# Supply Chain Performance in Transport Logistics: An Assessment by Service Providers

Kee-hung Lai*
Department of Shipping and Transport Logistics
The Hong Kong Polytechnic University
Hung Hom, Kowloon, Hong Kong
Tel.: (852) 2766 7920
Fax: (852) 2330 2704
Email: stlmlai@polyu.edu.hk


and


T.C.E. Cheng
Department of Management
The Hong Kong Polytechnic University
Hung Hom, Kowloon, Hong Kong
Tel.: (852) 2766 5215
Fax: (852) 2356 2682
Email: mscheng@polyu.edu.hk


*Corresponding author. Kee-hung Lai is Assistant Professor in the Department of Shipping and Transport Logistics and T.C.E. Cheng is Chair Professor in the Department of Management; both are at The Hong Kong Polytechnic University. All correspondence should be directed to Department of Shipping and Transport Logistics, The Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong. Email: stlmlai@polyu.edu.hk

# Supply Chain Performance in Transport Logistics: An Assessment by Service Providers

**Abstract**

This study presents an assessment of supply chain performance (SCP) in transport logistics by service providers in the transport logistics industry in Hong Kong. The industry is broadly defined as encompassing firms involved in the business of serving the physical flows of goods from a point of origin, i.e., shippers, to a point of destination, i.e., consignees, in a supply chain. These firms include those in sea transport, freight forwarding, air transport and third-party logistics services. A cross-sectional survey was conducted with firms in the industry to evaluate their perceived SCP in transport logistics and the attached importance from both cost and service perspectives. The study findings provide managerial insights for firms in the industry to understand their SCP in transport logistics and benchmark areas for performance improvement.

Keywords: transport logistics industry, supply chain, importance-performance analysis, survey, performance measurement

# 1. Introduction

The traditional view of firms with clear organizational boundaries, limited relationships with other member firms in a supply chain, and a sole focus on internal efficiency is no longer adequate for firms to compete in today's volatile business environment. Accordingly, many firms have shifted their management paradigm from being "self-centered" close-enterprises to global open-enterprises (Browne and Zhang 1999). This extended enterprise management approach is congruent with the supply chain management (SCM) concept, which prescribes close working relationship beyond traditional organizational boundaries with an emphasis on inter-enterprise networking across the supply chain. In fact, effective management of a supply chain has been increasingly recognized as a key factor in differentiating product and service offerings and building a competitive advantage for firms (Christopher 1998). It demands close integration of internal functions within a firm and effective linkage with external operations of member firms in the supply chain (Lee 2000). The SCM concept requires that performance improvement extend beyond organizational boundaries and involve member firms in the supply chain. The challenge for firms to achieve a competitive edge is to manage supply chain performance (SCP) for advantages in cost and service differentiation.

The SCM concept is applicable and useful in the transport logistics industry, a sector that is growing in importance, particularly in service-based economies. For instance, the industry serves the import/export trade of Hong Kong, the value added of which contributes 17.7% of the GDP of the economy (Census and Statistics Department of HKSAR 2001). Generally, firms in the industry function as intermediaries in a supply chain that facilitate the physical flows of

goods from a point of origin and from a shipper to a point of destination and to a consignee. The business operations, therefore, include a series of activities encompassing shippers in the upstream and consignees in the downstream in a supply chain process. As these member firms form part of the supply chain, it is important that firms in the transport logistics industry understand their SCP such that they can deliver mutually beneficial value to all the related parties in their supply chain activities.

As a logistics hub of global importance, the volume of container cargo handled through Hong Kong by air (in terms of metric tons) and by sea (in terms of throughputs in TEU) is the highest in the world (Beddow 2001; World Airport Week 2001). Faced with increasing competition from low-cost competitors on the Chinese mainland and high value added competitors from Singapore, firms within this industry in Hong Kong have started to turn to SCP as a means of obtaining cost and service advantages. Accordingly, there is a need to understand how firms in the industry in Hong Kong view their SCP and how well they perform. While there have been some successes in assessing SCP for manufacturing industries, assessments of SCP in the transport logistics context remain scanty.

To serve this under-researched area, we attempt to provide an assessment of SCP in transport logistics for the transport logistics industry in Hong Kong and determine the importance attached to SCP in transport logistics from the perspective of firms within this service sector. The study results are useful in enabling firms in this industry to understand SCP in transport logistics, and to improve their performance with the self-assessment results by the service providers as a benchmark.

The next section discusses the measures for SCP in transport logistics. Section three explains the use of importance-performance analysis (IPA) for assessing the SCP measures important to transport logistics service providers and how well they perceive their performance on the measures. Sections four and five present the research methods and analyze and interpret the study results using IPA. A discussion of the implications of the study results is provided to conclude the work.

## 2. SCP in transport logistics

The supply chain of a transport logistics firm involves shippers at the input side and consignees at the output side. The goal is to satisfy the needs of different parties, both upstream and downstream, in the chain for greater effectiveness and efficiency than competitors. In this context, effectiveness refers to the extent to which customer requirements are met, while efficiency measures how economically resources are utilized in meeting customer requirements (Mentzer and Konrad 1991).

To assess SCP in this industry, it is necessary to consider both effectiveness and efficiency together. For example, cost efficiency in providing services might be one of the important performance measures for a transport logistics service provider. However, this might not be what the shippers and consignees desire. They would instead demand high quality and low-price delivery of shipments conforming to their requirements. Another example is that delaying shipments until carriage in full truckloads is possible may reduce the costs of delivery and improve efficiency measures for the transport logistics service provider. But this leads to a

reduction in the service effectiveness provided to shippers and consignees. Neither effectiveness nor efficiency alone, can fully reflect SCP in transport logistics.

In this regard, SCP in transport logistics should cover not only operations efficiency parameters, but also measures of service effectiveness (Kleinsorge, Schary and Tanner 1991). In this study, the assessment of SCP in transport logistics is based on validated measures of the SCP construct in previous research (Lai, Ngai and Cheng 2002). The measures capture three aspects of SCP in transport logistics, incorporating both the efficiency and effectiveness perspectives to address the performance requirements of various supply chain members in this industry, i.e., shippers, service providers and consignees. The three aspects of SCP in transport logistics include:

- Service effectiveness for shippers (SES);
- Operational efficiency for transport logistics service providers (OE); and
- Service effectiveness for consignees (SEC).

**3. Importance-performance analysis**

Importance-performance analysis (IPA) is a useful technique for assessing the above three aspects of SCP in this industry. Originating from the marketing discipline, the technique is used to identify the strengths and weaknesses of a firm's offering on the basis of consumers' perceived importance of, and the performance of, the various attributes delivered to them (Martilla and James 1977). This technique has been applied in different service settings for

strategy formulation. For instance, Weber (2000) employed IPA to understand the performance of convention hotels from the perceptions of meeting planners. Skok, Kophamel and Richardson (2001) used IPA as a tool for diagnosis of information systems success in the heath club industry. In this study, in order to yield a self-assessment by service providers in the transport logistics industry, IPA is used to assess the relative importance and performance of various SCP measures as perceived by the transport logistics service providers.

IPA is easy to use and offers considerable value for the assessment of SCP in transport logistics. In this study, the service providers' self-perception of their performance on the various SCP measures is surveyed, as well as the importance they attach to these SCP measures. The perceived SCP measures are then classified in high/ low categories and plotted onto a two-dimensional, four-quadrant Importance-Performance Matrix (IPM) for interpretation. An example of an IPM is depicted in Figure 1.

< Insert Figure 1 about here >

The vertical axis of the IPM indicates the importance of the measures from low to high, and the horizontal axis represents their perceived performance from low to high. According to Martilla and James (1977), positioning the vertical and horizontal axes of the IPM is a matter of judgment by the researcher, based on relative rather than absolute levels of importance and performance. In the IPM, there are four identifiable quadrants: concentrate here (A), keep up the good work (B), low priority (C), and possible overkill (D).

In this study, the four quadrants of the IPM are interpreted in the following ways. In Quadrant A, measures are perceived to be very important to the service firms, but performance levels are perceived to be relatively low. This suggests that they should devote more attention to these measures - "concentrate here". In Quadrant B, measures are considered to be very important to them, while they also achieve high levels of performance on these measures, suggesting that they should "keep up the good work". In Quadrant C, both the importance and performance levels of the measures are perceived to be relatively low, suggesting that they should put a "low priority" for improvement on these measures. In Quadrant D, the measures are perceived to be of relatively low importance but the performance of the firms on these measures is perceived to be relatively high. This suggests that these "overkilled" performance areas have consumed excessive resources and the firms located within this quadrant should consider the re-allocation of resources to other areas in need of strengthening.

The use of IPA in this study serves to classify industry-wide SCP in transport logistics for analysis. In doing so, we examine the service providers' perceptions of the measures of SCP in transport logistics in terms of the aspects they value, and how well they perform on those performance measures. We then construct an IPM to determine the gaps between the importance and performance ratings of the SCP measures, thus providing a self-assessment of SCP in this industry by the service providers.

## 4. Methodology

To measure the three aspects of SCP in transport logistics, i.e., SES, OE, and SEC, the 26-item measurement instrument developed by Lai, Ngai, and Cheng (2002) was adopted. SES and SEC measure how well the activities are performed to meet the requirements of shippers and consignees, respectively. OE refers to the efficiency of a transport logistics service provider in the use of resources to perform its service activities. A structured questionnaire was designed to elicit the perceptions of the service providers on their SCP in transport logistics.

On the other hand, the survey questionnaire was designed to facilitate the use of IPA in data analysis. The respondents were requested to respond to each of the SCP measures twice by indicating their perceptions of their firms on each measure; one is about the "level of importance" the firm attaches to that particular performance aspect, and the other is related to the "level of performance" of the firm compared to the competition. Consistent with Lai, Ngai and Cheng (2002), all SCP measures in the survey questionnaire were assessed on a five-point scale, with an anchor on 5 = very important to 1 = very unimportant for the "level of importance" part, 5 = superior to competition to 1 = much worse than competition for the "level of performance" part. In accordance with the recommended procedures for IPA scale development (Martilla and James 1977), respondents were asked to rate importance first in the questionnaire.

As a first step to study this under-explored research area, service providers were selected as the study targets in this study because they are the key informants in the transport logistics industry, i.e., those with the necessary knowledge and experience about the industry under

investigation. This is justified on the grounds that it is necessary to understand SCP in transport logistics first with the key informants before extending the study to other related study targets in the supply chain, i.e., shippers and consignees. The survey questionnaire was administered to the complete sample of 924 firms in the Schednet – Asian Logistics Directory (2001), in which all firms involved in the transport logistics business in Hong Kong are listed. The sample represents four broad categories of firm in the industry: sea transport, freight forwarding, air transport, and third-party logistics service providers. The target respondents are the general managers or logistics managers of the sampled firms. These executives are targeted because they possess expert knowledge of SCP in their firms. We only solicited one response from each firm sampled in the survey. The questionnaire was mailed twice. One month after the first mailing, the questionnaire was mailed to non-respondents.

After two mailings, a total of 139 questionnaires were returned. However, five of them are not usable because of significant data missing and incompleteness. The remaining 134 responses - 97 in the first mailing and 37 in the second mailing - represent an effective response rate of 14.5%. The profiles of the respondent firms and their characteristics are displayed in Table 1. We carried out a test of non-response bias by comparing the mean scores of randomly selected SCP measures between respondents in the first and second mailings. At the 5% level, no significant differences between the 'early' and 'late' respondents are detected, suggesting that non-response bias is not a problem as regards the data collected in this study.

< Insert Table 1 about here >

## 5. Results

Table 2 summarizes the SCP measures examined and the respective means and standard deviations for both the importance and performance ratings on the measures by all the respondent firms. From the study findings, both the importance and performance ratings on the SCP measures tend to be high (above 3.0 on the five-point scale). The high ratings on importance suggest that the service providers attach great importance to all 26 SCP measures. Similarly, the high ratings on performance indicate that the service providers see their performance as high on all the 26 SCP measures. These findings are not surprising given that Hong Kong is a high volume and busy logistics hub in world trade. The results suggest that firms in the industry are aware of the importance of the various aspects of SCP in transport logistics and perform well as reported in their self-assessment.

< Insert Table 2 about here >

An IPA was carried out to analyze the SCP of the respondent firms. Analysis of the data in the IPA was conducted in the following manner. The mean values for each of the SCP measures on importance and performance are computed. A two-dimensional map that displays importance on the vertical axis and performance on the horizontal axis is constructed for the three aspects of SCP in transport logistics, thus creating the respective IPMs in Figures 2, 3, and 4. In line with previous studies using IPA (e.g. Babakus, Pedrick and Richardson 1995), we use the actual mean values of SES, OE and SEC to determine the cross-hairs in the IPMs. The mid-

point of the five-point scale, i.e., 3.0, is not used as the cross-hair because of the apparently high ratings on both importance and performance of the measures. If the scale mean, i.e., 3.0, is used as the cross-hair, all of the 26 measures would be positioned in quadrant B in the IPMs. To develop a more useful analysis, actual means are used to determine cross-hairs and divide the IPMs into quadrants for interpretation of the findings.

Plotting their mean values, we locate the 26 SCP measures in one of the four quadrants in their respective categorized IPMs, i.e., SES, OE, and SEC. The position of each plot of an SCP measure on its categorized IPM indicates where this industry stands on this measure from the service providers' perceptions: concentrate here, keep up the good work, low priority, or possible overkill. The findings from the IPA are reported under the following sub-headings: SES assessment, OE assessment, SEC assessment, and overall industry assessment.

5.1. SES assessment

We performed a series of t-tests to find whether any significant differences exist between the importance and performance of the SCP measures as perceived by firms in the industry. As is apparent from Table 2, the industry views fulfillment of promises to shippers (mean = 4.81) as the most important SCP measure in SES. This is closely followed by provision of service at the time promised to the shippers (mean = 4.64). The least important measure is concerned with giving prompt services to shippers (mean = 4.10), yet the mean score for that measure is high on the five-point scale, i.e., mean > 3.00.

However, firms in the industry perceive that their performance in SES is below the importance levels they desire in all the measures. There are significant differences, i.e., $t > 2.0$, between the means of importance and performance for all the SCP measures from SES. Using IPA, each of the SCP measures in SES was analyzed in order of its relative importance and performance, moving from bottom to top, and from left to right of the IPM. Four measures (1, 2, 4, 8) fall into the "keep up the good work" quadrant, four measures (3, 5, 7, 9) belong to the "low priority" quadrant, and one measure (6) is in "possible overkill" in the IPM.

< Insert Figure 2 about here >

5.2 OE assessment

The industry considers improvement of the rate of utilization of facilities/ equipment/ manpower in providing the services (mean = 4.40) the most important SCP measure in OE. Improvement of cash-to-cash cycle time is also perceived to be very important (mean = 4.39). It should be noted that all the SCP measures in Table 2 about efficiency in providing services receive high mean scores, i.e., mean > 3.00. Similar to SES, importance attains a higher mean score than performance for all the SCP measures in OE. All the mean differences are significant, i.e., $t > 2.0$. In the IPM, four measures (13, 15, 16, 17) fall into the "keep up the good work" quadrant, three (10, 11, 14) belong to the "low priority" quadrant, and one (12) is in "possible overkill".

< Insert Figure 3 about here >

5.3. SEC assessment

The industry rates fulfillment of promises to consignees as the most important SCP measure (mean = 4.68) in SEC, followed by provision of service at the time promised to the consignees (mean = 4.50). All the SCP measures in SEC receive high mean scores, even though the least important one – giving prompt services to consignees (mean = 4.27) – has a mean score higher than 3.00. Similarly, the industry rates importance higher than performance for all the SCP measures in SEC. The mean differences between the importance and performance ratings are significant, i.e., t > 2.0, for all the SCP measures. In the IPM, two measures (18, 21) fall into the "keep up the good work" quadrant, four (20, 22, 24, 26) belong to the "low priority" quadrant, and three (9, 23, 25) are in "possible overkill".

< Insert Figure 4 about here >

5.4. Overall industry assessment

It is noted that while the performance gaps in the industry, i.e., performance mean minus importance mean, for all the 26 SCP measures are negative, all mean scores on both importance and performance ratings are above the mean of the five-point scale. The results seem to suggest that firms in the industry place a high importance on improving their supply chain activities and perceive themselves perform very well. In all three IPMs, the scatter of the SCP measures shows an upward sloping trend from southwest to northeast. Table 3 summarizes the distribution of the 26 SCP measures in the four quadrants of the three IPMs. It is noted that none of the SCP measures falls into the 'concentrate here' quadrant. The results seem to indicate that the industry

is mature, with a certain degree of sophistication in their SCP. This implies that, from the service providers' perceptions, firms in the industry recognize that chain-wide performance is critical for their competitiveness.


< Insert Table 3 about here >

## 6. Discussion


This study provides a self-assessment of SCP in the transport logistics industry by service providers in the industry. The findings reveal that all the SCP measures are highly rated by firms in this industry with regard to both importance and performance. However, all performance ratings are lower than their corresponding importance ratings. The high ratings of importance for all the SCP measures are not unexpected given increasing expectations from customers, i.e., shippers and consignees, in their supply chain activities. It is interesting to note that while OE seems to have a lower performance rating, i.e., mean < 4.0, the service providers consider themselves perform reasonably well across all the SCP measures, as the means are above the mean of scale, i.e., mean > 3.0. The relatively low performance ratings of the SCP measures in OE suggest that there is much room for firms in the industry to improve the efficiency of their supply chain activities. The importance-performance gaps identified provide further analysis of the service providers' assessments of their SCP in transport logistics. The largest performance gaps identified are for measures 1, 10, 15, 16 and 17. The performance gaps reveal the strengths and weaknesses of SCP in transport logistics in the industry.

Using IPA, the SCP measures that attract great attention or under-perform can be identified. Generally, firms in this industry perceive themselves as doing well in all the 26 SCP

measures - none of the measures falls into quadrant A, "concentrate here". One possible explanation is that firms in the industry recognize all the SCP measures are important to them in the face of increasing customer expectations and severe competition in the global market place. Furthermore, firms in the industry consider that while they are doing a good job, they need to keep up the good work in many performance areas. This is manifested in many of the SCP measures, four out of nine in SES, three out of eight in OE, and two out of nine in SEC, where firms in the industry rate both importance and performance highly. The results indicate that firms in the industry tend to focus on sustaining good performance in these perceived important areas, in order to have a competitive edge.

However, there also exist several SCP measures that are rated relatively low in both importance and performance - three out of nine in SES, three out of eight in OE and four out of nine in SEC. These results indicate that the industry tends to put less effort into these 'low priority' SCP measures and considers these measures less important for competition. Moreover, the industry 'overkills' some performance areas. These include one measure each in SES and OE, and three measures in SEC. One possible explanation is that firms in the industry perceive these performance measures as too important for them to compete. They tend to be less willing to invest less in these areas in order to strengthen their competitiveness in others. Given that transport logistics is a "time critical" service business, the ability to tell the shippers and consignees exactly when the services will be performed (measures 6 and 23) is considered "highly important" by the service providers for them to create and retain customers. On the other hand, consignees are the recipients of transport logistics services and they usually give feedback to shippers on the effectiveness of the services they receive. Accordingly, the ability and the

willingness to help consignees (measures 19 and 25) are considered by service providers as "highly important" areas for them to obtain favorable 'word-of-mouth' comments from the consignees on their services. In addition, the ability to reduce warehouse costs (measure 12) is also considered "highly important" by the service providers in Hong Kong. This is probably due to the relatively high costs for physical space and labor in warehouse management in Hong Kong.

Although there exist a number of differences between ratings on importance and performance for SCP measures in the industry as perceived by the service providers, it is interesting to note that the scattering patterns of the SCP measures in the three IPMs are different. Given limited resources, firms in the industry tend to place different emphases on their SCP. It seems that they focus more on SES and OE than on SEC. This is evidenced by a higher percentage of SCP measures in SES (44%) and OE (50%) falling into quadrant B than in SEC (22%). Similarly, there is a higher percentage of SCP measures falling into quadrant D in SEC (33%) than in SES (11%) and OE (13%). One possible explanation is that shippers are the supply chain members from whom the service firms obtain business and income. Firms in the industry tend to stress highly both the importance and performance of their SCP to shippers, as compared to consignees, in order to keep their business, while also not forgetting about efficiency in service delivery.

## 7. Conclusions

This study provides a self-assessment of SCP in transport logistics by eliciting the perceptions of service providers in the transport logistics industry. Among the three aspects of SCP, SES seems to have received greater attention and achieved a higher level of performance in the industry from the service providers' perception. The study results provide a starting point and an initial benchmark for the reference of firms in this industry in their attempts to improve their SCP.

To improve SCP in transport logistics, firms in the industry must communicate their improvement priorities to their supply chain members, particularly employees, who are of paramount importance in performing the activities and adding value for shippers and consignees. It is also important that transport logistics firms assess the strengths and weaknesses of their SCP in transport logistics and compare them with the industry benchmarks for performance improvement actions. The industry benchmark, i.e., the service providers' assessment results in this study, may be used as a baseline to ensure that their SCP in transport logistics, especially for new entrants or those intending to enter the industry, is on a par with that of the competition. The benchmark can also help them track changes over time and provide additional information with which to plan and set goals for their SCP in transport logistics. The results of this study provide a useful reference for firms in the industry to understand SCP in transport logistics and a self-assessment by service providers on their SCP in transport logistics as a benchmark for firms in the industry (or those intending to enter the industry) to take performance improvement actions.

However, the study findings suffer from several limitations. First, we capture and analyze the perceptions of transport logistics service providers on their SCP in transport logistics. The study results could be different if we collect data and analyze the perceptions of the other member firms in the supply chain, i.e., shippers and consignees, on the SCP of the service providers. Future research on SCP assessment in this industry will benefit from input from shippers and consignees to compare and contrast the findings on the service providers' perceptions of their SCP in transport logistics reported in this study. Second, we only collect data from a single respondent within each sampled firm. We cannot rule out the possibility of respondent bias. Further research could overcome this limitation by gathering data from multiple respondents within each firm and across partner firms in the supply chain. Third, we ask the respondent firms to evaluate their perceived SCP in transport logistics at a single point in time. Therefore, the study only provides a snapshot of SCP in this industry. Future research could assess SCP in transport logistics on a longitudinal basis and track the changes of SCP in this industry. Finally, while comparable to similar studies of this nature, the response rate of 14.5% in this study is relatively low. The main reason for the relatively low response rate is the reluctance of respondents to complete a questionnaire that asks for performance-related data. Although the test results show that non-response bias is not a problem with the data collected in this study, it would be beneficial for future research to replicate this study with different data collection methodologies and samples to triangulate the findings.

### References

Babakus, E., Pedrick, D. and Richardson, A., 1995. Assessing perceived quality in industrial service settings: measure development and application, Journal of Business-to-business Marketing, 2 (3), 47-68.

Beddow, M., 2001. Top 30 Ports, Containerisation International, March, 93.

Browne, J., Zhang, J., 1999. Extended and virtual enterprises – similarities and differences, International Journal of Agile Management Systems, 1 (1), 30-36.

Census and Statistics Department of HKSAR, 2001. Quarterly Supplement to Statistical Digest of the Service Sector, First Quarter, Census and Statistics Department, Hong Kong Special Administrative Region, People's Republic of China.

Christopher, M., 1998. Logistics and Supply Chain Management: Strategies for Reducing Costs and Improving Services. Second Edition, Financial Times/ Pitman Publishing, London.

Kleinsorge, I.K., Schary, P.B., Tanner, R.D., 1991. The shipper-carrier partnership: a new tool for performance evaluation. Journal of Business Logistics 12 (2), 35-57.

Lai, K.H., Ngai, E.W.T. and Cheng, T.C.E., 2002. Measures for evaluating supply chain performance in transport logistics, Transportation Research Part E: Logistics and Transportation Review (forthcoming).

Lee, H.L., 2000. Creating value through supply chain integration. Supply Chain Management Review 4 (4), 30-36.

Martilla, J.A. and James, J.C., 1977. Importance-performance analysis. Journal of Marketing, 41, 77-79.

Mentzer, J.T., Konrad, B.P., 1991. An efficiency/ effectiveness approach to logistics performance analysis. Journal of Business Logistics 12 (1), 33-62.

Schednet (2001) Asian Logistics Directory, www.schednet.com/ schedule/asiainfo/

Skok, W., Kophamel, A. and Richardson, I., 2001. Diagnosing information systems success: importance-performance maps in the health club industry. Information & Management, 38 (7), 38-45.

Weber, K., 2000. Meeting planners' perceptions of hotel-chain practices and benefits: An importance-performance analysis. Cornell Hotel and Restaurant Administration Quarterly, 41 (1), 32-38.

World Airport Week, 2001. Cargo volumes experience North American Slide, World Airport Week, 8 (10), 1.

| | | |
|---|---|---|
| I | 5 | |

```
        5
I    ┌─────────────────────────┬─────────────────────────┐
M    │ QUADRANT A              │ QUADRANT B              │
P    │ Concentrate Here        │ Keep up the Good Work   │
O    │ High Importance         │ High Importance         │
R    │ Low Performance         │ High Performance        │
T    ├─────────────────────────┼─────────────────────────┤
A    │ QUADRANT C              │ QUADRANT D              │
N    │ Low Priority            │ Possible Overkill       │
C    │ Low Importance          │ Low Importance          │
E    │ Low Performance         │ High Performance        │
     └─────────────────────────┴─────────────────────────┘
        1                                              5
              PERFORMANCE
```
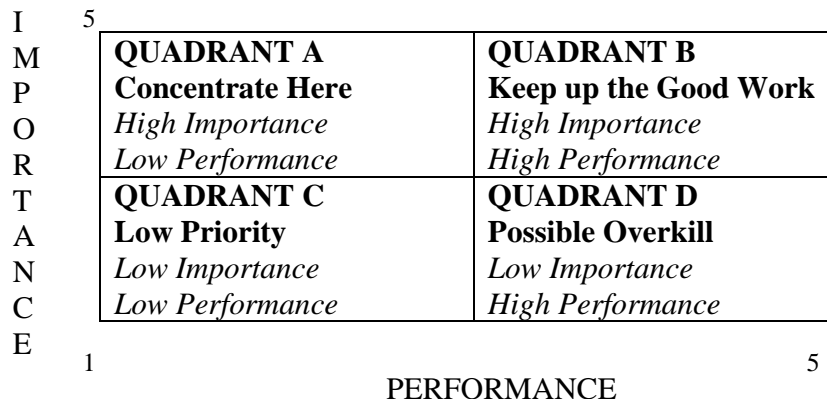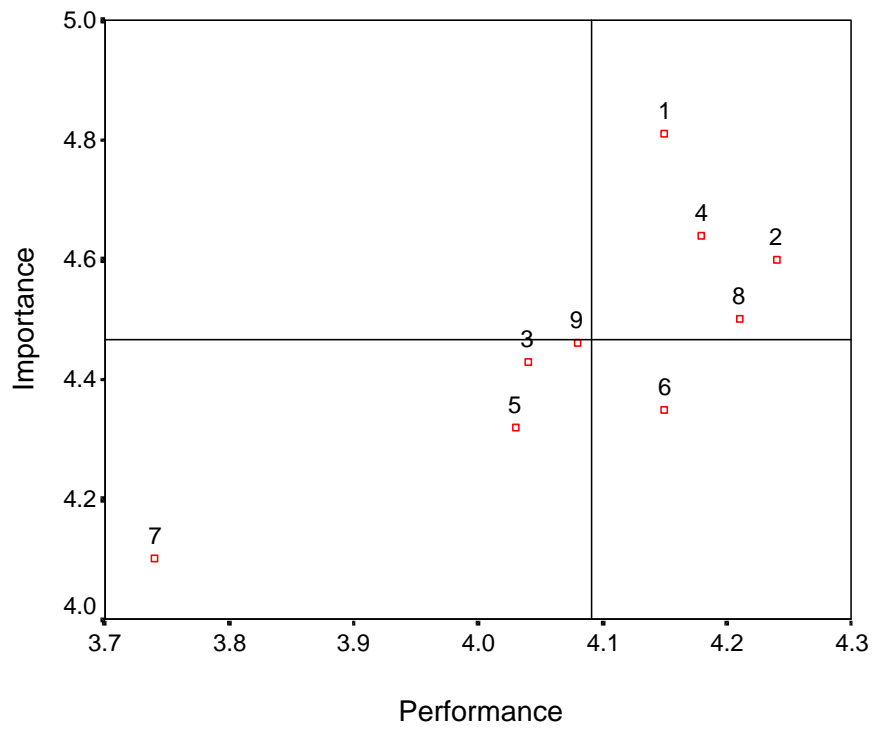
Figure 1. Importance-performance matrix

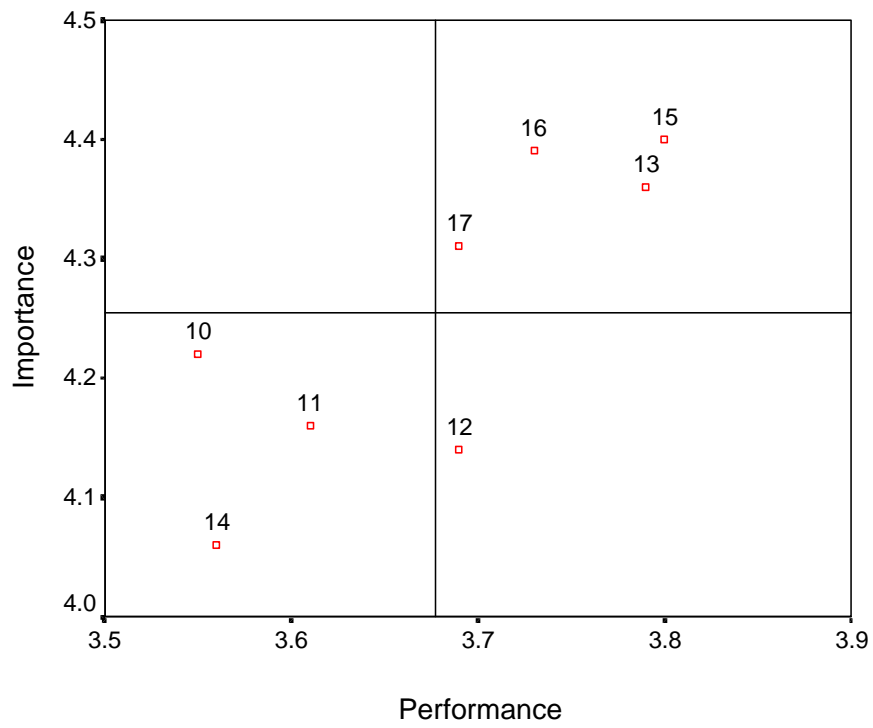Figure 2. Importance-performance matrix for SES

Figure 3. Importance-performance matrix for OE

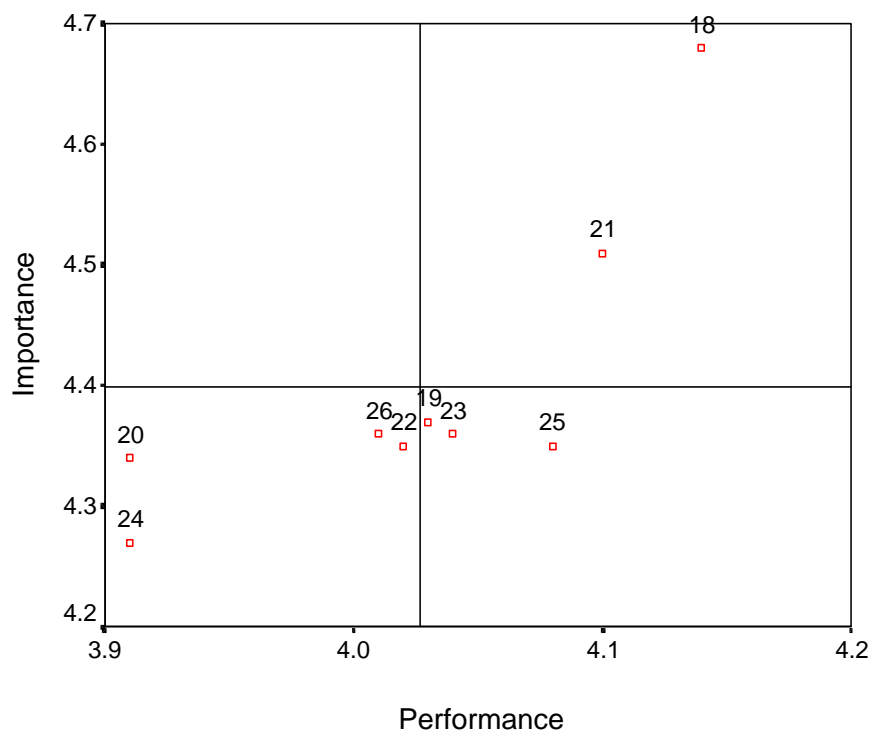Figure 4. Importance-performance matrix for SEC

Table 1. Profile of the respondent firms (n = 134)

| Nature of business | |
|---|---|
| Sea transport | 30 (22.4%) |
| Freight forwarding | 49 (36.6%) |
| Air transport | 2 (1.5%) |
| Third party logistics services | 53 (39.5%) |
| **Number of employees** | |
| Below 100 | 102 (76.1%) |
| 100 – 499 | 23 (17.2%) |
| 500 – 999 | 1 (0.7%) |
| Over 1,000 | 7 (5.2%) |
| Unknown | 1 (0.7%) |
| **Level of turnover (HK$)** | |
| Below 1 million | 17 (12.7%) |
| 1-10 million | 40 (29.9%) |
| 10-100 million | 45 (33.6%) |
| Over 100 million | 28 (20.9%) |
| Unknown | 4 (3.0%) |

Table 2. Means and standard deviations in importance and performance ratings on SCP in transport logistics

| SCP | Measurement item | Importance | | Performance | | Performance minus importance | |
|---|---|---|---|---|---|---|---|
| **SES** | | Mean | S.D. | Mean | S.D. | Mean | t-value |
| 1 | Fulfill promises to shippers | 4.81 | 0.41 | 4.15 | 0.74 | -0.66 | 10.32 |
| 2 | Solve shippers' problems | 4.60 | 0.60 | 4.24 | 0.69 | -0.36 | 6.03 |
| 3 | Perform services for shippers right the first time | 4.43 | 0.74 | 4.04 | 0.75 | -0.39 | 6.59 |
| 4 | Provide services at the time promised to the shippers | 4.64 | 0.53 | 4.18 | 0.72 | -0.46 | 7.31 |
| 5 | Keep shippers' records accurately | 4.32 | 0.81 | 4.02 | 0.81 | -0.30 | 4.98 |
| 6 | Tell shippers exactly when services will be performed | 4.35 | 0.73 | 4.15 | 0.71 | -0.20 | 3.75 |
| 7 | Give prompt services to shippers | 4.10 | 0.87 | 3.74 | 0.90 | -0.36 | 5.20 |
| 8 | Willingness to help shippers | 4.50 | 0.68 | 4.21 | 0.73 | -0.29 | 4.95 |
| 9 | Timely response to shippers' requests | 4.46 | 0.61 | 4.08 | 0.82 | -0.38 | 6.08 |
| **OE** | | | | | | | |
| 10 | Reduce order management costs | 4.22 | 0.81 | 3.55 | 0.96 | -0.67 | 8.10 |
| 11 | Reduce costs associated with facilities/ equipment/ manpower used in providing the services | 4.16 | 0.87 | 3.61 | 0.91 | -0.55 | 7.23 |
| 12 | Reduce warehousing costs | 4.14 | 0.85 | 3.69 | 0.89 | -0.45 | 6.04 |
| 13 | Reduce transportation costs | 4.36 | 0.82 | 3.79 | 0.81 | -0.57 | 8.02 |
| 14 | Reduce logistics administration costs | 4.06 | 0.95 | 3.56 | 0.94 | -0.50 | 6.78 |
| 15 | Improve the rate of utilization of facilities/ equipment/ manpower in providing the services | 4.40 | 0.69 | 3.80 | 0.73 | -0.60 | 9.30 |
| 16 | Improve the cash to cash cycle time | 4.39 | 0.75 | 3.73 | 0.91 | -0.66 | 8.94 |
| 17 | Improve net asset turns | 4.30 | 0.80 | 3.69 | 0.78 | -0.61 | 8.10 |
| **SEC** | | | | | | | |
| 18 | Fulfill promises to consignees | 4.68 | 0.53 | 4.14 | 0.66 | -0.54 | 9.31 |
| 19 | Solve consignees' problems | 4.37 | 0.75 | 4.03 | 0.78 | -0.34 | 5.61 |
| 20 | Perform services for consignees right the first time | 4.34 | 0.76 | 3.91 | 0.83 | -0.43 | 7.07 |
| 21 | Provide services at the time promised to the consignees | 4.50 | 0.63 | 4.10 | 0.80 | -0.40 | 7.57 |
| 22 | Keep consignees' records accurately | 4.35 | 0.79 | 4.02 | 0.81 | -0.33 | 5.49 |
| 23 | Tell consignees exactly when services will be performed | 4.37 | 0.70 | 4.04 | 0.73 | -0.33 | 5.88 |
| 24 | Give prompt services to consignees | 4.27 | 0.77 | 3.91 | 0.81 | -0.36 | 5.85 |
| 25 | Willingness to help consignees | 4.36 | 0.75 | 4.08 | 0.82 | -0.28 | 4.10 |
| 26 | Timely response to consignees' requests | 4.36 | 0.74 | 4.01 | 0.83 | -0.35 | 5.94 |

Table 3. Distribution of SCP measures in the IPMs.

| Quadrant in IPM | Item | SCP Measure |
|---|---|---|
| Keep up the Good Work (Quadrant B) | 1 | Fulfill promises to shippers |
| | 2 | Solve shippers' problems |
| | 4 | Provide services at the time promised to the shippers |
| | 8 | Willingness to help shippers |
| | 13 | Reduce transportation costs |
| | 15 | Improve the rate of utilization of facilities/ equipment/ manpower in providing services |
| | 16 | Improve the cash-to-cash cycle time |
| | 17 | Improve net asset turns |
| | 18 | Fulfill promises to consignees |
| | 21 | Provide services at the time promised to the consignees |
| Low Priority (Quadrant C) | 3 | Perform services for shippers right the first time |
| | 5 | Keep shippers' records accurately |
| | 7 | Give prompt services to shippers |
| | 9 | Timely response to shippers' requests |
| | 10 | Reduce order management costs |
| | 11 | Reduce costs associated with facilities/ equipment/ manpower used in providing the services |
| | 14 | Reduce logistics administration costs |
| | 20 | Perform services for consignees right the first time |
| | 22 | Keep consignees' records accurately |
| | 24 | Give prompt services to consignees |
| | 26 | Timely response to consignees' requests |
| Possible Overkill (Quadrant D) | 6 | Tell shippers exactly when services will be performed |
| | 12 | Reduce warehousing costs |
| | 19 | Solve consignees' problems |
| | 23 | Tell consignees exactly when services will be performed |
| | 25 | Willingness to help consignees |