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Intermodal Container Movement In Malaysia: Challenges And Strategies To Enhance Its Usage

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ABSTRACT

The purpose of this paper is to investigate the factors that could influence the increase usage of intermodal for container transport in Malaysia. This study uses in-depth interviews with experts in

container transport for data collection. The interviews were conducted with the road haulage operators, rail operator, inland terminal operators, port operators and freight forwarding operators. The most common challenges that could influence the increase usage of intermodal in Malaysia were efficiency, management issues and cost factor. Some improvements on these factors could make the rail-road intermodal container transport as attractive as the conventional road haulage services. Malaysia needs to emphasise more on promoting the high reliability, low cost and environment factors for a successful intermodal service. This study is limited to the container movement from ports to the important industrial areas in Malaysia and vice versa. The factors that influence the usage of intermodal can contribute to a better understanding on the best way to increase the current usage of the service. to develop possible strategies for improving the intermodal hinterland container transport system logistics in Malaysia. The study benefited the actors involve to improve rail-road intermodal container transport services.

Keywords: Intermodal, Challenges, Strategies Road, Rail

INTRODUCTION

The players involved in the container movement can be divided into two categories. The categories are terminal operators which consists of ports and inland terminal and the transport carriers which includes the road haulage and rail operators. For container movement, the intermediaries or known as the freight forwarding is also the customer of the industry. (Nasir S et al 2019) Since the freight forwarders act on behalf of the manufacturers, hence the freight forwarders and manufacturers are the key players that are creating demand for the container transport operators to fulfil. The

responsibilities of each service provider are vital in ensuring the hinterland container movement are conducted in a high satisfaction for the customer. Table 1 indicates the players involve in the intermodal transport chain. (Nasir S, 2014)

Table 1. Players in Intermodal Transport Chain

Players	Main activities
Port	To handle the container movement to the transport service providers either road or rail
Road haulage	On road delivery movement from the terminal. The movement can be a direct movement from port or from any inland terminal/inland ports/dryports.
Rail	Moving the containers to the hinterland from ports
Inland terminal	To handle the transferring activities from the inland terminal to the rail and road haulage
Freight Forwarding agent	The intermediaries that act on behalf of the manufacturers that connects with the road haulage and rail

Figure 1 gives an illustration of the container movement for import and export. The figure shows the two alternative container movement to the hinterland from ports and vice versa (Lee and Kambiz, 2013). The alternative 1 which is direct road haulage movement is more dominants for the hinterland container movement in Malaysia. However, as for the alternative 2, the intermodal movements provide another choice for the customers to move their containers.

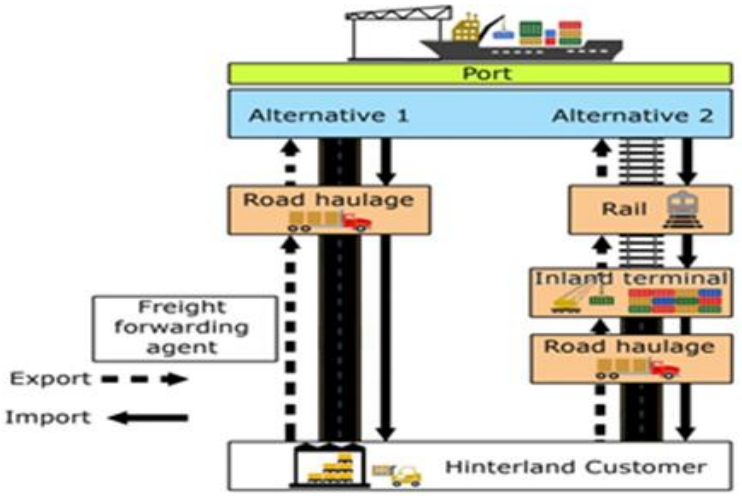

Figure 1. Transport Chains in Hinterland Container Transport Movement (Nasir 2014)

Road haulage is the main hinterland container transport from Malaysian ports. Road-rail intermodal has been seen as less important than direct road haulage. Malaysia rail network is well connected to ports but the percentage of container carried by rail is less than 2%.(Chen et al 2016). In Malaysia, there are several intermodal corridors were established. In the beginning of the intermodal development, it has been seen as one of the best alternative to reduce the transport cost for containers movement. However, for the last 10 years, only two important intermodal corridors are still in operations. The corridors are i) Port Klang-Ipoh corridor and ii)) Penang Port-Padang Besar corridor. (Nasir 2014). Other intermodal corridors that also have inland terminals did not manage to sustain the demand for the usage of intermodal

movement. Some of the inland terminal became a hub of operations for a few road haulage players. With the significance growth in future trade, efficient freight transport systems need to be developed with efficient intermodal points such as port, airports and inlad ports. (Nasir S et al, 2018) The purpose of this paper is to investigate the factors that could influence the increase usage of intermodal for container transport in Malaysia

METHODOLOGY

The qualitative method has been chosen to collect the data for the study. This study used the open-ended interview questions in order to obtain the information from the respondents. The method was used because it provides the respondents to gives their ideas and opinions openly. It also gives the respondents the right to convey their views by using their own words (Webber and Byrd, 2010). This method also allowed the interviewer to understand and obtain in-depth information from the respondents. The face to face or personal interview enables the interviewer to gathered detail thoughts of the respondents. By performing the unstructured interview approach, the researchers were able to discuss in depth with the respondents regarding the research topic. According to Boyce & Neale (2006), by conducting the in-depth interviews, the researchers would be able to obtain the detail information on the thoughts and views on the issues required. It also assists the researchers to study the behaviour of the respondents during the interview session. Qualitative methods enable researchers to evaluate the effects of ideas, belief and attitudes of the selected respondents. It would also help the researchers to obtain in-depth and very critical information by appraising the respondents' status. One of the advantages by conducting the face to face interviews, it would provide the

respondents with a more comfortable situation for them to give the answer freely. The one to one situation could assist the researchers to encourage the respondents to give a willing and sincere information. With this approached, the researchers can add more relevant questions in order to ensure the information gathered are more quality and useful. (Skulmoski et al., 2007; Cuhls et al., 2009). Expert panel in-depth interview was used to collect data for this study. This method was used because in-depth interview allows the respondents to provide opinions views in their own words (Webber and Byrd, 2010). The interviewer is able to obtain greater depth of people thoughts and understanding through face-to-face or person to person discussion. With an unstructured interview approach, it helps the researchers to push the respondents to discuss much detail on the research topic. Expert panel was used for collecting expert opinion to be used to assess the possibilities of future development. Four main requirements need to be fulfilled in choosing the expert panel:

a) knowledge and experience with the research issues
b) capacity and willingness to contribute and participate
c) sufficient time to participate
d) effective communication skills (Adler & Ziglo, 2002)

The interview sessions were performed at the respondents' premises. The respondents chosen for the study were mainly involved with the main operations of the container movement. The respondents were experienced, skilled and high qualified people of the respective industry. The list of the respondents for the study are presented in Table 2.

Table 2 Respondents for Face to Face Interview

No	Respondents	Sector/Industry
1	3PL A • Deputy Managing Director • General Manager	Road
2	3PL B • Senior Manager Land Transport Division	Road
3	Inland Terminal/Dryport • Acting General Manager • Manager Business Development	Inland terminal
4	Railway Operator • Senior Manager Business Development Freight Business Unit	Rail
5	Port A • General Manager on Audit	Port
6	Port B • Head of Marketing	Port
7	Freight Forwarders • Managing Director	Freight Forwarding agents
8	Ministry A • Assistant Director	Government Agency
9	Ministry B • Land Transport Authority	Government Agency
10	4 Manufacturers	2 Electronics 2 Textiles

In conducting the interview, the respondents were given some guidance on the questions that they need to answer. Four important points of discussion were i) the container and intermodal

operations, ii) the main infrastructure needed for container and intermodal operations, iii) the rules and regulations governing the container intermodal operations; iv) their views on the future of container and intermodal services The duration for each interview was between one to two hours.

RESULT AND DISCUSSION

Challenges Faced By Intermodal System

Three important problems faced by the customer in using the intermodal transpot services: operational efficiency, management and cost.

Operational Efficiency Issues

- **Total transit time and reliability**

The data obtained from the expert interview indicated that the two important service quality factors for the container transport service to remain competitive (Mohd Nordin et al., 2018). The first factor was the Total transit time (TTT). This factor played a great role for the customers to be ensured that their containers would arrive at their destination on the stipulated time. The second factor was the reliability. The reliability factor would provide the intermodal service with more trusted service which could enhance the demand for such service. In order to achieve a shorter TTT and also a more reliable service, every player in the intermodal chain must performed their role more effectively. The entire intermodal operation chain will be disrupted if all players fail to meet the requirements. To ensure the efficient and effective intermodal operations, every players in the intermodal chain must know and

understand their responsibilities, roles and requirements that they need to perform. (Nasir, 2014).

Road haulage and rail operation inefficiency issues have become one of the main challenges for intermodal services in Malaysia. Since the liberalisation of road haulage industry in 1999 (Tengku Jamaluddin, 2003), road haulage efficiency has become more critical. One of the main challenges in the industry was the numbers of new operators entered the road haulage business. This has created the governing and monitoring issues. As a result, to the liberalisation, the road haulage industry should be self-regulatory market driven industry. However this was not achieved. The self-regulatory concept fail to control, protect and maintain the operational standard of the industry. As a result of these failures, new problems emerged within the industry. The most significance problem was the unhealthy competition between the operators. When this happened, the operators has started to reduce their focus on safety aspects and the environmental issues has not become their priority. In 2010, the Malaysia Logistics and Supply Chain Council had conducted a Logistics Road Map Study and found that only 70% of the trailers were fully utilised during the road haulage normal operations (MITI, 2005).

- **Inland Terminal/Dryport Operations**

Excellent intermodal operation required a high efficiency of rail service and inland terminal operations (Kato, 2016). The rail operator managed to provide the required service by customer, however there were a few quality issues from the service. The customers indicated that the rail operator had many delays in rail operations hence the reliability of the rail service was highly disrupted. The planning, scheduling and infrastructure of the rail operations has contributed to the problems. To make the operations worst, the inefficiency of inland terminal has also

influenced the performance of rail service since it was part of the intermodal chain.

One of the biggest issues for the inland terminal operator was to have efficient equipment for container handling at intermodal points. This has created many difficulties for the inland terminal operator to achieve its required performance (Jeevan et al., 2015). There were times when a few of its material handling equipment required major service maintenance which had caused the inland terminal operator to lost its efficiency. Another critical factor that influenced the inland terminal efficiency was the lack of required space in the terminal. According to the General Manager of the inland terminal, Ipoh Cargo terminal (ICT) did not have any more land for future expansion. The land area was saturated. The expansion activities can only be done if the inland terminal to be relocated elsewhere. However, the relocation plan would not be beneficial for the current pre and post haulage operations since it would increase the cost.

Management Issues

Having the professional staff in road haulage operations has become critical. Many road haulage operators have foreseen the importance to upgrade the professionalism of their staffs especially the drivers. The operators were concerned on three mains aspects i) the overall performance of the drivers, ii) the behaviour of the drivers during driving and during dealing directly with customers and iii) the drivers' thoughts in receiving the new ideas in operations. In order to tackle the above issues, a new and upgraded training muddles for drivers are deeply required. These modules would be able to train the drivers to act and behave correctly during the operationalization of the road haulage. The other difficult task for any operators were the need to deal with the high turnovers of drivers in the industry. Since there were many

operators in the industry, it was easy for the drivers to find a new driving job. As for the inland terminal operator, it faced a different problem in managing its business. Marketing its services were the challenge for the inland terminal operator. The inland terminal operator relies to the freight forwarders to bring the customers to terminal. The freight forwarders would be able to take advantage on the rate given by the terminal operator. For an example, when the inland terminal provide a promotional rate to the customers, they would not be able to enjoy that benefits. This is because the freight forwarding who act on behalf of the customers would use the promotional rate to increase their own profit margin. This is the risk the inland terminal operator need to take whenever it provides promotional rates. Another critical management challenges in intermodal operations was the coordination between the players in the intermodal chain. The coordination between inland terminal operator, road haulage operator and rail operator were highly required for the intermodal system to work efficiently. The operators in the intermodal chain need to coordinate willingly and the ability to support each operator's activities are required. However, with the separation of government act for road and rail operations, and with the intermodal act not available in Malaysia, it makes the integration between these players more difficult.

Cost Issues

Additional handling is one of the main challenges for intermodal operations since it has been considered as an additional cost to the customer. This extra cost could be reduced if the customers could directly load container to the rail network. This can only be done if the customer has its own railway siding at its premise. However, most intermodal operations in Malaysia need to be performed at the inland terminal or dryport. With this concept of operation, it would provide the customers with higher cost and

longer total transit time as compared with the road haulage operation. The road haulage could deliver the container directly from port to the final destination without going through inland terminal. Even though intermodal seemed to add more cost, with higher capacity, the lower total cost for moving container can be achieved. The cost reduction can be obtained when the rail move container for the long distance haulage with higher capacity and the road would perform the pre and post haulage delivery.

Since the rate for road haulage has been considered the same for the past years, the overcapacity of operators has made them to struggle to survive in the market. To reduce the losses in the road haulage industry, many operators has move towards providing a total logistics services which include freight forwarding and warehousing. This can help the operators to gain more revenue for their business.

Factors Influencing the Usage of Road Rail Intermodal

For a company to remain competitive and to sustain in the market, the cost competitiveness factor need to be considered. Changes in inland transport cost could influence the total logistics cost for the customers. Choosing the right mode of transport for inland movement has become critical for the customers. If the service providers could provide a special preference service to customers, it would add value to the service given (Upadhyaya et al., 2013; Paek and Lee, 2018). In this study, with special preference given by the service provider, they are able to monitor and control the container transport cost and to ensure the cost will not rise significantly.

Another important quality factor that customers need to consider in choosing transport service is high reliability. Customers would rely on the on-time delivery of their containers.

If the operators fails, the customers' production will be interrupted. (Roso et al., 2009). For customers that who are implementing the Just-in-time (JIT) concept, an efficient transport service is required. JIT needs the critical inventory for the production to arrive on time at the production site. Some manufacturers would impose high penalty to the transport operators who fails to deliver on time. The data gathered from the interview has indicated that a few road haulage operators include some additional service such as extra storage at the yard of the road haulage operators' premise. So, the role of road haulage operator is more than just delivering and picking up containers.

The respondents also concern on the safety and security aspects when choosing the transport service. High safety during the delivery would reduce the risk of the goods to be damaged before arriving at the destination. Well trained drivers would increase the safety and security standards for the transport service. As a result, the issue of product damaged would not arise. Security is another critical factor that need to be considered in choosing any transport service. One of the respondents describe the hijacking attempt during the delivery of its container to the customer premise. The hijacking failed because the road haulage operator had installed GPS tracking on its prime mover.

Amongst all the factors highlighted in the study, environmental issues seemed not so important for the customers when choosing the transport service. The customers were aware on air pollution and emission from trucks but from the customers perspective the road haulage operators need to be responsible on the environmental impact cause by their trucks (Innis & La Laonde, 1994). Even though the customers followed all environmental regulations for their production, they did not observe to the same principles when making transport mode choice. The study has shown that the intermodal provides lower environmental impact

service. But, since the awareness level has been low, the changes intermodal could do to reduce the environmental problem is very minimal.

Strategies to Support Intermodal Movement In Malaysia

- **Institutional changes: Regulatory form and organisation**

In general, the transport industry in Malaysia is being governed as and individual modes. This has made the industry as one of the industries that is highly regulated in Malaysia. But it is not uncommon for for the transport industry to be highly regulated. The main difference is the intermodal issues have always been looked as an ad hoc problems thus positioning the intermodal movement as unattractive transport system for the freight users. Despite all the problems highlithed, intermodal movement required specific measures to assist and support the movement. Newly developed regulation and organisation are needed to enhance the usage of intermodal in Malaysia.

Intense and radical changes on government approaches should be taken all together give a gigantic lift to the Intermodal services in Malaysia. Regulation and organiation changes has been implementd in several developed countries that are supporting intermodal movement.. The support and interventions from the authorities are critical for improving the intermodal development. As the regulating body, the administration role would need to cover an immense part in supporting intertmodal; and with the persistent help from the administration, it would be a great opportunity to attract users to continuously support the intermodal services

It is crucial to set up a special authority to concentrate on intermodal direction, approach, policy and planning in Malaysia. The policy planning, implementing and monitoring and

enforcement should be conducted by a permanent organisational structure and not on ad hoc basis. The authority need to consist of people who are competent in the intermodal movement and issues. This is essential to have this authrotiry so that it would be able to communicate with organisations that involve directly with intermodal movement. Many individual modes issues are raised for the authority to handle and it would help to understand the point of view from the competitors and intermodal opertors for the development in promoting intermodal. The establishement of Intermodal Transport Department (ITD) could bolster the intermodal transport from institutional viewpoint points. ITD can play the role of regulating the intermodal movement, promoting the efficient use of infrastructure, facilitating coordination between service providers and addressing environmental issues associated with the use of individual transport modes.

ITD have to integrate all the current policies and also assisting on developing a focus policy to ensure intermodal issues are governed by a special permanent authority instead of being handled on ad hoc basis. This new authority would support and assists in developing a better alternative mode of choice in the future. ITD would also be responsible with the development of that intermodal which will focus on planning and enforcement for intermodal to be able to be developed. Thus the integration in developing intermodal policy could be achieved. ITD would need to integrate rules, operation, coordination and service standard of an intermodal service.

- **Intermodal policy**

Planning, introducing and implementing new intermodal policy have to be the authority key role. To achieve a successful

intermodal movement, the authority need to reduce all the challenges and it is a requirement for the authority to have a strong guide and policy intermodal. As been mentioned earlier, that Malaysia transport industry is highly regulated which made every single mode are governed by the rules and regulation for the spefici mode. However, it is strongly believed that with the development of more intergrate and coordinate policy, promoting and supporting intermodal would increases the chances for intermodal to be an alternative transport system in Malaysia.

It is important to managing the entire chain in an integrated aspect. This would require an Intermodal transport policy. Better corporation and coordination among the intermodal players would provide great integration results. It has been a practice in Malaysia to have policies that enable to support the development of each transport mode. However, lack of coordination and managing the facilities affected has become a main hinderances for intermodal to be an alternative system. To enhance the success of an intermodal system, relevant effective policies on intermodal need to be chosen in the selected corridor. The focus for the policy is to be successful should be in the form of regulation, financial and monetary support. Therefore, the policy development should focus on two aspects: 1) rules and regulation policy and 2) incentive policies for promoting intermodal. The proposed policy measures are listed in Table 3.

Table 3. Proposed Policy Measures

Rules and regulation policies	Incentives policies

• Increases toll charges for Heavy Goods Vehicles in the corridor • Privileges to the intermodal movement during specific time • Standardisation of policy with other agencies for the development of intermodal infrastructure • Increased of weight limit for container that move by using intermodal • Priorities in term of services for intermodal movement, can work with other authority and operator to have a different opening window for intermodal movement • To ban other heavy vehicles to enter in selected corridor in certain days for examples on Sundays or public holidays and only intermodal movement and be operating in this corridor	• Incentives for promoting and using intermodal services • Tax incentives for performing feeder service from inland terminal to customer premises • Initial set up grant to set up intermodal infrastructure especially for inland terminal and transhipment facilities. • Tax exemption for road haulage just use for feeder services • Increasing toll for HGV at this corridor which might shift to the overall modal shift

CONCLUSION

Intermodal movement in Malaysia could achieve a greater success if these three hindrances could be solved. These factors are: 1) operational efficiency issues 2) management issues and 3) the cost factor. New strategies need to be developed to ensure that these critical issues could be dealt with effectively. In this study also shown that intermodal services need to focus on these factors in order to attract more customers to use intermodal services. The factors are: 1) high reliability of services, 2) low cost, 3) safety and security. Even though, from the interview, majority of respondents felt that low environmental impacts factor is not important, positive approach can be implemented to promote intermodal usage by using this environmental issue.

Intermodal movement in Malaysia shows great potential for its development. It is critical for Malaysia to make changes in the institutional aspects in order to ensure that intermodal services remain sustainable and competitive. However, the logistics of the intermodal movement needs to be clear so that the continuous intermodal services could be developed. Reforming the institutional aspects would ensure the intermodal logistics could be in place and help to promote intermodal especially at the selected corridor.

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