

Effectiveness on Drop Trailer Method (DTM) of Haulage Industry in Malaysia

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Abstract — This paper focuses on the customers' commitment and behaviour towards an effective of 'drop trailer method' (DTM) in haulage industry. There was limited study in customers' commitment and behaviour on the efficiency of DTM. The study on DTM was due to the increasing volumes of international trade using haulage transport and trailers which led to rapid growth of container volumes at Malaysian ports. The maximum usage of trailers are needed to cater the growth of containers' movements at present. The detention trailers by the customers during loading and unloading processes caused inefficiency in haulage performance. Therefore, monitoring on the usage of trailers will increase to the overall movements and reduction in the detention times. Exploratory and qualitative studies are also used in this research. The results indicated that the effectiveness of DTM is a crucial part to benchmark on the overall businesses, particularly in effective ways coordinating and utilising to the overall trailers. It is used to indicate haulage operators' achievement towards their objectives. The better control in DTM may be used for better planning in the movements in future. The study suggests on the effective DTM structure for better impact in monitoring haulage business towards costs, revenues and profits.

Keywords: haulage industry, customer commitment and behavior, drop trailer method, trailer turnarounds

1. Introduction

Haulage industry is a road transport business and the daily activities are for trucking freights from place to another. The haulage activities involved with trucking goods belong to the customers with specific assignments until final destinations. The machineries used in the movements involved prime movers and trailers. This study explores on the delayed trailers at the clients premises was due to time taken on loading and unloading processes handled by them. The delaying part in the process of drop trailers with containers is called detention. Detention trailers resulted to the lower

turnaround in overall movements in haulage industry. Detention of trailers occurred due to less monitoring by the hauliers during loading and unloading activities at the clients' premises. Detention trailers are considered barriers in operational activities. The haulage industry was liberalised in the year 2000 and specific mechanism should be in control to maximise the usage of machineries for effective operations [29]. Improvement in service quality especially on trailers' management was at risk due to futile usages of fleets which faces on financial instability in haulage industry [33]. The hauliers are struggling from end to end price to fulfil the customers' requirements [16]. Optimising the assets is able to generate for better operational activities, revenues and reducing times on trailers' detention. The management of haulage industry is to ensure the productivity and effectiveness of their DTM. Therefore the customers' commitment and behaviour of existing practices in perceiving planning DTM is necessary.

2. The Problem

The role of haulage operations is to coordinate and facilitate in fleet movements of related activities [11]. Upon request by the customers, the Fleet Operations of Haulage Company assigns a prime mover, trailer and container to the respective customers in meeting their purpose [33]. The trailer and container are parked (drop trailers) at customer's premises for loading and unloading activities. Failing monitoring the trailers which regarded the delays. Fleet management underpins with transport related activities through the planning of the fleet that are used to optimize the movements. The studies in [6], [7], [24], [35] showed into the approaches engaged and improved the DTM [31] especially on fleet utilization for the benefit of haulage companies. Apparently the hauliers emphasized more on prime movers management rather than trailers [30, 33]. In reality, customers intend to minimize overall shipping costs through discounted rates given by the hauliers [2]. Customers' commitment and behavior are the factors that contribute to achieve the higher trailers' turnaround. DTM performance is able to be

improved through cultivating the relationship between customers and hauliers. However, within the haulage operations, trailers are used to load the containers and hauls with Prime Mover (PM) is always being sideline in term of monitoring performance among the operators [5,15]. A study revealed that majority of the Haulage operators are interested to measure their financial performance and rather than measuring on overall utilization of the equipment. It is a crucial part for haulage industry to plan their DTM comprehensively and maximize the deployment of trailers. DTM optimization is still new and not much focus been given in looking to the profitable problems [20,17]. With such limited studies, the investigation became a crucial part in transforming to the overall shortcomings. It is justified that an exploration of current practices in which the customer commitment and behavior are the contributing factors to the DTM performance.

3. Overview of Trailer Management Practice

The Container Haulage Industry is growing despite the challenges in economic downturn in 1998 [22,29]. As result, more operators were introduced after 2000 in response to improve for better services and cater the demands. The market share is smaller due to rising of haulage operators from Five (5) in the year 1999 to more than Two hundred (200) at present. The total fleets increased from 2,131 prime movers and 10,701 trailers in 1999 to 4,500 prime movers and 24,000 trailers. The ratio number of per-prime mover and trailers is structured to 7:1. One prime mover is able to haul with the ratio of seven trailers to complete the turnaround in their respective movements [29,36]. Overall numbers of prime movers and trailers for each company needs to be maintained and new monitoring concept of DTM is the best way to control the movement and costs.

The containers need to be stuffed or unstuffed and left mounted on trailers at its origin or customers' premises. It is often that containers on trailers left for several days [36,37]. Some cases, trailers were also used at ports for pre-mounting of containers and left for customs inspection and clearance, which some also takes several days to complete [31]. The customer service indicator is using five (5) measurements: request date, first acknowledgement, published interval, last acknowledgement, and last positive acknowledgement [21]. Each measurement was associated with a shipping planning and timeline such as extending from pickup to drop-off. Listed a collection of efficiency and effectiveness performance measures in five (5) categories: transportation, warehousing, inventory control, order processing and logistics administration [18,19].

The availability of trailers in haulage operation is acknowledged significantly by affecting the turnaround time of a drop-trailer at customers' premises [12]. This mainly contributed from high number of trailers idling at the customers' premises which cannot be used for haulage operations. It supposedly to be used and deployed for similar movements. Other factors affecting the turnaround of the trailers are distance and availability of prime movers. The studies [6], [7], [24], [35], [37] examined the performance evaluation of haulage industry in overall movements. The practices for the present haulage industry required trailers to be deployed at optimal level [8].

4. A Review of Customer Commitment and Behaviour Relating to DTM Movement Effectiveness

The customers' commitment and behavior theory that developed is widely used as a model in marketing [23,26]. In fact, there were five (5) stages of customer commitment and behaviors; Goal (one-to-one relationship), Recognize (name and history of each customer), Cultivate (interactions and delight with outcomes from each), Develop (relationship with the organization and the community of the customers) and finally the outcomes. The efforts to facilitate the development of reliability measures for freight travel may also be used. The authors revealed on time and reliable movement of freight are critical factors in the economy [16,25]. The following measures were proposed: fill rate, delay, travel time, travel time reliability, profitability, and return on investment [14]. The supply chain process divided into two (2) segments which are customer service and operations. The primary concerns of customer are reliability, flexibility and responsiveness, while the main concerns of operations are costs and assets. Efficiency refers to how well the resources are deployed to accomplish the results and further defined that the total productivity as the ratio of net output to the sum of all input factors [27,32]. Clearly the container haulage companies in Malaysia are not measuring on the efficiency of their trailer in DTM systems.

An effective DTM movement utilization is a dimension that helps to determine how the efficiency of trailers being used as to generate more revenues. Utilization can be measured daily or over a longer period of time, but it usually incorporates with the total profits earned by overall trailers. Similarly, haulage operators wish to quantify the amount of time that trailers are detained by customers so that operators can charge accurate detention fees as an alternative way to generate revenue for haulage operators. In quantifying on the amount of times of idling trailers, the customers' knowledge and information are needed. This includes on customer awareness and the details of the process from loading, unloading and drop trailers at customers' premises. This is the major barrier in achieving higher trailers' turnaround. Moreover, trailers with lower turn around in DTM caused by poor monitoring aspects and human factors in managing organization [34,37] which caused impact not only to the

performance but also to the organizational outputs. In practice, most of the haulage operator adopted the DTM in their operation but not up to the standard as suggested. The trailers are normally takes several days for the collection. It is common for the container to be used as a temporary store by the customers. Other than that, the trailers were also used at ports for pre-mounting of boxes for respective government agency in doing the inspection and clearance, which also takes several days to complete.

Relationships driven by the needs to create value, products, commitment and relationships based [10]. Customer-supplier relationships are changing from adversarial to cooperative engagement [13]. The outcomes of these activities are from long term customers, orientation, committed relationships, quality's improvement, process performance, new product ideas, information on competitive activities and products [1,38]

It is clearly mentioned that the haulage industry merely look at the end results rather than their complete operational processes. This has led the industry difficult to understand their operational efficiency level. The haulage operators also did not relate the DTM parameters which captured with effective measurement and as a result, they unable to comprehend their competitiveness. Hence, an opportunity is discovered and measures the technical efficiency in showing their performance more appropriately especially to study on how customers' commitment and behavior can be improved to enhance DTM performance. This critical issue will help the haulage operators to optimum and improve their operational efficiency and avoid wastages in their business.

In maintaining the viability, the haulage industry should be more focusing on DTM management in order to increase the efficiency of trailers' turnaround. Through improvement in trailers performance dimension, the haulage operators should be focusing on optimizing the numbers of trailers according to the needs. Consequently, exploratory research is essential to resolve this insufficiency of the whole operations.

5. Research Objectives

This study is to investigate on the effectiveness of planning in DTM relating to customers' commitment and behavior adopted by selected stakeholders Haulage Operations. This is an exploratory study and to be used for more comprehensive investigation in future. The specific objectives of this study are:

1. To investigate the effectiveness of planning on DTM related to customers' commitment and behavior in haulage industry
2. To examine the influencing factors towards customers' commitment and behavior on planning of DTM in haulage industry
3. To identify the improvement in planning DTM towards customers' commitment and behavior.

6. Research Methodology

The qualitative approaches are chosen for this study and depending much on the views from the participants [9]. Facts were gathered through questionnaires with open-ended questions and interviews. It refers the meanings, definitions, concepts, metaphors and descriptions of several elements [4]. This approach allows exploration of a phenomenon by using wider foundations [3]. Additionally, the approach is used to pursue answers by scrutinizing numerous settings in retrieving unquantifiable facts in DTM. The strength of qualitative research is to bring complex textual descriptions, particularly on DTM which cannot be performed quantitatively. Therefore, this research approach helped the researchers in considering for a specific situation besides growing and improves theory by observing in-depth events and situations of the study.

An interview method of qualitative research is used in data collections from selected of Four (4) Container Haulage Operators in Johor, Malaysia. These operators mainly served the customers for import and export containers deliveries from Three (3) Seaports that located at Tanjung Pelepas, Pasir Gudang and Tanjung Langsat. The details of the respondents were unable to be revealed instead of being identified as Company 1, Company 2, Company 3 and Company 4. The respondents assume their role of operations managers and executives.

7. Results and Discussion

Taking an appropriate planning, the DTM had secured with better customers' commitment and behaviors. This is vital to determine on trailers' utilization which able to generate better operational activities, revenues and profits. Having the good customers' commitment and behavior, the haulage players are capable to ascertain growth of the business. Data collected from interviewees towards the effective panning of DTM and deliberated the consequences in order to deliver response for research questions as structured.

7.1. The Effectiveness of DTM Movement in relation to the customer commitment and behaviour

The current approach towards the DTM management is driven by the constraints of historical practices in delivery processes. The Haulage Operators need to implement as a strategic business, wider objectives and transition towards an effective DTM planning management approaches. It would be able for better managing fleets and control on their trailers. Better control in DTM will provide a greater predictability regarding movement planning and management practices towards satisfaction by both parties in regard of customers' commitment and behavior. Findings on effectiveness DTM in relation to the customers' commitment and behavior are summarized in [Table 1](#).

Table 1. Effectiveness of DTM Movement Planning in Relation to the Customer Commitment and Behavior

| Issues Addressed | Respondents | Findings |
|---|------------------------------------|--|
| Effectiveness of DTM in haulage industry. • How effective of the current DTM relates to the customer commitment and behaviour. | Manager Company 1 | <ul style="list-style-type: none"> Effectiveness of DTM is constrained by the customers' requirements and practices. Late advice by customers on the ready containers to be hauled will impact to DTM. Customers' commitment in shipment readiness. |
| | Operation Manager Company 2 | <ul style="list-style-type: none"> Late feedbacks from customer on trailers which impact to DTM The revenue generation is depending on daily of movements Customers' commitment is vital certain movements and increase trailers' utilizations. |
| | Senior Executive Company 3 | <ul style="list-style-type: none"> Containers requested sometimes exceeding the actual cargo, resulted more times for trailer |
| | Operations Manager Company 4 | <ul style="list-style-type: none"> Delays in DTM based mis- understanding of customers Monitor closely among hauliers and customers Advise customers to comply with DTM planning |
| • How DTM movement planning can be improved and increase the trailer turn around? | Manager Company 1 | <ul style="list-style-type: none"> Communication and commitment by both efficient DTM. Serious effort in ensuring the cargo readiness and material handling. |
| | Operations Manager Company 2 | <ul style="list-style-type: none"> Customers' feedbacks and communication for effectiveness of DTM |
| | Senior Executive Company 3 | <ul style="list-style-type: none"> DTM is more on customers' commitment and information flow Right planning and information. |

| | | |
|---|---|---|
| | Operations Manager Company 4 | <ul style="list-style-type: none"> Trailer turnaround relates to the commitment by customers Smooth or delays is correlated to both customers and operators |
| • Is your terms and conditions of services is well accepted by customers? | Manager Company 1 Operations Manager Company 2 Senior Executive Company 3 Operations Manager Company 4 | <ul style="list-style-type: none"> Not all applied on terms and conditions or MoU |

7.2. Factors influencing customers' commitment and behaviour for an effective planning in DTM

The factors those inspiration customers' commitment and behaviour in the direction of effectiveness in DTM are defending through their statements during the interviews. The findings on the factors influencing on customers' commitment and behaviour for an effective DTM movements are summarized in [Table 2](#).

Table 2. Drivers' Mistakes on Simulated Driving Factors that Influencing Customers' Commitment and Behavior for an Effective DTM Movement Planning

| Issues Addressed | Respondents | Findings |
|---|-------------------------------|--|
| Factors influencing customer's commitment and behavior for an effective DTM movement planning. • What are the factors that will influences customer's commitment on DTM movement planning? | Manager Company 1 | <ul style="list-style-type: none"> Hauliers need to persuade customers on the rational of DTM Hauliers should come up with effective policy Effective communication and commitment Regular meeting , reviewing services and commitment |
| | Operations Manager 2 | <ul style="list-style-type: none"> Given discounted rates for better DTM Customers' engagement and commitment. Customers' satisfaction programs. |
| | Senior Executive Company 3 | <ul style="list-style-type: none"> Keep in touch with customer understand the constraints related to DTM Immediate actions by hauliers and customers for |

| | | |
|---|------------------------------|--|
| | | shortcomings, delays and revenue losses <ul style="list-style-type: none"> Customer satisfactions especially shipments status |
| | Operations Manager Company 4 | <ul style="list-style-type: none"> Regular meeting and good relationship are problems' identification. Visit programs. |
| <ul style="list-style-type: none"> If the customers do not given their commitment and what will be the management's perspectives on this matter? | Manager Company 1 | <ul style="list-style-type: none"> Difficult to practice on effective DTM Constraint for Hauliers to explain on DTM to their customer |
| | Operations Manager Company 2 | <ul style="list-style-type: none"> Unpredictable customer behaviour in facing DTM Cargo delays due to certain problems and congestions |
| | Senior Executive Company 3 | <ul style="list-style-type: none"> Remind customers on the delays Imposing the trailer detention charges Selected customers with better commitment. |
| | Operation Manager Company 4 | <ul style="list-style-type: none"> Reviewing the customers' profiles for long term relationship. |

7.3. Improvement the customer commitment and behavior in DTM movement

The study derives that, there is no clear understanding between respondents on proper methodology to the customers' commitment and behaviour which contribute to the effectiveness of DTM. In short, customers' commitment and behaviour can be regarded as a justification between benefits and sacrifices. In other words, to begin and develop business relationships with customers, the haulage operators should be focusing for better service that able to maximise the trailers and operational activities. The customers' perceived relationship have strong impacts on their intention for long-term business partners. The understanding an effective DTM was initially imperfect in monitoring the overall trailers' movements but it also able to classify few possible improvements in future. Findings for an Improvement of Customer Commitment and Behaviour in DTM are summarized in [Table 3](#).

Table 3. Improvement of Customers' Commitment and Behavior in DTM Planning

| Issues Addressed | Respondents | Findings |
|---|-----------------------------|--|
| Improvement the customer commitment and behavior in DTM movement <ul style="list-style-type: none"> How to improve customer commitment and behavior in ensuring the DTM | Manager Company 1 | <ul style="list-style-type: none"> Effective communication with customer is crucial in ensuring their commitment. Making customers' care to improve the situation. Drivers' attitude for customers' commitment Using latest ICT for enhancing better services. |
| | Operation Manager Company 2 | <ul style="list-style-type: none"> Pre-advise to customer is necessary, enable customer to make preparation in loading and unloading. |
| | Senior Executive Company 3 | <ul style="list-style-type: none"> Haulage Operators to inform customers on SOP in DTM |
| | Operation Manager Company 4 | <ul style="list-style-type: none"> Staff with effective communication skills and training Frequent meeting with the customers. |

8. Conclusion

A better relationship is vital between service industry and customers. The research explored in order to illuminate the correlation of social aspects in business relationship such as commitment, satisfactions, long-term orientations, dependencies and trusts. Relationships between customers and service providers will benefit both. Haulage industry and the customers play an important role ensuring the related activities run smoothly. Communications are able to coordinate the need of the operational requirements especially on duration, time taken and the delayed costs related to DTM. Just In-Time (JIT) efforts should be taken and monitoring by both parties are able to secure the planning in DTM. The lacks of accurate information on total trailers are located invite the oversupply of machineries.

Handling better in DTM will improve the operational activities and costs as well as profits. The effective of DTM may reduce the need of new capacity investments. An old-method monitoring the turnaround times and detained by the customers is costly. The trailers' performance should be monitored accordingly with standard parameters of DTM. Haulage players should educate staff and customers on the problems towards trusts and good relationship. The customers' commitment and behaviour for an effective DTM performance is based on better understanding by both parties.

In absent of clear direction, standard indicator and applications will jeopardise in the whole operational activities. The findings revealed that, the respondents were not detailed out on the indicator standards. An ultimate indicator such as deployment of the resources was not practiced by the haulage players resulted poor trailers' turnaround. Due to liberalisation in haulage industry which enables for free market, the customers had several choices for the services [29]. In this phenomenon, the input and outputs from customers were vital in planning of DTM due to option of purchasing power. However, the effective DTM is able to be executed based on fleets promptness, goods availability, planning, monitoring, staging times and readiness. It also includes the allocations of resources, schedules, trained manpower, communication, information technology, SOP, attitudes and other necessary steps to be related to DTM. Thus, the identification of customers' commitment, behaviour, resource utilisation, communication skills, terms and conditions for an effectiveness of DTM are the primarily indicators of this study.

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