Service quality determinants of the container haulage industry: an empirical study in Malaysia

D.N. Shariff

University Malaysia Terengganu, Malaysia Email: dnoor@umt.edu.my

K. Jayaraman*

Graduate School of Business, Universiti Sains Malaysia (USM), 11800 Penang, Malaysia Email: dr_kjraman@usm.my *Corresponding author

Muhammad Zaly Shah

University Technology Malaysia, Malaysia Email: b_zaly@utm.my

A.H. Saharuddin

University Malaysia Terengganu, Malaysia Email: sdin@umt.edu.my

Abstract: The international shipping trade has emerged to be a growth enabler of globalisation, playing a crucial role in the economy and development of many countries, such as Malaysia. To support the industry, the Malaysian Government liberalised policies to develop the container haulage industry, but some issues still exist. The present study focuses on retention behaviour of consignees who use container haulage services in major Malaysian ports. The findings reveal that customers retain the same container haulage company provided overall service quality is maintained at an acceptable standard. The safety and security of goods transported by haulage companies are the highest priorities of customers. However, customers also reported that haulage service providers need to show professionalism in human resources competency, employee-customer relations, appropriate pricing for expected service delivery, and information databases.

Keywords: container haulage industry; logistics service quality; professionalism; retention behaviour; Malaysia.

Reference to this paper should be made as follows: Shariff, D.N., Jayaraman, K., Shah, M.Z. and Saharuddin, A.H. (2016) 'Service quality determinants of the container haulage industry: an empirical study in Malaysia', *Int. J. Shipping and Transport Logistics*, Vol. 8, No. 1, pp.66–80.

Copyright © 2016 Inderscience Enterprises Ltd.

Biographical notes: D.N. Shariff is currently a Senior Lecturer and Fellow Research in the Department of Maritime Management (undergraduate studies) in the University Malaysia Terengganu. She received her Master degree from the University Technology Malaysia and Postgraduate in International Marketing from the University of Strathclyde (UK). She is a chartered member of CILT (UK), and also holds position of treasurer of CILTM (Malaysia East Coast Division). She was formerly seconded to UNCTAD as Cost Developer and Course Lecturer in port performance for developing countries. Her main area of interest is on port and shipping management, logistic and supply chain management.

K. Jayaraman is an Associate Professor in the Graduate School of Business (GSB), Universiti Sains Malaysia (USM), Penang. He has 28 years of experience in teaching, research and consultancy services in quantitative methods. His areas of research include operations management, service innovation in marketing, quantitative methods and tourism and transportation. He has published more than 70 research articles in international and national journals. He has received the Outstanding Teacher Award 2009–2010 from USM, Malaysia. Currently, he is guiding 13 PhD, research scholars of USM on various aspects of management strategies related to industry.

Muhammad Zaly Shah is currently a Senior Lecturer at the Department of Urban and Regional Planning, Faculty of Built Environment, Universiti Teknologi Malaysia (UTM) where he is also the Head of the Transportation Planning program. Prior to UTM, he was a Senior Executive with Malaysia Airlines. He received his BSc in Industrial Engineering from Bradley University, Illinois, USA. He received his MSc and PhD in Transportation Planning from UTM. His research interests include transport modelling, network optimisation, scheduling and sustainable transportation.

A.H. Saharuddin is a Professor with the Center of Maritime Management and Business, UMT. His research interest is in the field of maritime developmental policy, marine environmental and resource management. He has attended about 70 conferences at international and national level as a speaker and has published more than 100 over academic articles. He is an editorial board member and reviewer in journals such as *IKMAL Maritime Journal*, the *International Journal of Sustainability Science and Management* and the *International E-Navigation and Maritime Economic Journal*.

1 Introduction

Global maritime transportation is the major mover of cargoes in domestic and global logistics and distribution chain activities, with the global container market projected to reach 731 million 20-foot equivalent units (TEUs) by 2017. Continued industrial development and expansion in corporate commercial operations across the globe are the mainstays of the global container shipping industry and the reason for robust growth in global container traffic between 2010 and 2017 (Jose, 2011, 2012). Container shipments in emerging economies, such as China and India, show growth in terms of container throughput and new builds. The growth has stimulated a range of industry efficiencies: increased use of containerisation for shipments of bulk cargos, automated handling, satellite tracking for speed as well geographical positioning and efficiency in operations,

joint-ventures among terminal operators and partnerships among container haulage service operators.

Industry growth and development have also influenced the maritime and logistics industries in Malaysia, which is also affecting the container haulage industry. Hauliers play a vital role in Malaysian trade. The recent growth in maritime container haulage was underpinned by Malaysia's robust economic performance in 2012 in the manufacturing and industrial sectors, but it simultaneously witnessed a global rise in container cargo movements. This has contributed to the fast growth of containerisation as well as the expansion in the shipping industry in Malaysia. The growing demand for container transport has pushed it to the agenda of economists and politicians (Badawi, 2006), and container logistics service quality is now recognised as critical determinant of logistics efficiency, competitive advantage and customer satisfaction and retention.

In 1997, the government liberalised the Malaysian maritime container haulage industry by increasing the number of operators (Economic Planning Unit, Prime Minister Department, 2001). The move to liberalise was also an attempt by the government to increase efficiency and service quality in the industry. Based on reports from other countries, liberalisation was expected to force haulage companies to become more cost efficient and customer-oriented. Currently, there are more than 300 operators in the country. Despite the growth in trade in 2010 and 2011, the number of operators still remains below expectations laid out in 2009.

Even though liberalisation of the haulage industry received overwhelming support from many sectors of the economy, especially the manufacturing sector, haulage operators expressed their concerns and were sceptical of expected benefits. The above scenario was also experience by the European commission when they integrated different transport modes to create an efficient and cost-effective transport system and encouraged competition between transport operators (Socio-Economic and Environmental Research Institute, 2004).

The most common mode of transport for inland traffic in Malaysia is either containerised or bulk cargo, and since the cargoes from Malaysian ports are connected by cargo haulage trucks and trains, the service quality of the land connection affects the overall performance of the maritime freight industry. Hence, managing these challenges requires not only industry knowledge of the highest order, but also a thorough knowledge of customer needs, the impact of loyalty, and ultimately, retention behaviour.

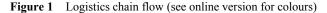
A search of the extant literature shows a heavy focus on the issues of maritime carriers or port selection decisions, but limited discussion of the attributes of quality dimensions of maritime transport services. Hence, the purpose of this study is to extend our knowledge on service quality and how to manage this in the context of maritime transport by proposing and testing a new conceptual model for customer retention behaviour.

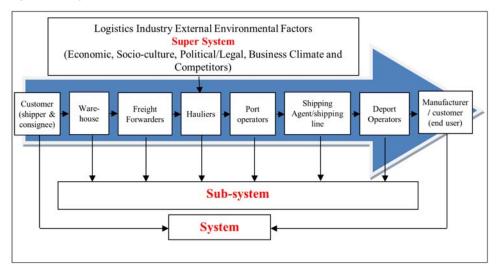
2 Literature review

Numerous papers have documented the effect of containerisation on industrial development and also the shift to state of art container operations and relocation of ports on the entire maritime transportation industry (Bernhofen et al., 2012). The impact of these changes requires a major re-assessment of logistics operators' strategies, not only in terms of port calls, but also in hinterland transportation and its linkages in the logistics

chain (Notteboom and Rodrigue, 2008). Moreover, most of the studies have emphasised the impact of containerisation on overall re-engineering of transportation, either ocean or hinterland. Specifically, the introduction of containerisation has created modern intermodal transport systems that move cargo between ships, trains and trucks, facilitating dramatic escalations in shipping capacities and reductions in delivery times. Simultaneously, containerisation has stimulated trade and economic growth in the emerging Asian markets, such as China, India, Taiwan, South Korea and Southeast Asia, including Malaysia. In addition, the crucial role of maritime industry is highlighted by the fact that almost 90% of goods traded across borders are transported across the oceans and seas of the world (Jose, 2011, 2012). Therefore, the container haulage industry plays a vital role in linking the containerised inland freight from Malaysia's new economic regions of Iskandar Region Development (IRD), Northern Corridor Economic Region (NCER), East Coast Economic Region (ECER), Sabah Development Corridor (SDC) and Sarawak Corridor of Renewable Energy (SCORE) and sea maritime transport.

Malaysia is experiencing escalating demand for quality container haulage services in the maritime industry, especially in the major Malaysian port hinterland areas where the majority of cargo is containerised. While customers of container haulage services are looking for more efficient and fairer market practices, they are confronted with a lack of timeliness in delivering or picking up cargo and insufficient equipment to cater to demands during peak periods in the major Malaysian ports. These issues affect customers' end-to-end operations, according to Zaid and Shah (2007), as the haulage industry is one of the key components in determining supply chain efficiency and effectiveness. From the operators' perspective, more stringent approval of haulier permits and simplified licensing and inspection procedures would enable an optimal utilisation of prime movers, lorries and trucks, and improve overall operations (Socio-Economic and Environmental Research Institute, July 2004).





The haulage industry underpins the logistics transportation chain, consisting of shipping agents, freight forwarders, warehouses, depots, port operators and shipping lines. The

complex external environmental in a logistics chain forms the super system, depicted in Figure 1, and contains factors which cannot be controlled by the container haulage industry service providers. The logistics customers (shippers and consignees) deliver products in good condition to manufacturer or customer (end user). Intermediate processes (operations), namely warehouse, freight forwarders, hauliers, port operators, shipping agents/shipping line operators, and depot operators form the sub-systems of the chain.

The multitude of operators in a logistics supply chain add a high degree of operational risk. A World Economic Forum (2012) survey highlighted that 93% of senior executives believed that addressing logistics risk was a growing priority in maritime industry management. Asia-Pacific is the largest market worldwide (Jose, 2012), characterised by escalating demand for the container haulage services and stiff competition among the market players. However, the United Nations-Economic and Social Commission for Asia and the Pacific (ESCAP) (2011) reported that many container haulage companies in Asia-Pacific lack management professionalism and consistent service quality. When haulage services fail to meet customers' quality standards, customers, seeking more professional and reliable services, switch from one haulage company to other. Hence, retaining customers over a long period is becoming an important issue for container logistic companies and is the primary concern of the present article.

As a result of booming industrial development in Malaysia, and a proportionate rise in the movement of containerised cargo, new economic corridors have opened up, such as IRD, Malaysia in southern Johor, NCER, ECER, SDC and SCORE. These economic corridors are the Malaysian Government's initiative to accelerate economic growth and development through collaboration with the private sector to develop priority industries and facilitate private investment, create a vibrant business environment and employment opportunities.

2.1 Service quality determinants

A wide range of definitions can be found in the literature for service quality. Lehtinen and Lehtinen (1982) defined it in terms of physical quality, interactive quality and corporate image quality, whereas Juran (1999) described service quality as the features of products that meet customers' needs and provide satisfaction. Wisniewski and Donnelly (1996) defined service quality as the extent to which a service meets customers' needs or expectations, the reference point against which performance is judged (Zeithaml and Bitner, 2003). Service quality, the difference between customers' expectations and their perceptions of the actual service received, has been studied by Grönroos (2007) and Parasuraman et al. (1985).

In the context of container haulage services, service performance is a key component in creating overall customer satisfaction (Qin and Prybutok, 2009). Companies such as Dell and Federal Express suggest that logistics service quality has a significant impact on revenue and is a powerful source of competitive differentiation (Mentzer and Kahn, 1995). This also applies to the container haulage service industry. However, limited literature directly addresses the dimensions or determinants of service quality in container haulage services. According to Pearson (1980), the most important criteria are flexibility, first on the quay, speed of delivery, reliability and regularity.

The issue of carrier selection decisions in liner shipping was examined by Brooks (1985), who listed carrier selection criteria as frequency of delivery, delivery time,

directness of delivery, on-time pick-up and delivery, cost of service, cooperation between personnel, carrier flexibility, fast claims response, tracing capability of the carrier, sales representative, carrier's reputation for reliability, past loss and damage experience, informational nature of advertising and carrier appropriateness. Moreover, Murphy et al. (1989, 1991, 1992) revealed freight forwarders selected carriers based on equipment availability, shipment information, and loss and damage performance. Container haulage industry selection factors were equipment availability, loss and damage performance, large shipment delivery capabilities, and convenient pick-up and delivery times (Miremadi et al., 2011). Other evidence reveals that haulier efficiency as well as performance is an important factor in selection criteria.

The proposed research framework includes ten independent variables (constructs) and two dependent variables, which altogether comprise 31 question items (see Appendix). The independent variables, identified through expert opinion and existing literature, include facilities, human resources, reliability, competency, employer-consignee relationship, business culture, pricing, communication/information, safety-security, and customer satisfaction. Customer retention behaviour and professionalism in services form the dependent variables.

2.2 Customer retention behaviour

Marketing scholars have explored the link between the practices of customer management and shareholder value (Doyle, 2000). In particular, the connections between customer retention and shareholder value have been subject to scrutiny. Swildens et al. (2004) found that about 1% increase in customer retention has almost five times more impact on firm value than a 1% change in discount rate or cost of capital. Hence, customer retention improves profitability by reducing costs incurred in acquiring new customers. Lombard (2009) commented that the pressure on companies to retain customers is fuelled by high customer acquisition costs and a lengthy process. Under these circumstances, losing an important customer to a competitor significantly impacts the organisation's profitability and growth.

2.3 Professionalism in services

Despite the attention devoted by researchers to study professionalism in health care and service quality, little focus has been shown in container haulage. The ability of customers to effectively measure service quality influences the professionalism in haulage industry services. The difficulties normally associated with the measurement of professionalism are exacerbated by the highly intangible, labour-intensive nature of services and the frequent presence of customers during the delivery process.

Even though the logistics transport sector has a long history in linking the air-sea-road or rail modes, container logistics companies still need uniformity in strategic managerial skills, especially in Malaysia's haulage industry. The major challenges for haulage service providers are aligning corporate strategy with the right organisational model and matching strategy to targeted customer segments. For example, Notteboom and Rodrigue (2008) argued that time-based management of production, whereby logistics flow from a push (supply-based) to a pull (demand-based) method to improve distribution, has a significant effect on velocity of freight. Managing state of the art systems that affect freight velocity require a high level of professionalism by the logistics

service provider (Boonpattarakan, 2012). Even though the literature on the customer retention strategies in the service sector indicates that different service industries adopt different customer retention strategies, professionalism is a common theme. Clearly, professionalism is a quality organisations' managers need to possess. Therefore, service quality dimensions of professionalism are of interest in the present research.

3 Research framework and hypothesis development

The study employed a survey, conducted at major ports in Peninsular Malaysia, targeting shippers and consignees who use the services of large, medium or small container hauler companies. Respondents were general managers, marketing managers, or logistics managers (supply chain managers). The target firms were identified from industrial directories published by the Ministry of International Trade and Industry.

Out of 500 questionnaires administered, 172 (34.4%) complete responses were received. The self-administrated questionnaire and in-depth interviews used the SERVQUAL model to measure the significant dimensions influencing customer retention and professionalism of service quality of haulage providers. In the first section, 31 items (randomly placed in the questionnaire to avoid the order of biasness) measured the study variables (independent and dependent variables) using a five-point Likert-type scale (1 = very poor -5 = excellent). The second section used open-ended questions to rate other attributes of service quality not listed in the first section. The collected data were analysed using SPSS version 22.

The respondents of the study were clustered into seven manufacturing business sectors (Table 1) with the majority of respondents belonging to the glass products (18%) sector, followed by electrical products (17%). The other business sectors were plastic products (16%), followed by chemicals and petroleum products (13%), food and drink manufacturing, automobile parts, and other manufacturing companies (12%).

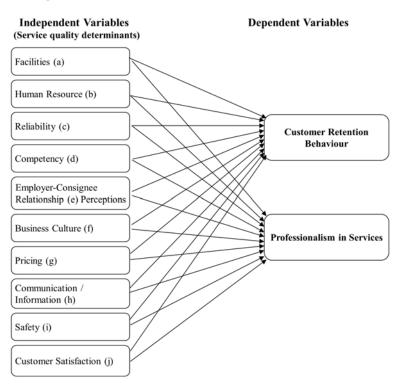
Manufacturing sectors	Number of respondents	Percentage (%)
Electrical and electronic products	29	17
Rubber and plastic products	28	16
Glass products	30	18
Food and beverage products	21	12
Automobile parts	21	12
Chemical/refined petroleum products	22	13
Other manufacturing companies	21	12
Total	172	100

Table 1Profile of the respondents

The present study determines if variations in haulage service delivery quality affect the respondents' container transportation, such container cargo volume or container cargo delivery. The study also focuses on how the determinants of service quality influence professionalism in services and customer retention behaviour. In addition, an attempt is made to articulate a new set of theories on the container haulage service quality of logistics service providers in Malaysia, and to clarify the relationship between customer

satisfaction, customer retention and switching behaviour. By applying the concept of service quality gaps (Luk and Layton 2002), the study intention is to narrow the gap between service quality determinants and actual service delivery from managerial and customer perceptions. The research framework for this study was adopted from work by Kang and James (2004) (Figure 2).





Service quality determinants, outlined in Figure 2, influence customer retention behaviour. If customers perceive haulage services do not meet expectations, then they are likely to switch over to another container haulage service provider (a competitor). Furthermore, the studies of Mazanec (1995) and Zeithaml and Bitner (2003) advised identifying the service quality determinants that significantly influence customer retention, which informs the main hypothesis:

H₁ (a–j) Service quality determinants positively influence customer retention behaviour in the container haulage service industry.

In addition, previous literature has suggested the extent of the service quality provided by container haulage companies influences service professionalism. The relationship between the logistics service quality and the professionalism of service delivery was also explored in this study. Such relationships have been shown to exist in different applications (see Cronin and Taylor, 1992; Spreng and Mckoy, 1996; Zainudin and Zaihan, 2004). Based on this work, the following hypothesis was put forward for testing:

H₂ (a–j) Service quality determinants positively influence professionalism in services in the container haulage service industry.

Each hypothesis has ten sub-hypotheses (a-j) connected to each independent variable on the dependent variable.

4 Significant findings and results

The collected data were tested for possible outliers and normality, with no outliers found and the normality of data ensured. Data consistency was verified using Cronbach's alpha for all the study variables, and the results were found to be above the cutoff value of 0.7, as advised by Nunnally (1978). Multiple regression analysis was then applied to determine the influence of a set of independent variables on a dependent variable, i.e., how much of the variance in the dependent variable is explained by the set of predictors or independent variables (Hair et al., 1998). From Table 2, we infer that the multiple regression model fits well with $R^2 = 0.814$, p < 0.01 (Cohen, 1992), indicating that the service quality characteristics explain 81.4% of the variance on customer retention behaviour. The Durbin-Watson test value of 2.1 indicates that the error term is independent. There is no multicollinearity among the service quality characteristics variables as the variance inflation factors for all independent variables are less than 5.0 (O'Brien, 2007).

Service quality characteristics	Beta coefficients	t-value	p-value	
Facility	-0.038	-0.419	0.676	
Human resource	-0.266	-3.523	0.001	
Reliability	-0.67	-0.596	0.552	
Competency	0.369	3.671	0.000	
Employer-consignee relationship	0.209	2.200	0.030	
Business culture	0.106	1.217	0.226	
Pricing	0.238	2.676	0.008	
Communication/information	0.218	5.017	0.000	
Safety-security	0.423	3.615	0.000	
Customer satisfaction	-0.178	-2.860	0.005	
R^2 , <i>p</i> -value	0.814, <i>p</i> < 0.01			
Durbin-Watson		2.1		

 Table 2
 Regression analysis for customer retention behaviour in the container haulage industry

Out of the ten independent variables considered, seven variables were found to be statistically significant (H_1 variables), of which five variables were positively correlated on customer retention behaviour and two variables were negatively correlated. On the positive side, respondents expect more competency from haulage service providers

 $(\beta = 0.369, p < 0.01)$ in terms of handling the target products, pricing of logistics and packaging to make all the difference in customer retention behaviour.

These results allow us to make the following observations. The employer-consignee relationship is positive and needs to be strengthened otherwise the retention behaviour changes ($\beta = 0.209$, p < 0.05). The pricing of container transport should be reasonable without much deviation from normal service charges ($\beta = 0.238$, p < 0.01). Hauliers' information on pricing, service quality, and delivery systems should be provided on their website ($\beta = 0.218$, p < 0.01). Products delivered to the consignees should be intact without any damage as most respondents considered shipment safety and security a priority when considering whether to retain their service provider ($\beta = 0.423$, p < 0.01). The respondents indicated serious concerns with logistics and distribution of transport facilities, and they wanted value-added services in integrated packages, freight integration and informative data bases from Malaysian container haulage companies.

On the negative side, the respondents expressed dissatisfaction with service quality ($\beta = -0.178$, p < 0.01). Also, the respondents perceived the haulage industry did not employ sufficient staff and failed to coordinate staff, resulting in switch over intentions ($\beta = -0.266$, p < 0.01).

From Table 3, we can conclude that the multiple regression model fits well as $R^2 = 0.637$, p < 0.01 (Cohen, 1992), indicating that the service quality characteristics explain 63.7% of the variance in professionalism in the container haulage industry. The Durbin-Watson test of 1.846 indicates that the error term is independent. There is no multicollinearity among the service quality variables as the variance inflation factors for all the independent variables are less than 5.0.

Service quality characteristics	Beta coefficients	t-value	p-value	
Facility	-0.159	-1.260	0.210	
Human resource	-0.097	-0.879	0.381	
Reliability	-0.143	-0.910	0.365	
Competency	0.197	1.342	0.182	
Employer-consignee relationship	0.16	0.121	0.904	
Business culture	-0.46	-0.377	0.707	
Pricing	-0.094	-0.739	0.461	
Communication/information	0.095	1.438	0.153	
Safety-security	1.249	9.594	0.000	
Customer satisfaction	-0.347	-2.860	0.005	
R^2 , <i>p</i> -value	0.637, <i>p</i> < 0.01			
Durbin-Watson	1.846			

 Table 3
 Regression analysis for professionalism in container haulage industry

Out of the ten variables considered, only two variables were found to be statistically significant (H₂ variables). The variable safety-security significantly and positively influences professionalism ($\beta = 1.249$, p = 0.000). In an earlier study, Banomyong (2005) investigated the impact of port and trade security initiatives on maritime supply-chain management and the respondents expressed satisfaction on the existing safety-security aspects in the Malaysian container haulage industry.

On the whole, the respondents of the current study were not satisfied with the level of professionalism in the container haulage industry, and noted that industry competition and employees' job pressure could be possible contributing factors ($\beta = -0.347$, p < 0.01). Furthermore, as service providers with more effective operations yielded better service quality satisfaction from customers, operational strategies that build both customer satisfaction and professionalism are superior at retaining customers, even customers that may express dissatisfaction. Overall, the present study identifies the significant determinants of container haulage service quality which are vital to customer satisfaction, customer retention behaviour and professional services that can help further to enhance the development of container haulage service industry in Malaysia.

Some interesting findings emerged from the open-ended questions in the second section of the questionnaire and the personal interviews with respondents. The container hauliers treat large multinational customers, small, and medium customers differently when it comes to pricing. The most surprising observation from the study is that a new trend in container haulage companies exists where freight forwarders take on the role as mediators (agents) between multinationals and container haulage industry. This intermediate practice by freight forwarders leads to unethical practices, and government intervention to prevent this practice may improve container haulage industry services for all customers.

The interference of bordering countries, particularly Thailand in the north and Singapore in the south, created some issues for container haulage customers. For instance, if container haulage companies engage prime mover drivers from Thailand, this may lead to problems because customers question driver honesty, trust worthiness and their ability to deliver cargo safely, securely and on time.

5 Discussions and conclusions

Globalisation has driven the growth in international trade, which plays a central role in economic growth and development of countries such as Malaysia. To assess the current status of the Malaysian container haulage industry, and the challenges facing customers and haulage companies, the researchers identified the determinants of service quality of container haulage companies operating in major ports of Peninsular Malaysia. The respondents were consignees of small and medium manufacturers in Malaysia. The results indicate that the high levels of professional competency of haulage service providers influence customer retention because manufacturers (customers) are assured in advance of haulier's skills, in terms of the cargo drivers' efficiency and of the supporting staff. For instance, customers value hauliers who can implement contingency plans that minimise the impact to deliveries in the event of port operational issues, such as delays in ship arrival, technical breakdowns, inefficiency in cargo operations, customs' clearance, or safety and security issues delaying cargo deliveries. Most manufacturers have experienced improper contingency planning on the part of logistics suppliers, which has caused them to switch from one haulage company to another.

Another important aspect of the haulage industry is maintaining employee-consignee relationships. The business culture depends on the existing contract, rapport created in cargo handling and the agreements that they have with the customers. Further, the haulage industry cannot afford to lose clients with good business opportunities. The creation of information data bases on available services and human resource coordination may overcome some of the existing problems in the container haulage industry.

The study respondents reported that professionalism in haulage service delivery and overall operations play a crucial role in their satisfaction and hauliers' retention. In terms of haulier management, respondents noted the professionalism of cargo handling operations, and the role of supervisors, middle management and senior management were paramount in establishing a business-culture-oriented around customer satisfaction. Haulier management must drive a professional approach and innovation in day-to-day operations.

However, customers also contribute to the problems by enforcing infeasible performance targets. In their attempt to meet the targets, haulage company managers and supporting staff often rush jobs, creating further complications and problems. For instance, if trailers are unavailable or customers make unplanned requests, haulier staff may seek help from other haulage companies. Additionally, the respondents revealed that it is common practice to negotiate terms of pricing (tariff rate), even though there is growing demand for cargo transport services. The Malaysian Government has mandated uniform pricing guidelines for haulage industry operators, but loop holes in the system add to the inconsistency of service quality and delivery.

One key positive was that respondents expressed overall satisfaction in haulage service safety and security, even though numerous issues were cited. For example, customers experienced cargo damage or reduced volumes because trailer drivers were irresponsible; they make extra trips, only achieved by fast, rough driving, which damages cargo. Improper maintenance and over-use of machinery, including prime movers and trailers, occur among private haulage sub-contractors, and some drivers consume alcohol or drugs or both while driving in order to make long haul deliveries.

Acknowledgements

The authors would like to thank the journal editor and two reviewers for their valuable comments and suggestions which have made the presentation of this paper more meaningful. This study is supported by the Universiti Sains Malaysia RU short term grant No. 304/PPAMC/6311073.

References

- Badawi, A.B.H.A. (2006) Ninth Malaysian Plan 2006–2010, pp.1–53 [online]
- http://www.parlimen.gov.my/news/eng-ucapan_rmk9.pdf (accessed 7 January 2015).
- Banomyong, R. (2005) 'The impact of port and trade security initiatives on maritime supply-chain management', *Maritime Policy & Management*, Vol. 32, No. 1, pp.3–13.
- Bernhofen, D.M., El-Sahli, Z. and Kneller, R. (2012) Estimating the Effects of the Container Revolution on World Trade [online] http://www.nek.lu.se/publications/workpap/papers/WP13 _4.pdf (accessed 7 January 2015).
- Boonpattarakan, A. (2012) 'Competitive capabilities of Thai logistics industry: effects on corporate image and performance', *International Journal of Business and Management*, Vol. 7, No. 5, pp.19–30.
- Brooks, M.R. (1985) 'An alternative theoretical approach to the evaluation of liner shipping Part II: choice criteria', *Maritime Policy and Management*, Vol. 12, No. 2, pp.145–155.

Cohen, J. (1992) 'A power primer', Psychological Bulletin, Vol. 112, No. 1, pp.155–159.

- Cronin, J.J. and Taylor, S.A. (1992) 'Measuring service quality: a reexamination and extension', *Journal of Marketing*, Vol. 56, No. 3, pp.55-68.
- Doyle, P. (2000) Value-based Marketing: Marketing Strategies for Corporate Growth and Shareholder Value, 2nd ed., John Wiley, Chichester.

Economic Planning Unit, Prime Minister's Department (2001).

- ESCAP (2011) Transport and Communications Bulletin for Asia and the Pacific, No. 73: Private Sector Participation in the Transport Sector: Policy Measures and Experiences in Selected Countries [online] http://www.unescap.org/resources/transport-and-communications-bulletinasia-and-pacific-no-73-private-sector-participation (accessed 7 January 2015).
- Grönroos, C. (2007) Service Management and Marketing: Customer Management in Service Competition, 3td ed., John Wiley & Sons Ltd., London.
- Hair, J.F.J., Anderson, R.E., Tatham, R.L. and Black, W.C. (1998) *Multivariate Data Analysis*, 5th ed., Prentice-Hall International Inc., Upper Saddle River, New Jersey, USA.
- Jose, S. (2011) Global Maritime Containerization Market to Reach 731.88 Million TEUs by 2017 [online] http://www.prweb.com/releases/maritime_containerization/container_ports/ prweb8271890.htm (accessed 7 January 2015).
- Jose, S. (2012) Global Maritime Containerization Market to Reach 731 Million TEUs by 2017, According to New Report by Global Industry Analysts [online] http://www.prweb.com/ releases/containerization/container_shipping/prweb9382752.htm (accessed 7 January 2015).
- Juran, J.M. (1999) How to Think About Quality, 5th ed., pp.2.1–2.3, McGraw-Hill, New York.
- Kang, G-D. and James, J. (2004) 'Service quality dimensions: an examination of Grönroos's service quality model', *Managing Service Quality*, Vol. 14, No. 4, pp.266–277.
- Lehtinen, J.R. and Lehtinen, U. (1982) Service Quality: A Study of Quality Dimensions, Service Management Institute, Helsinki.
- Lombard, M.R. (2009) 'Customer retention strategies implemented by fast food outlets in the Gauteng, Western Cape, and Kwazulu-natal provinces of South Africa a focus on something fishy, nando's and steers', *African Journal of Marketing Management*, Vol. 1, No. 2, pp.70–80.
- Luk, S.T.K. and Layton, R. (2002) 'Perception gaps in customer expectations: managers versus service providers and customers', *The Service Industries Journal*, Vol. 22, No. 2, pp.109–128.
- Mazanec, J.A. (1995) 'Competition among European tourist comparative analysis with multidimensional scaling selforganizing maps', *Tourism Economics*, Vol. 1, No. 3, pp.283–302.
- Mentzer, J.T. and Kahn, K.B. (1995) 'A framework of logistics research', *Journal of Business Logistics*, Vol. 16, No. 1, pp.231–250.
- Miremadi, A., Ghalamkari, S. and Sadeh, F. (2011) 'Customer Satisfaction in port industry (a case study of Iranian shipping', Paper presented at the *International Conference on Sociality and Economics Development (IPEDR)* [online] http://www.ipedr.com/vol10/12-E10007.pdf (accessed 7 January 2015).
- Murphy, P.R., Dalenberg, D.R. and Daley, J.M. (1989) 'Assessing international port operations', *International Journal of Physical Distribution and Materials Management*, Vol. 19, No. 9, pp.3–10.
- Murphy, P.R., Dalenberg, D.R. and Daley, J.M. (1991) 'Selecting links and nodes in international transport', *Transport Journal*, Vol. 31, No. 2, pp.33–40.
- Murphy, P.R., Dalenberg, D.R. and Daley, J.M. (1992) 'Port selection criteria: an application of a transport research framework', *Logistics and Transport Review*, Vol. 28, No. 3, pp.237–255.
- Notteboom, T. and Rodrigue, J.P. (2008) 'Containerisation, box logistics and global supply chains: the integration of ports and liner shipping networks', *Maritime Economics & Logistics*, Vol. 10, No. 1, pp.152–174.

Nunnally, J.C. (1978) Psychometric Theory, McGraw-Hill, New York, NY.

- O'Brien, R.M. (2007) 'A caution regarding rules of thumb for variance inflation factors', *Quality & Quantity: International Journal of Methodology*, Vol. 41, No. 5, pp.673–690.
- Parasuraman, A., Zeithaml, V.A. and Berry, L.L. (1985) 'A conceptual model of service quality and its implications for future research', *Journal of Marketing*, Vol. 49, No. 4, pp.41–50.
- Pearson, R. (1980) Container Line Performance and Service Quality, University of Liverpool, Liverpool.
- Qin, H. and Prybutok, V. (2009) 'Service quality, customer satisfaction, and behavioral intentions in fast-food restaurants', *International Journal of Quality and Service Sciences*, Vol. 1, No. 1, pp.78–95.
- Socio-Economic and Environmental Research Institute, July (2004).
- Spreng, R. and Mckoy, R. (1996) 'An empirical examination of a model of perceived service quality and satisfaction', *Journal of Retailing*, Vol. 72, No. 2, pp.201–214.
- Swildens, E.S-J., Day, R.D. and Gupta, A.K. (2004) Content Delivery and Global Traffic Management Network System, Google Patents [online] http://www.google.com/patents/ US6754699 (accessed 7 January 2015).
- Wisniewski, M. and Donnelly, M. (1996) 'Measuring service quality in the public sector: the potential for SERVQUAL', *Total Quality Management*, Vol. 7, No. 4, pp.357–365.
- World Economic Forum (2012) Outlook on the Logistics & Supply Chain Industry 2012, Global Agenda Council on Logistics & Supply Chains 2011–2012, pp.1–36 [online] http://www3.weforum.org/docs/WEF_SCT_GAC_OutlookLogisticsSupplyChainIndustry_Ind ustryAgenda_2012.pdf (accessed 7 January 2015).
- Zaid, Z.M. and Shah, M.Z. (2007) 'Performance measurement in Malaysia container haulage industry: a critical evaluation', Paper presented at the *Fakulti Alam Bina Postgraduate Seminar*, UTM, Skudai, Malaysia.
- Zainudin, A. and Zaihan, O. (2004) 'The impact of corporate image on perceived quality in healthcare industry', Presented at *Conference of Social Science Research (CSSR 2005)*, Institute of Research Development and Commercialization UiTM.
- Zeithaml, V. and Bitner, M. (2003) Service Marketing: Integrating Customer Focus Across the Firm, McGraw-Hill, New York.

Appendix

Questionnaire items

1	2	3	4	5
Very Poor	Poor	Fair	Good	Excellent

Items		Experience				
А.	Facility					
1	Fleet capacity and availability (prime movers and trailers)	1	2	3	4	5
2	Availability of modern equipment such as GPS, tracking systems and black box	1	2	3	4	5
3	Physical facility of haulage company's (visual appeal e.g. Prime mover and trailer appearance, depot arrangement)	1	2	3	4	5
В.	Human resource					
4	Human resource management - drivers turn over	1	2	3	4	5
5	Employee tidiness and appearance (uniform)	1	2	3	4	5

Questionnaire items (continued)

Items		Experience					
C. Reliability							
6 Reliability of services and dependability at the time as promised	1	2	3	4	5		
7 Responsiveness in delivering the services (including during holidays and urgent request)	1	2	3	4	5		
8 Timeliness in delivering the services (including during holidays and urgent request)	1	2	3	4	5		
9 Sincerity in assisting to solve customer problems	1	2	3	4	5		
D. Competency							
10 Competence/skills driver	1	2	3	4	5		
11 Competence/skills supporting staff	1	2	3	4	5		
12 Competence/skills management staff	1	2	3	4	5		
E. Employer-consignee relationship							
13 Behaviour of haulage company employees	1	2	3	4	5		
14 Behaviour of employee instills confidence to the customer	1	2	3	4	5		
15 Haulage company employees consistently courteous to customer	1	2	3	4	5		
16 Willingness to help the customer	1	2	3	4	5		
17 Employee is knowledgeable to answer customer questions	1	2	3	4	5		
F. Business culture							
18 Contingency planning in deliveries especially during peak season	1	2	3	4	5		
19 Punctuality in deliveries	1	2	3	4	5		
G. Professionalism in services							
20 Supervisor show professionalism in handling any problems/issues	1	2	3	4	5		
21 Management show professionalism in handling any problems/issues	1	2	3	4	5		
H. Pricing							
22 Tariff rate (pricing)	1	2	3	4	5		
23 Service level in relation to pricing	1	2	3	4	5		
24 Obligations (business relationship, contracts etc.) in relation to pricing	1	2	3	4	5		
25 Pricing tiers, rebates, discounts, etc.	1	2	3	4	5		
I. Communication/Information							
26 Accessibility: customer hotline, helpdesk etc. provided	1	2	3	4	5		
27 Customer oriented: able to meet specific needs of customers	1	2	3	4	5		
J. Safety-security							
28 Safety of cargo delivery – damages, quantity	1	2	3	4	5		
29 Security of cargo delivery	1	2	3	4	5		
K. Customer satisfaction							
30 Overall rating on the services rendered by hauliers	1	2	3	4	5		
L. Customer retention							
31 Retention of the last service provider for the next one year	1	2	3	4	5		