nearby areas, such as Pacific islands, South Asia, as well as East Asia (Reid, 1998). The trade dynamic had evolved Southeast Asia history and making this region eventually emerged to play valuable part within global trade activities. Precious commodities as pepper, nutmeg, sandalwood were main products which engaged in cross-continent. Southeast Asia geographical condition had encouraged this region to be participating into multiple intense sea trade. It than established political system to be quite supple (Reid, 1998). Rice itself has been known as origin plant in Southeast and East Asia (Isemura in Castillo, 2016).

Within Southeast Asia region, Java obtains valuable part of in supporting rice across the country. Java island was noticed by European in the term of Java or Java Major, as well as Taba. This island then called as Jawa or Nusa Jawa that happens to be the biggest island within Indonesia archipelago. Modern geographers notice it as Sunda Kelapa (Raffles, 1817). The term origin remains unknown.

When we referring to Southeast Asia’s historian, Dennys Lombard, Java term was first mentioned in Buddha’s priest chronic Fa Hsien (Faxian). The priest made a journey to learn Buddha from India to China. He stayed in India about 12 years then moved to Sri Langka. During the journey, the vessel that he occupied was being crashed by storm. Fa Hsien made it way to a land called Ye-po-ti or Yawadwi (pa). This term derived from Sanskrit, means Java. Other record about Java term was written by Kasymir prince named Gunawarma. He lived in She-Po, a term similar to Jawa for few months. It could be concluded that term She-Po also recorded in Chinese chronic. Another inscription makes a connection between Java and traders, mainly from China and Arab, approximately since 5th to 7th century (Lombard, 1990).

For thousands year, Java geographical condition and characteristics has been providing massive effects towards the communities. The existing active volcanoes encouraged escalation of population, as well giving devastation for several times. Meanwhile, 20th century geological quiescence and earthquake had developing history of social and political aspect of the region (Henley & Nordholt, 2015).

The island of Java performs ranges of mountains and highland created an east to west backbone within the island. This geographical condition separated remote areas into smaller regions which is very appropriate for wet rice cultivation. The wet rice cultivation fields of Java are assumed prosperous globally. The main way in communication in Java was engaging rivers’ stream. Two rivers were posing outstanding value, namely Brantas and Solo rivers. In the other hand, paved road was built in mid of 17th century, seems to be more convenient compared to river utilization. Gradually, East Javanese society grew in the Brantas valley that just upstream of Arjuna Mountain slopes and streams in opposite direction (Ricklefs, 2001; Tarling, 2008).

It has been known that since ancient times Java basic economy was agricultural, mainly rice cultivation, which were three kinds type, namely unirrigated, terraced and irrigated fields. During 14th century, Javanese hills were occupied by rural dwellers, means encouraging extensive jungle logging and waste land. Hence, deforestation was undeniable along mountain downhills. Performing sawah (terraced field) was supported by both dams and canals as ancient Javanese civilization achievement, which had been practiced prior to Indian arrival (Pigeaud, 1962).

During 14th century, Javanese Power occurred in Trowulan. Trowulan was the former center of the Majapahit kingdom. Geographically, this region is located on a bumpy plain with an altitude of 30-40 meters above sea level. This region is surrounded by ridges, volcanoes, and wide valleys. Generally, it stretching to the north. People call it ‘Jatirejo’ alluvial fan. Every rainy season, volcanic material from the base of the fan is gushing through the rivers that flow in the center of the kingdom. The outpouring overflowed the river water. Flooding is inevitable.

About 10 km north of the center of the kingdom, the Brantas River runs. The area around the river is a vast expanse of floodplains. Majapahit rulers also turned their minds to prevent flooding from getting worse and using water for the people's welfare.

In the range of 1293-1500, the Majapahit authorities built a number of reservoirs, artificial ponds, canals, small waterways, water tanks, and wells. The information included in the Kandangan Inscription, dated 1350. One of the famous reservoir developments was the "Candi Tikus" (called the temple because in the middle of the reservoir stood the temple). It worked as a dam and symbolization of Mount Meru which is pouring water from its peak. This symbolization is significant and an inseparable part of Javanese culture. Water plays an important role in Javanese mythology.

In addition to building these facilities, the Majapahit authorities formed a water management unit called *huluair.* His job is to divide water for rice fields, almost similar to the *subak* klian in Bali. By ensuring that the water was evenly distributed, the king ensured public welfare.

Besides water management, rice was also an important concern as one of the trading commodities at that time. Rice is considered as a paramount product of Indonesia. Meanwhile, this rice brings vulnerability in term of climate change, hence it requires proper plantation technique upon irrigation method. Rice has three to five months to grow requires the certain water amount within harvest process (Panuju et al, 2013; Alexander et al, 2014; Silva et al, 2015). Apparently, 90% rice suppliers coming from Asia, with main producers are China, India, Indonesia, Bangladesh and Vietnam. Most of the rice produced and consumed is grown upon irrigation, even though there are few varieties of rice which are not planted in flooded paddies (Northrup, 2005) .

According to Ricklefs, rice is also the primary diet and product of Southeast Asia (Ricklefs 2001; Castillo, 2016). Rice or Oryza Sativa is phsycologically a swamp plan and has evolutionary sequences the shifting cultivation of rice hills cannot have modified in lowland plantation (Hill, 1980). People of Southeast Asia also engage other daily meals, namely caladium, potato, sago, as well as wheat that had exceed rice. Even though, in 15th century, rice was more accommodative, since it can be found everywhere and could be planted conveniently. Rice also represented with several plants, namely grains, spikelet bases and lemma apiculi (Reid, 1998; Castillo, 2016). Rice production of Southeast Asia kingdoms, rice of Java was considered the top producer. Rice appeared as the primary commodity of Southeast Asia, which against Van Leur’s premise which mentions precious commodities were the main trade products (Reid, 1998).

During the 14th century, Java experienced domination upon Majapahit Kingdom. It was complex society. On the one hand, tribal social order were seen dominant, while the other hand modern Javanese remarks gradually appeared. It could be assumed that Javanese society during 14th century (and prior) possible divided into four classes; rulers, priests, people and and bondmen. Within this era, Majapahit realm the rural communities seems to have been variegated to a bigger scope seems possible (Pigeaud, 1962). This is why 14th century was peculiar period, referring to Negarakertagama which possess valuable information upon religious, social, as well as economic circumstance of 14th century under Majapahit realm.

History of Java had linkage towards inter-continent economy circumstance through Dutch colonialism, as well as global trade network with foreign traders (Carey, 2018). This research aims to figure the effect of water in rice trade of Java during 14th century. This study attempts to examine the geographical history of waters towards Rice trade of early Java.

**METHOD**

This study is a historical research which engages literature review. Literature review is definition stages of review based in systematic matters. This method proposes ideas to identify, evaluate, and synthesize towards earlier research attempted by reseachers, scholars, and praticioners. The literature review method used in this research namely;

1. planning (formulating the aims of literature review)
2. selection (selecting the appropriate literature)
3. extraction (assessment of quality and data extraction)
4. excecution (findings analysis and formulating the results) (Okoli, 2010).

**RESULTS AND DISCUSSION**

*Results*

Java regions, namely East and Central Java provided products of rice, palm sugar, timber and other products towards domestic and international trading route throughout Malaka straits since early centuries. Java north coast established harbor ports which were used as entrepôrts. Furthermore, foreign traders both from India and China already built stable trade relation with traders of Java since 14th century (Klaveren, 1953).

Java possess lands that could be identified to general divisions; lands that suits if inundated directly from rivers and land that does not. The first one is called as *sawah*, in which eventually turn in *tegal* or gaga. The primary sawah land or wet cultivation compared to tegal asserts how they produce the rice periodically. Rice was continually noticed as the main diet among Javanese, also Indian plantation, as well as husbandry subordinate varieties. Some states and kingdom of Sumatera, Malacca, Borneo, Celebes, and Moluccas were always have significant rely upon Javanese rice supply (Raffles, 1817).

Started in 12th century, trade network encompassed Java island appeared more intense. This was due to opening of Chinese ports, hence encouraging high intensity of merchant activities within Indian Ocean until the middle of 13th century (Lombard, 2005; Christie, 1982). During 14th century there was significant shifting within Indochina Peninsula, such Mongolians expeditions, Angkor Kingdom decrease, and all. These events passed blessing towards current flourishing kingdom of East Java, that is Majapahit. This kingdom apparently had already established intensive sea trade connection until 15th century, while Islamic states were gradually formed, replacing Hinduism-Buddism kingdom (Lombard, 2005).

It was apparently in 14th century that Majapahit achieved its golden age which could be seen through Javanese representation. Under Majapahit, the realm controlled sea ports all along Java north coast, namely Jepara, Tuban, Gresik, Ampel (Surabaya), which were busy markets occupied by many merchants performed exchange wares both near and far. The Javanese in 14th century was spending time dominantly with trade, including building ships, seafarers and colonizers controlled the whole archipelago, even Malay peninsula and Philippines. The growth of economic stage partly encouraged by state supervision and markets which were administrated by central government. The central official including a small army, but most regions was established different rules and linked up to the organization in maintaining authority (Furnival, 2010).

The style of commerce then changed. During Majapahit, trade was no longer free. The activity was handed over to employees who were in charge of and benefits for the country. Economically, Majapahit turned on important ports along the north coast of Java as transit ports, such as in Gresik, Tuban, Jepara, Lasem, Bali, Surabaya, and Jaratan.

Majapahit also emphasized its natural yield. Like rice, spices and salt as trade commodities that were required globally. Majapahit court provided trade regulations, taxation, and reinforced the ports on the two rivers, Brantas and Solo. In order to control the regions, a local ruler or *Bhattara* was placed. They are given the right to make their respective tax regulations. This commercial activity became one of the biggest tax contributors in the Majapahit kingdom's economy (Rahmawati et al, 2019).

Since the late of 14th century, there were several ports chief on the north coast escaped from the grip of fell off Hinduism empire, Majapahit (Raffles, 1817; Furnivall, 2017). Gradually, merchants converted to Islam and gained more independent role. In 1677, Dutch started to interrupt towards Mataram in Java. Dutch attempted to increase their economical exploitation with Cultivation System. As Multatuli states Java as “jewel in the Dutch Crowb” and the wealth of Holland.” The Dutch Cultivation System occurred for forty years eventually gained more than 1,250 million guilders profit. This was the first stage that being engaged by Dutch to exploit the potential of Javanese cultivation under Dutch formal regulation (Kian, 2006). Hence, Dutch then appeared to be the middle man of rice distribution across the country, in which about eight thousand tons delivered to Ceylon, Coromandel, Cape, and other areas (Raffles, 1817).

According to Reid’s, there were three methods in rice plantation technique which was used since 14th century in Southeast Asia. First, a technique by planting around downhills, spreading the seed into dugged holes, and planting seed in field. Since 16th century, some countries were known as big producers of rice, including Ayutthaya (Siam) which distributed about 500 tons and Pegu exported approximately 40 ships full of rice to Sumatera states, as Pasai, Pedir, dan Melacca. However, after Birma defeated Pegu, rice surplus distribution moved into Irawadu river towards Birma capital. Cambodia was also able to trade about 700 tons each year into Patani, Pahang, and Brunei. Songhkla and Nakhon Sithamarat (Ligor) also took part in delivering about 800 tons annually to Pahang and Patani. Yet, it was Java who produced the largest quantity that engaged the third method by seeding germ into the field (Reid, 1998).

In the 14 century, East Javanese realm rice growing on *sawah* indeed was the basis of economy. All kinds of crops and produce were delivered from rural communities and the various kinds of beliefs domains and estates spread all over the country (Pigeaud, 1962).

*Discussion*

There is a logical connection could be made between waters and rice trade production in Java during 14th century. Indonesia is an archipelago country consisting of sea and islands. Sea could be viewed in different perspectives. One hand, water is the form of sea encouraging dangerous thought due to bad weather like storm or unknown creatures. In the other hand, sea travel seems convenient due to navigation technological advance, makes it faster and easier than land travel (Boomgard, 2007).

Throughout Java island exists a range of mountains which giving shape of backbone from east to the west. Active volcanoes along with highlands are supporting in separating hinterland regions become effective terraced fields (*sawah*). Paddy or rice specified regions within Java was considered one of the richest in the world. Main routes of Java mainly rivers which mostly were short, despite transportation did only occur through rivers. Records of massive vessels of Central Java states between 8th and 10th century represent in Borobudur temple relief indicate that there was high possibility of long distance sail. This also supported by Sojomerto inscription (about 700 BC) which mentions the relation between Java and Sumatera which happened to be maritime route (Ricklefs, 2005; Munandar, 2009 in Prihatmoko, 2011).

Finally, we come to conclusion that Indonesia possess monsoonal tropics, in which this monsoons are unlikely common in Asiatic continent. However, Java island is located between monsoon and equatorial point. The monsoon from West to East makes dry season turns more intense in the east moosoon, which is actually trade of Southeast Asia wind that caused by quite high pressure into region of Australia. The nearby place over Australia, the lesser smoke accumulated on its short path and precipitation it takes towards the islands of insulinde. Java is also prosperous blessed island that obtains andesitic tiffs and efflata and along this condition provides aptitude in maintain the dense and settled dwellers (Klaveren 1953).

Java is noticed with enormous of *sawah* and *tegalan* culture. Sawah illustrates superstructure of social matter to deliver the supply of water and to put labor based on communal efforts in larger scope in the form of dams and canals. Furthermore, Java also possess teakforest area that is being controlled chalk valleys then formulates pattern of Java geological situation (Klaveren, 1953).

Wet rice cultivation of Java derived from unknown history. It could be based on palynological data that burn-offs closed to grain swidden cultivation. Many areas habitation patterns were established in the early ages that related to historic stage. However, settlement shifting in Java based on rice plantation was possibly receding-flood cultivation. According to the palunological proof suggests that political and economic developed in early Java, commoners were performing cultivation in average height than in low land areas (Sutikno, 1989).

Overflow area compared to periodically flooded lake and river end points required large amount of labors and metal tools, since this type of cultivation plays land purification, the establishment and preserving accumulated, terraced, ploughed, and fields of ‘bottomed’, as well as cannal system into water delivery. The accurate recording of Javanese rice cultivation based on historical sources. One of the most important information was recorded in Old-Javanese language inscription that kept the tax payment, carved in stone and copper plates found in the end and early second millennia AD. These historical records defining that since 9th century, rice was the primary commodity of agricultural system, as well as main crop product (Boomgard, 2007).

Java lays in equator point with tropical maritime, which also known as ring of fire. Java landscape is dominated and formed with both active and inactive volcanoes. Mountains encourage rain clouds that is watering most area in southside clamps. This result in water storage in the surface over mountain hillside. Therefore, the cultivation system in the south of volcanoes in Central Java becomes more stable, supported by proper seasonal changes. Meanwhile, two major rivers namely Brantas and Solo are free to the ocean of east Java northeast coast (Boomgard, 2007).

Food production and the distribution of food supplies across Indonesia have long been connected to geographical and temporal variations in climate. The Indonesian archipelago embraces the equator and temperature is relatively constant across the year and the region. Precipitation patterns are the primary sources of temporal and geographic climate variation. Average rainfall is between 1,500 and 4,000 mm per year and in some mountainous regions, rainfall of 6,000 mm per year can occur. The El Nino-Southern Oscillation (ENSO) climate scheme significantly affected temporal and geographical; rainfall is a major precondition upon rice production, the main staple crop in the country. This ENSO patterns has had consequences for rice production and food supply (Eng, 2009).

Classifying Java climate is quite complicated. The existence of high volcanoes and mountains series which is 2,000-3,000 meters and extensive areas at high altitude cause considerable variation in regional rainfall, temperature, humidity, and sunshine. In terms of general condition, there are two seasons; rainy and rainfall season. The period of peaks and throughs, as well as the average number of precipitation, different within the island (Eng, 2009).

Rainfall amount influences to crop production, particularly rice. Both low or late rainfall during the rainy season may cause reduction in the number of land for rice cultivation, since rain is absolutely required to weaken the soil in order to puddle and to fertilize. Rainfall also responsible in increasing crop failure due to shortages of rain retards rice to grow. There is plenty of regions with soil variability across Java island and giving impact towards rice production, as well as rice trade of Java (Eng, 2009). As stated in The Suma Oriental the “Land of Java only had infidels (merchandise); unlimited amount of rice four or five types; and very white; better than that somewhere else ... “(Cortesao, 1944).

For many centuries, wet rice cultivation pattern had been stroked both southward and eastwards, encouraging new pattern of society and fetching current pattern, as well as establishing path towards natural forests. The logical connection among natural resources landscape, and economical shifting in term of rice trade have proved to be related. Landscape encourages the system of cultivation, the availability of raw material, and how social structure to be formed. The major control of main production figures that environmental circumstance determines how the cultivation pattern establishes, the means uses for deriving potential consequences into several facets of live, particularly trade itself (Falkus, 1990).

**CONCLUSION**

Waters in the form of river, rain, and all are not only significant elements found from Java volcanoes. Volcanoes also played quite significant part in agricultural system with delivery valuable materials, namely ash and minerals. Furthermore. active volcanoes also generating the amount of slid that required to be embraced, first in weirs and then end up in cannals that connected to the field. This patter gathers and distributes to the field, both in water of fertilizing sludge. Therefore, the point of the land around Mount Merapi in Central Java, happens to be greatest supporter of the largest densities upon agricultural population in the world.

Another aspect is seasonal rain that drops annually in most part of Java helping the wet rice cultivation to be more prosperous. Annual rain encouraged by mooson are significant part to ensure the quantity of rice could be produced. Instable climate could result in bad harvest and giving obstacles in delivering the commodity.

Water in the term of rivers, rain, and etc had played huge task towards Java rice trade both Indonesia archipelago and Southeast Asia regions. Waters happened to held control of quality and quantity produced during 14th century. Majapahit realm proved to be effective engaging river as main tool in transporting the rice proved to effective. It could be said that landscape and geological condition have turned into general concern for court. In order to collect condition in comprehensive way of long-term environmental change would involve an immense task as detective work, well beyond the present essay scope, identifying and gathering relevance of several social sciences.

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