Factors Influencing The Increased Usage of Intermodal For Container Movement in Malaysia

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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. The study benefited the actors involve to improve rail-road intermodal container transport services.

Keywords: Intermodal, Challenges, 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. The freight forwarders act on behalf of the manufacturers. So the freight forwarders and manufacturers are the players that creating demand for the container transport operators to fulfil. The responsibilities of the each service provider is vital to ensure the hinterland
container movement need to be conducted in a high satisfaction for the customer.

Table 1 indicates the players involve in the intermodal transport chain.

Table 1. Players in intermodal transport chain

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

Figure 1. Transport Chains in Hinterland Container Transport Movement (Nasir 2014)
Figure 1 gives an illustration of the container movement for import and export. The figure shows the two different container movement to the hinterland from ports and vice versa. 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.

Road haulage is the main hinterland container transport from Malaysian ports. Road-rail intermodal has been seen as less important than direct road haulage (MOT 2013). 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.

Methodology

The qualitative method has been chosen to collect the data for the study. The instruments used for data collection was the in-depth interview. This study used the open-ended interview questions in order to obtain the information from the respondents. The methods 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. (Grechen et al., 2010). This methods also allowed the interviewer to understood and obtained in-depth information from the respondents. The face to face or personal interview enable
the interviewer to gather 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 (2010), 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., 2010; Cuhls et al., 2009).

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. In conducting the interview, the respondents were give some guidance on the questions that they need to answer. Four important points of discussion were i) the container operations, ii) the main infrastructure needed for container operations, iii) the rules and regulations governing the container operations and iv) their views on the future of container transport services. The duration for each interview was between one to two hours.
Table 2 Respondents for face to face interview

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

Result and Discussion

Three important problems faced by the customer in using the intermodal transport services: 1) Operational efficiency 2) management and 3) cost

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. 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 players 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 2015).

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 the achieve. 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.

● Inland terminal/dryport operations

Excellent intermodal operation required a high efficiency of rail service
and inland terminal operations. 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

- **Staff professionalism**

  Having the professional staff in road haulage operations has become critical. Many road haulage operators has 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. This modules would enable 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 was 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 has make the integration between these players more difficult.

Cost Factors

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 delivered 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 has help the operators to gain more revenue for their business.

**Factors Influencing the Usage of Road Rail Intermodal**

1) 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. 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.

2) 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.

3) 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.

4) 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.

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.

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