

# Logistics Development Study of East Coast Region: Early Investigation

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*Logistics industry is one of the catalysts for the development of industrialisation in Malaysia which is linked to the international trade. The performance of the industry will have an impact of the progress of the nation's industrialisation and its competitiveness in international trade. The development of logistics management has facilitated production and distribution processes and created more access to the global market. It is within this competitive environment that shippers and consignees require efficient logistics services to move their goods at the right place, at the right time, in the right quantity, conditions and at the right price. Logistics development is paramount important to the country in supporting economic and growth and enhancing competitiveness. Malaysia as well as many developing countries are still at the moderate stage in developing logistics system and often face considerable challenges and constraints to provide efficient and effective logistics services. Therefore, the research objectives (i) to examine the current logistics infrastructures in the East Coast Region of Peninsular Malaysia, (ii) to find out the constraints and challenges in logistics development and (iii) to identify the capability of logistics service providers in providing the services. To achieve the objectives of this research, interviews were conducted with selected local authority, manufacturer, port operator and logistics service provider in this region to achieve the objectives of this research. The overall findings show that the existing logistics infrastructures are not well occupied the logistics development in the region. Amongst the constraints and challenges were mind setting of the communities and financial issues in organization. However, at the time beings, most respondents were satisfied with the services rendered by logistics service providers.*

**Keywords:** Logistics development, logistics infrastructure, logistics service providers

## 1. Introduction

Logistics industry is one of the catalysts for the development of industrialisation in Malaysia which is linked to the international trade. The performance of the industry will have an impact of the progress of the nation's industrialisation and its competitiveness in international trade. The development of logistics management has facilitated production and distribution processes and created more access to the global market. Logistics is widely defined as a backbone to the economic development. It means that a good or systematic logistics system applied in certain organizations will bring good impacts to the organization and definitely could increase their competitiveness among competitors. Thus, up to a certain level, the healthy competitiveness could bring developing countries to stand at the same standard as developed countries.

Malaysia government had established East Coast Economic Region (ECER) as one of Malaysia economic corridors within East Coast Region (ECR). ECER will transform the region into a major international and local tourism destination; an exporter of resource based and manufactured products, a vibrant trading centre, and an infrastructure and logistics hub. Strategically located in the east coast of Peninsular Malaysia, the ECER has the potential to become the main gateway for trade and industry within the Asia Pacific region.

The government has intended to make Malaysia to be centre of logistics and transportation hub. In order to make the government's intention become reality, the study of the logistics development within ECR should be thoroughly study. Therefore, in light of the above, the following objectives were established.

- (i) to examine the current logistics infrastructures in the ECR.
- (ii) to find out the constraints and challenges in logistics development.
- (iii) to identify the capability of logistics service providers (LSPs) in providing the services.

## **2. Literature Review**

### ***East Coast Region (ECR)***

The efficient logistics system is required within ECR in order to cater the economic clusters. ECR consists of three states namely Kelantan, Terengganu and Pahang, 66,000 square kilometres which covered 55% of total land area of Peninsular Malaysia. These areas are now developing with variety of economic clusters such as oil & gas, petrochemicals, manufacturing, education, agriculture and tourism. The clusters are reliable to be part of Malaysia's economic boosters. In Terengganu for example, there are two areas of international trade; Kemaman Supply Base (KSB) and Kertih Port. The port and supply base are very important for export and import domestically and internationally, they thus need an efficient logistics infrastructures and logistics system to support the activities. Other than Terengganu, Pahang also has Kuantan Port, one of Malaysia's international ports. The brief of the ports information in ECR as explained below:

#### **i) Kemaman Supply Base**

KSB is located in Terengganu and began operations in 1982 as an onshore support base dedicated solely to service and supplies the offshore petroleum operations. It was specially designed and developed as a comprehensive logistics supply base for Peninsular Malaysia's offshore petroleum exploration and production industries. KSB is an all weather port due to the natural shelter and the 850-meter breakwater built as a protection from the seasonal north easterly and south easterly winds. Its 360-meter quay with a depth of 8.0 meters enables it to receive 5-6 supply vessels at any given time. All this berthing facilities are dedicated for the specialized use of the supply vessels and the oil and gas related cargo traffic. There are more than 220 petroleum supply and service companies with varying degrees of manufacturing and technical service capacities operating at KSB. It is the biggest concentration of experienced contractors in Malaysia supporting the petroleum development (EPIC).

## ii) Kertih Port

As Kertih has now transformed into a petrochemical hub, Kertih Port as logistics infrastructure supporting to logistics services activities which functioning as Centralised Tankage Facilities and acting as mainly bulk liquid port. It houses the Petronas Petrochemical Integrated Complex (PPIC) that links the entire range of the oil and gas value chain, beginning from the upstream exploration and production to the final stage of petrochemical manufacturing.

## iii) Kuantan Port

The Port of Kuantan is one of the deepest seaports in Malaysia and the fast emerging port acting as the new gateway to the Asia-Pacific region. As a deep-sea all weather port operating all year round, it is capable of handling vessels up to 150,000 DWT and various types of cargo ranging from general cargo, dry bulk to liquid bulk. The Port of Kuantan is logical choice of shippers in the ECR area. It is the port which other regional ports within the Asia Pacific would like to be associated with. In addition, the port is positioning itself as a regional centre for transshipment activities as well as cargo consolidation and distribution activities. The port is also located right in the heart of the oil and gas related industrial zone in the ECR and is poised to benefit from the rapid growth of the petrochemical industries in and around Kertih. Kuantan Port functions as Centralised Tankage Facilities, Pipeline and pipe rack system connecting Gebeng area to Kuantan port and acting as container and bulk liquid port.

Besides port's logistics facilities, mode and condition of transportations are also playing significant roles. Road condition for example, is significant for smooth delivery especially for the usage of hauliers. Railroad is needed as an alternative way to sea and air transport. Railroad is a very good of alternative choice since it offers less cost, less risk and faster delivery time.

In term of railway sector, rail haulage of containers is by Keretapi Tanah Melayu Berhad (KTMB) for the movement of containers which linking Kertih, Gebeng and Kuantan Port. The Kertih-Kemaman-Kuantan railway is a 77-kilometre long route which connects the integrated petrochemical complex in Kertih, Terengganu to Gebeng, Pahang and the Kuantan Port. The railway line is capable of hauling cargo in large volumes and in bulks, thus making it a highly economical, safe, reliable and consistent mode of transportation for the movement of raw materials and finished products of petrochemical materials. Apart from transporting petrochemical products, the railway link is also opened for general freight transport operated by KTMB, the main rail operator of Peninsular Malaysia. The rail link crosses five points in Kemaman (Kertih, Kemasik, Ulu Chukai, Binjai and Banggul) in Terengganu and Sungai Karang in Pahang.

### ***Logistics infrastructure***

A study conducted under the auspices of the Economic and Social Commission for Asia and the Pacific (ESCAP, 2010) identified the major problems faced by Malaysia's freight

transportation community like excessive dwell time for freight at ports or inland border check line (resulting either from or combination of both), congestion of the land transport accesses to ports, poor coordination of rail and road loading or unloading activities in ports, blockages to the free flow of transit vehicles and cargo in the hinterland, inefficient and costly methods for trans shipping containers or cargoes between different railway gauges, lack of a single transport authority document for door-to-door consignments involving more than one mode and fragmented tariff-setting to railway in international transport corridors, putting rail at a competitive disadvantage. According to the study, these problems existed and could be increased might be because of slow customs inspection or slow document transmission at the checkpoints (ports/hinterland), railway institutional problem and because of existing poor infrastructure (ESCAP 2001). Sgouridis (2003) added, all major Malaysian ports have both road and rail access but the quality of the connectors can be improved especially if congestion problems are experienced. The Malaysian government has shown that is focused on the improvement of the management and efficiency of the transport sector, although the major focus remains on the building of new infrastructure (MEPU 2001).

Sgouridis (2003) reported that the Federal Government's decision to assign Port Klang as the load centre for Malaysia had repercussions both in an increase of economic activity in the area as well as the freight handled by the port. The port infrastructure and handling techniques are currently adequate to service the demand but problems have arisen in the landside handling of the freight, with delays in the delivery of the goods to and from the port. There were some potential reasons that lead to this condition (Sgouridis 2003):

1. The majority of the freight transported to and from Port Klang (95%) is carried by trucks with rail carrying only 3.5%.
2. The use of Electronic Data Interchange (EDI) and electronic tracking by the haulage firms is still limited.
3. Even if EDI is used, there is a need for additional paper documents like bill of lading, insurance certificate, invoice, delivery order, packing list, detail packing list etc, required for custom clearance.
4. Company operation requires permit approvals and additional paperwork that may reduce the operating efficiency of both the private and the public sector and increase the transaction costs.
5. There is congestion on the main corridors that delay the delivery of goods and reduce truck fleet utilization. Port generated truck traffic contributes to the problem.
6. Railway performance is not adequate for drawing a significant share of truck traffic.

In a further study by Li & Fung Research Centre (2008) mentioned that although strong exports in past decades have stimulated the infrastructural development in China in important coastal regions, infrastructure capacity in China was unbalanced. Transportation bottlenecks remain common given the vast geographical span, in particular in Central and Western China and the rural regions. Connections between rail, road and port facilities also still have much room for improvement. According to Speece and Kawahara (1995), China's highways, railways and shipping were already insufficient to meet the needs in the 1990s. Yam and Tang (1996) have also found similar transportation issues in Southern China.

### ***Constraints in developing logistics***

From the research conducted by Ali et al (2008) on logistics industry in Malaysia, they found several constraints that limit the logistics development in this country. Among the constraints were lack of follow up actions after certain meetings or issues raised, lack of sophisticated management techniques among the supply chain companies, problems in information technology (IT) system with regard to the (1) costly EDI pricing and charges due to in transparent marks-up by freight forwarders and (2) overall performance and functionality of the system, lack of skilled and trained manpower, no single established source of logistics data and information including lack of information of the industry players, facilities, services and capabilities of the sectors, lack of research and development of the industry, lack of regulatory forms to facilitate the industry, lack of dissemination of information with regard to the development and expansion of the logistics industry. This information was important because through the information obtained, the practitioners could then suggest on how they could participate in the new business opportunities (Thong, 2007). Also, one of the main problems faced by the local service providers is the inability to participate in international logistics activities as a result of limited IT linkage, overseas corporate network and capital investment (Thong 2007).

The research conducted by Li & Fung Research Centre (2008) found that China was having problem with human resource. It was found that the demand for talent outstripped supply in the logistics industry. Many of their practitioners lack of modern management knowledge and skill sets to cope with ever-changing needs of the industry. In the other hand, they stated that the self-management mentality has hindered the development of China's logistics sector. Seepece and Kawahara (1995) lined that in China, the fault also lied in adequate transportation infrastructure, bureaucratic inefficiency and corruption. Beside China, Hungary, Korea and Japan also were also facing lack of managerial skills in logistics, apart from issues pertaining to centrally planned economies (Handfield and Withers 1993). Goh and Ling (2003) added, aged infrastructure exists and was inadequate to meet vibrant demand, coupled with archaic handling equipment and the lack of qualified logistics personnel. This naturally leads to high logistics cost. For instance, the proportion of logistics cost to total production cost is estimated at 20-30% in China, compared to only 10% in the developed countries (Dekker 2002). Other major logistics barriers in China include the lack of responsiveness and dependability of local suppliers, inadequate communications infrastructure, complicated and time-consuming customs procedures and the unavailability of logistics consulting services (Carter et al 1997).

### ***The challenges for logistics development***

Li & Fung Research Centre (2008) stated that even the industry in China grows year of year, there were also some major challenges that interrupt the development like rising cost, financing bottlenecks, in-house mindsets to handle logistics, localized services, lack of unified top level institutional coordination and imbalance transport infrastructure development. For 2006-2007, the China's GPD decreases 0.1% due to rising cost of labour and fuel cost. The toll problem there also leads to cause driving expensive.

From a survey on 68 logistics managers in Bangladesh, the results showed that the most challenge facing logistics development in Bangladesh appears to be infrastructure related; inadequate transport and telecommunication networks, and poor port and related facilities are the major factors hindering the development of a logistics system in the country. Other than infrastructure, the challenges also came from frequent changes in the government and government policies, lack of understanding of the nature of market economy and its management. More severe, its modus operandi may not have been well understood by the economy managers. The logistics managers also fail to understand and appreciate the role and importance of logistics as a distinct management function, as such, was reluctant to support the establishment of the organization (Razzaque 1996).

Generally, in today's world of continued growth and globalized markets, supply chain stakeholders had an opportunity to realize substantial value potential. At the same time, the resulting increase in complexity has created significant challenges for players. Most major logistics players are experiencing unstable growth and eroding margins, while supply chain operators (shippers) are facing increasing pressure to lower their costs whilst at the same time improve the efficiency and effectiveness of supply chain operations (McKinsey 2011).

### ***Capability of Logistics service providers***

With the increase of the of the global competition and the rapid progress of the IT technology, the logistics industry has become one the most influential subjects of the 21<sup>st</sup> century. The scope and role of logistics have changed dramatically over recent years. In the past, logistics has played a supportive role to primary functions such as marketing and manufacturing. Now the scope of logistics has expanded beyond its traditional coverage of transportation and warehousing activities to include purchasing, distribution, inventory management, packaging, manufacturing and even customer service (Chin et. al 2010). More importantly, logistics has dramatically evolved from a supportive role characterized as passive and cost absorbing, to a primary role and critical factor in competitive advantage (Sum and Teo 1999). Companies experiencing growing pressure to reduce costs and provide better service can improve their logistics by outsourcing to logistics firms, an option that can both efficiency and effectiveness. Fernie (1999) classified studies on logistics outsourcing into three types: (1) the outsourcing decision from theoretical perspective; (2) broad conceptual views on the relationship between the logistics service users and their LSPs; and (3) empirical research on the users' perceptions of logistics service providers.

The outsourcing of logistics activities to specialized logistics service providers can help increase the efficiency and effectiveness of a company's logistics function (Vowles 1995; Christopher 1993). Outsourcing is also an option for companies that perceive the existence of gaps between what they want to accomplish with their logistics operations and what they can achieve with their in-house expertise (Buxbaum 1994). The use of logistics providers allows companies to concentrate more closely on their core business. Other key drivers for the use of logistics providers include globalization of businesses and implementation of just-in-time (JIT) principles. Ali et al (2008) mentioned that since the outsourcing of the production function has led to the outsourcing of logistics activities, many multinational companies, such as automobile, electronic and electrical companies have outsourced their logistics activities to third party logistics (TPL) service providers in order to enable the companies to focus on their core business.

In China's logistics industry, four main distinct groups of different origins were entering where their competition is intensifying with each other. Based on a survey on 177 companies of LSPs conducted by (Chin et al 2010) in Shanghai, it was found that the respondent companies generally possess well capability of performing traditional logistics services such as freight forwarding, direct transportation service, customs clearance, shipment consolidation, tracking and tracing shipment information and warehousing. They are also capable of performing logistics services involving the use of basic logistics information technology. These services include receiving and sending shipment notices using EDI and logistics information systems. The results suggest that logistics companies in Shanghai had been investing in basic information technology to enhance their service capability. Nevertheless, they appear to lack the capability to provide advance logistics services such as purchasing services which requires relatively large investments in human and physical assets and in information technology infrastructures. One plausible reason for their lack of service capability in these "value-added" services is that most of the respondent companies are of small and medium size. They thus lack of financial resources, persons with those abilities and operating scale to expand the scope of their services to include these categories in their services menu.

In the view of LSPs' perceptions, the companies of LSP in Shanghai were particularly good at helping customers to solve cargo transportation dispute, making efforts to help in emergencies and giving pre-alert notices of shipment or delivery problems. Thus, the result shows that the logistics companies in Shanghai recognized the different performance aspects of their services and give them equal attention when carrying them out (Chin et al 2010).

From a survey conducted by Sum and Teo (1999) for 51 logistics companies in Singapore, it showed that they pursued different strategies performed differently in order to give best logistics service to their clients. Those companies aimed to provide reliable and consistent service, to offer a short delivery lead time, to meet customer's specifications/ special request, to operate at low cost, to meet customer due date, to offer service of good design and performance, to be flexible in accommodating changes and to maximize value-added to products of clients. From this research, they also found that the respondents agreed IT could contribute significantly to their operations capabilities. As Singapore prepares to position itself as the logistics hub of the Asia Pacific region, the logistics service industry must achieve higher standards of customer service and product quality.

### **3. The Methodology**

Qualitative research is appropriate for this exploratory research since it can be applied in organizational business as a means of identifying common threads in management styles, processes, and strategies in context-specific situations. In our study, we looked out the common issues related to the objectives of the research in the view of authorities, port operators, manufacturers and supply base (service providers). In an effort to gain rounded, holistic explanations, we collected data using qualitative technique, which was interview.

To achieve the goal, we chose one representative organization for each category mentioned above. We conducted our interviews with above mentioned organization in Terengganu and Pahang. Overall, each interview last for 2.5 hours. Each organization was represented by at most two personnel from managerial level who had years of experience in the logistics field

and also served the organization for several years. The interview's questionnaires were constructed thoroughly with the division of four sections that approach the respondents' views, knowledge and experience in logistics industry at the organization plus the adjacent areas.

- i. Section one covers demographic study.
- ii. Section two emphasized on the current logistics infrastructures owned by the organization. The respondents required to state the level of satisfaction on existing infrastructures, including the logistics facilities.
- iii. Section three discussed on the constraints and challenges faced by the respondents in order to develop with the goodness of logistics development (facilities, infrastructures, services etc).
- iv. Section four asked the respondents about the capability of logistics service providers to provide different types of services. The questions were applied same to authority, manufacturer and port provider because they used the service of logistics service provider.

## **4. The Findings**

### ***Demographic***

Local authority in Terengganu – the functions of this authority is to handle the management of domestic logistics in term of planning, transportation and residential requirements before submitting the implementation process to the logistics players, based on approval from federal government.

Manufacturer in Pahang – core business of this manufacturer is assembling the car which including receives the car's body, storage, unpack, assemble, and supply to the line as well as distribution.

Supply base in Terengganu - the respondent is come from supply base company. Main function of the company is to provide facilities for port operators and logistics players.

Port operator in Pahang - the main function of port operator is to manage port activity and also acted as feeder port.

## Current facilities

Table 1: Issues of current facilities

Local Authority	Manufacturer	Supply Base	Port operator
<ul style="list-style-type: none"> <li>• Insufficient network and less quality of road</li> <li>• No specific lane for heavy transport</li> <li>• Two-way lane of rail</li> </ul>	<ul style="list-style-type: none"> <li>• Insufficient of Warehousing facility</li> <li>• Road conditions within their area improved</li> </ul>	<ul style="list-style-type: none"> <li>• Road condition was not expanded up to the level of current business development</li> <li>• Facilities could not covered the logistics requirement</li> </ul>	<ul style="list-style-type: none"> <li>• 19 wharfs available to serve customer</li> <li>• Container and liquid wharfs are sufficient</li> <li>• Flexibility on the storage and warehouse</li> <li>• Problem in accommodating the dry bulk and conventional commodity</li> <li>• Majority used trucking and hauliers for cargo movement</li> <li>• Low performance as most of cranes were old</li> </ul>

In the view of representative of local authority, the current logistics facilities in Kemaman area were insufficient in term of network, width of the road and also the quality of the road. Kemaman had only one main road which was shared with the public users. Among their nodes were supply base to Kerteh, supply base to Gebeng and supply base to Kuantan. In addition, there was no specific lane for heavy transport. Even there was a lane of two-way of railway from Kerteh to Kuantan for the purpose of accommodating the industrial goods to the port, it was not enough to support industrial development in the area.

Insufficient of warehousing facility is the main problem facing by the manufacturers in this region as explained by respondent from manufacturing. As stated by the respondent, they have to rent the warehouse far away from their manufacturing area which will increase more cost. However, road condition within their area in Pekan, Pahang was improved with the expansion to four lanes.

However, representative from supply base disappointed with the road conditions within their area. This is because the road is not expendable in line with the businesses and activities development. Even though, there was improved, but still was not sufficient to accommodate the logistics business activities. As a result, supply base operator concluded that the facilities in Kemaman and Kerteh still not at the acceptable level.

Respondent from port operator explained the current port handles four main commodities such as dry bulk, break bulk, liquid and container with the total of 19 wharfs (3 wharfs for palm oil, 3 wharfs for liquid chemical, 3 wharfs for container and the rest for other jetties). The infrastructures for container and liquid bulk were sufficient but there was a bit problem with dry bulk and conventional especially for iron ore as the volume keep increasing. The port operator was not facing problem with storage and warehousing as their clients build their own concept and port operator provided the space for them to choose.

Previously, port operator used the railway as the transportation mode, but since the railway ceased the operation as maintenance cost high, therefore, they changed to the trucking and hauliers as the transportation mode. Port operator also mentioned, at the moment, performance of container throughput productivity was low as the cranes were old.

### ***Constraints and challenges of logistics development***

Table 2: Constraints and challenges

<b>Local Authority</b>	<b>Manufacturer</b>	<b>Supply Base</b>	<b>Port operator</b>
<ul style="list-style-type: none"> <li>• Financial</li> <li>• Management ability</li> <li>• Attitude of the community</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of manpower skill</li> </ul>	<ul style="list-style-type: none"> <li>• Shortage of manpower</li> <li>• Insufficient facilities</li> <li>• Road congestion</li> <li>• Limited space of land</li> </ul>	<ul style="list-style-type: none"> <li>• Insufficient of feeder vessel</li> </ul>

The representative of a local authority in Terengganu highlighted three main constraints and challenges such as financial, management ability and attitude of the communities involved in the development of logistics in this region. There are some spaces to expand the facilities but it was limited by the financial capability. Expansion need to be implemented immediately as the parking space was insufficient for transportation and the transport owner parked randomly at the edge of main roads. Other constraint and challenge is the attitude of the people to accept and support the changes. Based on previous study by the local authority, the attitude problem contributed about 80% of town planning problems.

The respondent from manufacturing in Pahang has only highlighted one constraint and challenge in developing the logistics in the region. The factor is lack of manpower skill. Many of them were not preferred stay in this area as they prefer to live in bigger city like Kuala Lumpur.

Shortage of manpower was a crucial factor that affects the logistics development in this region as highlighted by respondent from service provider. The reason was the investors will look into

the facilities such as residential areas, hospitals and school. Another constraint and challenge was road congestion. This is because everyone using the same road especially when there were constructions at the adjacent areas. Furthermore, the limitation of space within supply base area to upgrade caused to the slow development of logistic.

The respondent from port operator explained insufficient feeder vessel is the constraint and challenge in supporting the shipping and logistics activities in this region. Most of the existing feeders were moved to the East of Malaysia. There was no a direct feeder to Sabah and Sarawak from this region.

***Capability of logistics service providers to provide the services***

Table 3: Capability of logistics service providers

<b>Local Authority</b>	<b>Manufacturer</b>	<b>Supply Base</b>	<b>Port operator</b>
<ul style="list-style-type: none"> <li>• Insufficient to cater the demand</li> <li>• Focus in one service</li> </ul>	<ul style="list-style-type: none"> <li>• Satisfied with current service of LSPs</li> </ul>	<ul style="list-style-type: none"> <li>• Satisfied with the LSPs</li> </ul>	<ul style="list-style-type: none"> <li>• LSPs were not local player</li> <li>• Multiple services</li> </ul>

The representative of the local authority observed that LSPs were insufficient to cater the demand in logistics business. As a result, the customer will use the less performance LSPs as there is no alternative to choose it. Most of LSPs in Kemaman served for transportation only as the industrial players have their own warehouses. However, respondents from manufacturing and supply base explained that they were satisfied with the current service provided by LSPs. On the side of port operator, respondent explained 70% of LSPs came from outside of this region and remaining were local companies. Port operators added that LSPs that deal with them provided multiple services to the customer.

**5. Discussion and Conclusions**

From the finding, it was found that the current logistics facilities in ECR were not sufficient to cater the continuously developing industry within this area. The main factor was the road network and condition for both Kemaman, Terengganu and Kuantan, Pahang. The road was not wide enough to support the increasing number of vehicles and there was no specific lane for the industrial transportation. As a result, the industrial transportation is sharing with public user and caused to road congestions and unsafe conditions. With the limitation road access, it gives impact to the logistics player to deliver the goods timely. In addition, the road condition was not acceptable as there was holes and dust which would risk to the logistics players and public users.

However, Pekan, Pahang was quite fortunate to have good road condition with new highway. The high quality of road condition is important to attract the investor to invest in this region. Network access from port to manufacturing and customer is first priority for the investors and

logistic players to deliver efficient service. In addition, warehouse facilities were another point found in this study. The demand exceeded over the supply. Currently, several warehouse in the middle of construction but all of them were fully booked. As such, the authority should resolve the problem immediately in order to be in line with the growth of manufacturing industry in ECR.

There are bunch of constraints and challenges in developing the logistics in the ECR. It includes financial, the ability of management, people attitude, lack of manpower skill, shortage of manpower, insufficient facilities, road congestion, limited space of land and insufficient of feeder vessel.

The logistics development was limited due to financial issues where the development projection by the local authority was unparallel with the government's provisions. The findings also found that mind setting of people play as a significant factor in facing the changes in logistics development. Some of them did not ready for it and tend to lay back without supporting the efforts done by the authorities. It was similar to the causes of lack of manpower skill as most of the professional would not prefer to move from the big city to this region. As result, the shortage of manpower will be main constraint and challenge in developing the logistics in this region. Therefore, the current facilities need to be upgraded in order to influence the potential worker to move into this region. Land space limitation was also the issue in order to develop logistics facilities.

In the case of logistics service providers, all of our respondents were satisfied with the service served by their logistics service providers except the local authority rated it as average, but still satisfied. About 70% of the logistics service providers came from outside of this region and they are able to provide variety of services required by the customers.

Despite the above insufficient logistics infrastructure and obstacles, there would be potential development especially in Kemaman. From the sources of respondents, there will be two new plants from big investors in Telok Kalong, railway extension from Kerteh to Gebeng, construction for sea transportation, Kijal Dry Port and also an old road will open to Kuala Kemaman in order to lessen the road congestion in that area. To increase the safety, the authority will provide a new lane for heavy transports so that they do not cross the public users. All of these efforts are hoped to boost up the economic development in that area and at the same time will give employment opportunities to the community.

Since there were insufficient in warehousing services, the authority has planned to develop new warehouses at the adjacent area on the land provided by the ECER. The project is expected to be completed in next two years. While for the supply base, they are now working out for an inland port, Bandar Baru Kijal, which also will be an area for small medium business to expand.

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