

New Business Segmentation for Haulage Industry in Malaysia

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Abstract: The haulage industry has the biggest fleets as compared to the others road trucking operators in Malaysia. The history of haulage industry started in 1971 until 2004 with five operators and in 2019 and above was recorded to 220 operators in the market. It was demonstrated with the open market which the growth of total fleet from 2,131 prime movers and 10,701 trailers before 2004 and more than 4,500 over prime movers and 31,500 over trailers in 2018 (AMH, 2018). The total number of prime movers and trailers had increased to 111% to overall fleets' capacity. Haulage market which relate to container throughputs from 2009 - 2019 (ten-year) recorded at 16 million teus to 25 million teus in 2019 (UNCTAD 2019) which increased only by 65%. It was calculated on the surplus by 46 % of holding of prime movers in haulage industry at present. Apparently the market of haulage industry has stagnant and invite further sluggishness on haulage movements. The haulage operators had initiated to downsizing on the fleets due to unstable market and difficulty to sustain in their business. Therefore, the research suggests on appropriate ways to improve on the present condition and making more competitiveness of haulage industry. This research will investigate into three (3) segmentations such as reduction number of fleets, improvement on present activities and changing on other types of trucking businesses. The key respondents of the survey were the haulage operators, customers, government agency and other stakeholders. The survey was conducted among 200 respondents and at the end only 170 answers were accepted. The research uses SPSS version 25 and PLS-SEM to analyze from the collected data. The finding of the research has suggested that the three segmentations are the most appropriate ways to improve the present condition in haulage industry.

Keywords: Open Market, Haulage Industry, downsizing of fleets, improvement activities, business segmentation and competitiveness

1. Introduction

The main business of haulage industry is trucking activities which involved in transporting containers for import and export goods. The core business activities involved haulage movements from the place of the industry vice versa the seaports, container depots and customers' yards. The movements of container haulage are based on the number of demand from customers and stakeholders. Improving the demand of haulage is also based on the economic indicators at one particular time which is measured on the total import and exports. The total number of ports throughputs also able to indicate the growth of the demand in haulage industry. The present supply of prime movers was more than demand and caused further sluggishness in haulage companies [3]. Through the basic calculation on the surplus of 46 % of present fleets in haulage industry the majority of haulage operators were experiencing the difficulties [2]. It was due to the huge capital investment and other overhead costs related to the business. The government has less control towards haulage industry and depends on the players competing in the market [16]. This issue has traced to lack of addressing the major causes of determinant factors that could help in establishing the new strategy in the context of haulage companies and its businesses. This research suggests a new strategy as for future remedies in haulage industry. It involves on the three (3) segmentations as the most appropriate ways to improve the present condition in haulage industry. The proposed segmentation involves on the reduction of fleets, improvement of present activities and changing or adding to other types of trucking in the haulage business.

2. Literature Review

The history of haulage industry in Malaysia begins in 1971 with one prime and three trailers that only one player which covering area around Port Klang [1, 2]. Due to rapid industrial growth which involved with containerized vessels for import and export of goods in 1980, the haulage industry has expended its businesses covering seaports at Pasig Gudang, Penang, Kuantan, Kuching and Kota Kinabalu. In 1985 the players were increased from three (3) to five (5) haulage companies in controlled the market at all seaports. The total fleets recorded were about 2,131 prime movers and 10,701 trailers. In year 2000 the government of Malaysia had proposed an open market which will ensure that the permits or haulage licenses opened to public without

limitation. The situation became difficult situation in 2002 where too many players in the market which resulted turmoil in the haulage industry [2]. In 2004 the open market was established and recorded on the increased from five to more than 220 operators with 4,500 over prime movers and 31,500 over trailers (AMH, 2017)[3]. Again in 2007 to 2009, the industry also affected with the world economic difficulties and invite industry to realign the number of fleets and reduction on the holding of capacity. Other than this, there should be appropriate planning before implementing the concept especially on the government preparation due to present situation of haulage activity. It was recorded the increased by 111% of prime movers and trailers as compared at these times while the demand of haulage trucking is based on the container throughputs. The statistics of port throughputs from 2019-2019 (ten years) recorded at 16 million tues to 25 million teus in 2019 (UNCTAD 2019)[21] which only increased by 65%. The global economic crisis was recorded in 2008 and 2018 in every ten years, the number of fleets in the company had reduced due to incapacitation of supply and demand were in irregular conditions and affected badly in the industry [15]. It also recorded the surplus by 46 % of holding of machineries in haulage industry at present which additional to 2070 prime movers and 14,490 trailers. The surplus is based total of prime movers versus the present market as shown in the statistics which was not parallel as required. Therefore a special mitigation has to be taken to improve the present condition in haulage industry[16].

The haulage business is involved with high capital investment with an intensive business which costs of one prime mover is about RM500, 000 and trailer is 40,000 each. [9] In order to operate for a small company, the fleet capacity should have minimum with five (5) prime movers and thirty five (35) trailers[20]. The ratio of 1; 7 [17] was suggested on the capacity by the ministry in order to sustain in the business. It also cost approximately about RM4 Million to set up the haulage business with the breakeven times in five years [13]. The costs were excluded on other overhead such as the facilities and manpower requirements [3]. With the local trips (below 96 km) haulage charges is about RM 200 per trip and maximum about 10 trips (24 hours) for one prime mover enable them to sustain in the business [3]. Due to present competitive business, the total daily local movements only generated between 4 to 7 trips per-day[22]. Taking into consideration on other overhead costs the company is only managed to gain only 2% to 5% gross profit provided if all machineries are maximized and met the minimum number of trips per-day [3]. Hence, this research intends to establish the factors that determine and proposing on the reduction number of fleets, improvement on present activities and change to other types of trucking businesses [2]. There was no restriction for the haulage operators in getting up their business and compete with others [4]. This is a duty for the government to intensifying its efforts in promotes and developing the haulage sector through improving more exports, encourage the manufacturing on local products and increasing other sectors as well[4]. Lately in 2019 [8] the world economic was badly affected by Coronavirus Pandemic - Covid -19 with the total import and exports dropped drastically. The condition in haulage industry also negative and invite further on reconciliation on new segmentation strategy [17]. The segmentation involves are on the reduction of fleets, improvement of activities and change the type of trucking activities[7].

3. Methodology

Geographically, this study covers the place which normally the business of haulage industry government, regulatory bodies, customers public and researchers which located at designated areas. The list of the respondents was taken from the Association of Malaysian Haulage (AMH) and the Association of Logistics Operators in Malaysia. This is a quantitative research approach through the demographic enquiry and analysis of the research model that reveals the perception of respondents. Validated questionnaire with 5-point Likert scale adapted from Siriwan (2015). Stratified sampling technique has been used to sample respondents and the self-completion questionnaire were conducted by self-administered, supervised and via email. Questionnaires were distributed for more than 200 respondents and at the end only 170 questionnaires were accepted and validated. The objectives of the study had been transformed into hypotheses are as follows;

Hypotheses developments from the conceptual framework are as:

H1: Reduction on the number of fleets has a positive effect on core business in haulage industry

H2: Improvement of haulage activities has a positive effect on core business in haulage industry

H3: Changing the new type of trucking has a positive effect on core business in haulage industry

The theoretical framework of this research has suggested in three (3) segmentations and it involved on the reduction number of fleets capacity, improvement in business activities and changing the type of trucking activities towards a new core business of haulage industry. Eva K. Foedermayr, Adamantios Diamantopoulos. (2008)[13] refers on an exploring the construct of segmentation effectiveness as a multidimensional construct, capturing four(4) core dimensions of segmentation success (namely targeting performance, positioning performance, cost reduction and increased adaptability to environmental uncertainty. The detail of redevelopment of new segmentation of this study is based on the theory and literature as well as suit in haulage industry at present. The research suggests in three (3) segmentations as depicted in Figure 1.

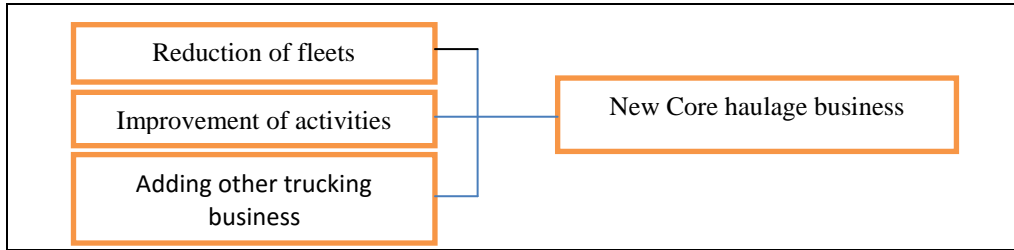


Figure 1. The framework of the study

3.1. Target respondents

The respondents’ profile is a descriptive analysis that deals with all descriptions made by the respondents in the questionnaires. The demographic profile is quoted as general for those working with high level position such as with experience in 10 years in the services in haulage industry, haulage customers, public and government. The higher position suggested in the survey are from executives to the director levels and above. The survey areas situated at Johor Bahru, Pasir Gudang, Tampoi, Kuala Lumpur, P.Klang, Shah Alam, Padang Besar, Penang, Bukit Kayu Hitam, Padang Besar, Cross border haulage and others. This research focuses on the proposed new business segmentations. Table 1, refers to the allocation of respondents for the purpose of the study.

Table 1. Samples of the survey in several locations

Location	Samples	Respondents	Accepted	Percentage (%)
Johor/Pasir Gudang/Tampoi	Haulage industry, haulage customers	50	50	100
Kuala Lumpur/ P.Klang /Selangor	Government and regulatory , public and	50	50	100
Penang /B.Kayu Hitam/P.Besar	Researchers	50	50	100
Cross boder/Other		50	20	40
Total	4 groups	200	170	85

Meanwhile, the distribution and collection of questionnaires were conducted at the strategic locations. The sample of respondents during the data collection was based on probability sampling approach, which was performed on a randomized basis. The survey was conducted through a simple random sampling with over 200 respondents which have adequate knowledge in haulage industry, however only 170 were finally responded and accepted as the final data. The data collection is capable of achieving the set objectives for this research and statistics of respondents shown in Table 2.

Table 2. Statistics of Respondents

No	Characteristics	Number	Relative frequency (%)
a	Haulage operators	50	25
b	Haulage customers	50	25
c	Government regulatory bodies	20	10
d	General public / researchers	50	25
	Total	170	85

4. Data Analysis and Results

The data analysis commences with the treatment of missing data as one of the data preparation and cleaning. Thus, the result shows that there was no missing data in the data-set while coding into the IBM SPSS version 25. Besides, the data was further screened and found that 30 cases out of 200 questionnaires as outliers. This leads to the deletion of all the 30 cases from the returned questionnaires as they cannot be used as the opinions of the respondents of the stake holders in haulage industry, due to its tendency of the model fitness. The final valid questionnaire accepted is 170 respondents.

5. Analysis of the Model

Structural Equation Modeling (SEM) is a methodological technique to ease the analytical complex model. Thus, SEM is a statistical technique for addressing a confirmatory approach of a structural theory that generates observation on multiple variables [5,6]. Moreover, researches have shown that there are two types of SEM named as the Covariance-Based SEM (CB-SEM) and Partial Least Square SEM (PLSSEM). The CB-SEM is purposely for estimation of the parameters of the model order to reduce the variation between the sample covariance and those predicted by the theoretical model. However, CB-SEM cannot be used to reduce the effort to predict existence of the dependent variables through the maximization of the variance explained (R²) of the dependent variable [6,7]. Moreover, PLS-SEM is capable of making use of both normal and non-normal datasets. Hence, this research uses PLS-SEM to analyze the collected data from the stakeholders in haulage industry.

Table 3. The Constructs Table

Constructs	AVE	R ²	C.R
Reduction of fleets	0.548	-	0.827
Improvement of activities	0.537	-	0.852
Adding other type of trucking	0.538		0.853
Core business	0.502	0.218	0.727

The Table 3 shows on an Average Variance Extracted (AVE), Fitness of the model (R²) and Composite Reliability (C.R) were analyzed to test the reliability of the collected data and strength of the model that used in modeling the key antecedents of new core business concept in haulage industry. The results show that that all the constructs to model the core business for haulage industry have their C.R greater than 0.7. Besides, the AVEs of the construct satisfy the benchmark values of 0.5. Indeed, the fitness of model is acceptable with the variance explanation of 0.218 which is common in transportation research and shown in Figure 2.

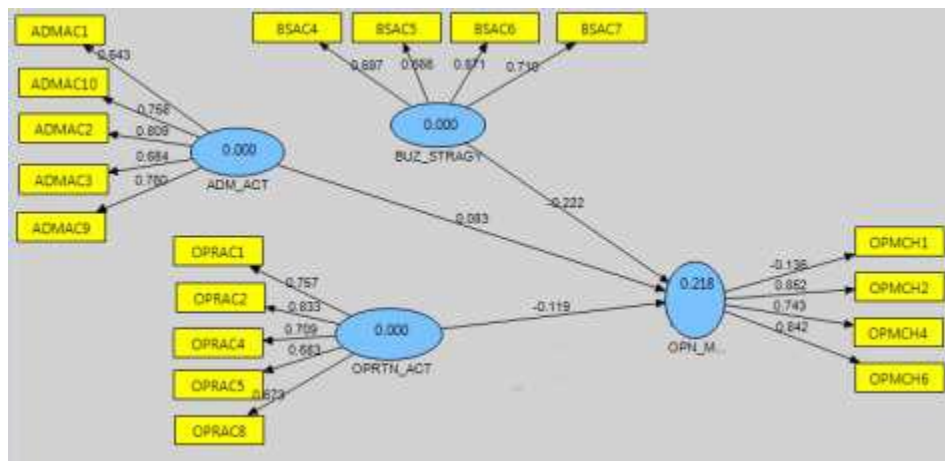


Figure 2: Construct and Loading Items

6. Evaluation of Hypotheses Testing

After examining the appropriateness of the measurement of the model, the hypotheses were tested with their results shown in Table 4. All the set hypotheses supported by the result of the analysis which was done through the bootstrapping technique in the PLS-SEM. Table 4 shows the results of the hypotheses with all the three set hypotheses supported after the analysis. This implies that to achieve the core business concept in haulage industry, such as reduction of fleets, improvement of the activities and adding other types of trucking businesses of haulage industry have to be taken into consideration. The new suggestion of market or business segmentation had accepted by the respondent and supposed to be implemented at present haulage industry as well as for future sustainability.

Table 4. Result of Hypotheses Testing on the New Core haulage business in Haulage Industry

CONSTRUCTS	Hypotheses	Original sample(o)	T Statistics (O/STERR)	Remarks
Reduction of fleets> New Core business	H1	-0.2218	2.0856	Supported

Improvement of activities > New Core business	H2	0.0827	2.6776	Supported
Adding other type of trucking > New Core business	H3	-0.1193	2.158	Supported

7. Discussion

The obtained results from the reliability and validity of the research model reveal that AVE for the both endogenous and exogenous variables are above 0.5. The indication of strength of the endogenous variables is to be accepted as antecedent for modeling new core business in haulage industry. The power of variance explanation R2 of the model is also accepted as the basis for modeling in new core business concept of haulage industry. This implies that segmentations as proposed for future commercialization of haulage industry could be achieved through the new core business as suggested to all companies in haulage industry in Malaysia. As shown in Table 4, the hypothesis H1 is supported which is the relationship between reduction of fleets and core business concept in haulage industry and accepted by the respondents. This implies that whichever the strategy on reduction of fleets adopted in haulage industry is able to accommodate the commercialization at present competitive business. Reduction of fleets is able to have a proper monitoring on the overhead costs, fleets scheduling and able to maximize the movements as well as meeting with the proposed profitable revenues by the haulage operators. On the other hand reduction of fleet is able to reduce the downtimes of vehicles and able to improve the overall productivity of haulage company (Zahid and Melan 2019)[18][19]. It also suggested that the number of fleet has to be reduced until 46 % based on the current market demand. So that the liability has reduced drastically of course able to improve on the capacity in haulage industry. In commercialization or privatization of companies, the previous studies have shown that strategy of company matters are most in welcoming people's and staff ideas.

Moreover, the administrative activity, H2 of the haulage industry has suggested on the improvement of activities in order to achieve on the new core business. This segmentation involves on manpower panning, costs structuring, maintenance, safety of vehicles and improvement on new clients and retention plans. This is able to justify on the capacity of vehicles and revenue towards its performances. This means that the policy makers in the haulage industry have vital roles to play while intends to go into commercialization of their companies and towards competitiveness. Ultimately, the type of operations that individual in haulage companies should performs and to be put into consideration in achieving for the new core business in haulage industry, thus leads to the support of hypothesis H3.

H3 is the most challenging in the haulage business where the new strategy on adding on a new type of business has suggested. In this area of improvement, the research has suggested for the haulage industry to change or add on the present business to other types of activities such as hauling other than containers, cargoes, tankers, cements, garbage, oil, gas and any other commodities which able to be hauled by owned prime mover and trailers. Directly these activities are able to maximize the usage of prime movers and trailers as well as value added to the existing business practices. The operations as they performed in haulage industry should be the type that will allow their staff to exercise their rights and propose new ideas for the better in performing their haulage business in future.

8. Conclusion

One of the major issues is the suggestion in new segmentations on new core business market as the factors that should be taken into consideration. Among the factors that could be regarded as the determinant issue in competitive industry are the reductions of fleets, improvement at present activities and changing or adding to other type of businesses. Hence, this research establishes the key antecedents for modeling the new core business concept in haulage industry, while the empirical results validate their acceptability. The future study should be taken longitudinal approach into consideration other than the used cross sectional approach for the research design and the results of the suggested new business segmentations as proposed in this research.

References

1. Ahmad,S. and Melan, M.(2014) Challenges and Impact of Open Market Concepts in Haulage Industry *International Journal of Academic Research in Accounting, Finance and Management Sciences* Vol. 4, No.4, October 2014, pp. 16–26 E-ISSN: 2225-8329, P-ISSN: 2308-0337

2. Ahmad, S., Melan, M. and Zakaria, M. (2015) Issues and Barriers to Sustainable Growth of Malaysian Haulage Industry, *American Journal of Economics* p-ISSN: 2166-4951 e-ISSN: 2166-496X 5(2): 82-89 doi:10.5923/c.economics.201501.06
3. Association of Malaysian Hauliers (AMH) (2008) <https://amh.org.my/about/>
4. Azizi, A. S., Hassan, M. G., Akanmu, M. D., & Melan, M. (2019). Relationship between logistical support factors and effective contract management in Royal Malaysian Navy. *International Journal of Supply Chain Management*, 8(3), 1010-1017. Retrieved from www.scopus.com
5. Barbara MR; Structural Equation Modeling with AMOS: Basic Concept, Applications and Programming. 2nd Edition, Routledge Taylor & Francis Group, New York, USA, 2010.
6. Bentler PM; Causal Modeling Via Structural Equation Systems: *Handbook of Multivariate Experimental Psychology*. 2nd Edition, Plenum, New York. USA, 1988.
7. Bowersox DJ, Closs DJ, Cooper MB; Supply Chain Logistics Management. McGraw-Hill, 2002.
8. Corona Virus (2019); <https://www.worldometers.info/coronavirus/>
9. Halizahari, M., & Mustakim, M. (2016). Initiatives to prolong aging assets life cycle: A case study in royal malaysian navy. *International Journal of Supply Chain Management*, 5(2), 122-126. Retrieved from www.scopus.com
10. Jalil, N. A., Prapinit, P., Melan, M., & Mustaffa, A. B. (2019). Adoption of business intelligence - technological, individual and supply chain efficiency. Paper presented at the *Proceedings - 2019 International Conference on Machine Learning, Big Data and Business Intelligence, MLBDBI 2019*, 67-73. doi:10.1109/MLBDBI48998.2019.00021 Retrieved from www.scopus.com
11. Mazlan Md Zahid*, Mustakim Melan (2020) Drop Trailer Method (DTM) Monitoring in Malaysia Haulage Industry, *International Journal of Management(IJM)*
12. Mazlan Md Zahid; Mustakim Melan, Rohafiz Sabar, Pichit Prapinit⁴, Patchateeya Booyarit (2020) FRAMEWORK FOR DROP TRAILER METHOD (DTM) OF HAULAGE INDUSTRY IN MALAYSIA, *International Journal of Management(IJM)*
13. Melan, M., Zahid, M. M., Sabar, R. (2019) Effectiveness on Drop Trailer Method (DTM) of Haulage Industry in Malaysia *International Journal of Supply Chain Management* Vol 8, No 5.
14. Melan, M. (2011) Framework for the formulation of haulage policy in Malaysia. PhD thesis, *Universiti Teknologi Malaysia*, Faculty of Built Environment.
15. Omotayo, A., & Melan, M. (2017). Factors influencing the information and communication technology (ICT) of third party logistics in Malaysia. *International Journal of Supply Chain Management*, 6(2), 202-208. Retrieved from www.scopus.com
16. Prapinit, P., Sabar, R., Melan, M. (2019) Demand for Logistics Management Studies In North Eastern Thailand *International Journal of Supply Chain Management*, Vol 8, No 5.
17. Road Transport Act (1987) Act 333 - Road Transport Act 1987 - *Laws of Malaysia* <https://www.lawyerment.com/library/legislation/acts/1987/333/>
18. Tufail, M. M. B., Ibrahim, J. A., Melan, M., & Nawli, M. N. M. (2019). Novel approach of quantifying energy security in terms of economic, environmental and supply risk factors. *Journal of Advanced Research in Fluid Mechanics and Thermal Sciences*, 57(1), 100-109. Retrieved from www.scopus.com
19. Tengku Jamaluddin Bin Tengku Mahmud Shah Al-haj (2003) LIBERALIZATION OF THE CONTAINER HAULAGE INDUSTRY IN MALAYSIA - *Transport and Communications Bulletin for Asia and the Pacific* No. 73
20. Tufail, M. M. B., Ibrahim, A. J., & Melan, M. (2019). Quantifying indicators of supply risk in power generation system using risk impact matrix (PICOST). *Journal of Computational and Theoretical Nanoscience*, 16(12), 5020-5025. doi:10.1166/jctn.2019.8558
21. UNCTAD (2019) United Nation conference on trade development- Port Throughputs in Malaysia, *UNCTAD/TDR/2019* ISBN: 978-92-1-112953-3 eISBN: 978-92-1-004214-7 ISSN: 0255-4607 Sales No: E.19.II.D.15