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A User-Provider Perspective of Third-Party Logistics Services: Comparison between Australia and UAE

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Abstract

Using a sample of Australian companies and a pilot study in the United Arab Emirates (UAE), this study assesses the relative importance assigned by shippers and logistics service providers (LSP) to various elements of third party logistics services. An importance-performance matrix (IPM) analysis was conducted to assess the gap between what is required by the shippers and what is provided by the LSPs, and categorizes the logistics service elements into four categories such as 'low priority', 'possible overkill', 'concentrate here', and 'keep up the good work'.

Results in Australia indicate that LSPs must improve their image in terms of their capability to provide service at a required quality level. Furthermore, they must shorten delivery time, reduce product/service cost and be flexible while providing services. It is critical that they use EDI and a stand-alone IT platform to integrate with shippers.

Pilot results from the UAE show a different emphasis on improving productivity, cost reduction, and using integrated logistics IT applications. LSPs in UAE have a common priority in the need to improve their capability to provide service at a required quality level.

Keywords

Australia, UAE, Importance-Performance Matrix, Logistics services, third-party logistics, shippers

A User-Provider Perspective of Third-Party Logistics Services: Comparison between Australia and UAE

1. Introduction

Terms such as contract logistics, third-party logistics (3PL) and logistics alliances have been used to describe contracting out logistics activities that were previously performed in-house [1, 2]. As a result, various definitions and interpretations of 3PL have evolved [3]. They can be studied from different perspectives, such as the scope of the service, its time-frame, and the nature of relation [4]. From the scope perspective some of the definitions have broader focus, while some have narrower scope. For instance, Lieb *et al*. [5] suggested that "the functions performed by the 3PL providers can encompass the entire logistics process or selected activities within the process". Whereas, Bagchi and Virum [6] take a narrower view, and suggest that in an outsourcing context "the shipper and the logistics provider see themselves as long term partners" (p.193). Some definitions take a long-term formal or informal view [6], and those companies adopting a long-term view of the definition of 3PL tend to be more strategic than tactical [7].

For our study we adopted the Lieb *et al*. [5] definition of outsourced logistics services, as follows: "The outsourced logistics involves the use of external companies (3PL providers) to perform logistics functions that have traditionally been performed within an organization. The functions performed by the 3PL providers can encompass the entire logistics process or selected activities within the process."

2. Three Perspectives of 3PL - Literature

Over the last decade and a half a large number of studies have been conducted in the field of outsourcing of logistics services and the field is growing [8-17]. A recent study has identified over one hundred refereed papers published between 1990 and 2005 [18]. These studies have focused on a range of issues regarding 3PL services conducted in different parts of the world. This body of literature can be broadly analyzed from three

perspectives: logistics service user perspective, logistics service provider perspective and user-provider perspective.

2.1 Users' perspective

A vast majority of the 3PL studies have been conducted from the users' perspective. The first comprehensive survey of the extent of use of the 3PL services was conducted by Lieb [1]. This study surveyed large American manufacturers to identify the extent to which companies outsource their logistics services; the specific 3PL services used; the benefits experienced from outsourcing logistics services; the impact of 3PL services on logistics costs; customer satisfaction; and the trends in using 3PL services over time and across nations. Sohal et al. [19] and Bhatnagar et al. [15] also conducted similar studies in the context of Australia and Singapore respectively. They found that most users of 3PL services are satisfied with their providers and are likely to increase their usage of contract logistics in the future. Lieb and Miller [20] surveyed the chief logistics executives of Fortune 500 manufacturers concerning their use of 3PL. They concluded that users are generally satisfied with the impact of 3PL services on their companies, and are most satisfied with the impact on logistics costs, logistics service levels, and customer service. Recently, Arroyo et al. [17] investigated the status of logistics practices in Mexican firms as compared with logistics activities in Europe and US. The results indicate that generally the Mexican firms aim for customer service and concentration on core functions while firms in Europe and US focus more on tactical and integrated functions when using 3PL. Some studies in this category compared the usage of logistics services amongst two or more geographical regions/countries [5].

There have been a few studies in the developing economies which investigated the extent and usage of logistics services from the users' perspective. For instance, Sohail et al. [21] and Cilliers and Nagel [22] studied logistics services in Ghana and South Africa respectively and found that such services were more or less operational in nature, rather than tactical or integrated systems. Sohail and Sohal [23] studied 124 firms in Malaysia and concluded that most of the users were satisfied with the logistics service providers and that the industry is growing. Studying logistics services in China, Hong and Chin

[24] suggest that compared to the developed nations, China's logistics market is still in its infancy and may have to adopt different strategies for its development. While studying the outsourcing logistics services in India, Sahay and Mohan [25] noted that the most important factors that motivate Indian firms to outsource are cost reduction, focus on core competencies, and improved customer services.

2.2 Providers' perspective

Relatively little attention has been given to the service providers' perspective. Leahy et al. [26] surveyed 37 US 3PL firms and found that they provided both asset-based dedicated services and non-asset based management services.

While surveying 16 CEOs of large 3PL providers operating in Europe, Peters et al. [27] concluded that the most frequently provided services are logistics information system, order processing, product returns, warehousing and consolidation, and repacking and re-labelling. Larson and Gammelgaard [28] studied Danish logistics firms including air, rail, and truck transportation providers, warehousing companies, freight forwarders and 3PL providers and concluded that the Danish logistics providers tend to be niche firms, focusing on the internal market and providing services mainly to the food and beverage industry. Sum and Teo [29] investigated different strategic postures of 3PL providers in Singapore. By analyzing technological issues, and operations objectives of the providers, Sum and Teo [29] proposed plans for different strategic types. Lai and Cheng [30] assessed the supply chain performance in transport logistics by service providers in the transport logistics industry in Hong Kong. The results provided managerial insights to better understand their supply chain performance in transport logistics and benchmark areas for performance improvement. More recently Yeung et al. [31] and Wang et al. [32] studied the logistics providers in Hong Kong and China respectively. Surveying a total of 105 3PL providers in China, Wang et al.[32] reported on current and future business objectives, operations priorities, business performance, and concerns of the 3PL providers. The findings provided valuable insights for 3PL providers, educators and government policy makers.

2.3 Users' - Providers' perspective

Only a limited number of studies examined outsourcing logistics services from both users' and providers' perspective simultaneously. One of the rare studies is by Daugherty et al. [33]. They investigated the US manufacturers' perceptions regarding their international logistics service providers' capabilities and found that the suppliers had performed well in the areas of responsiveness and flexibility. However, their service needs to be improved in the areas such as;

- Ability to adjust operations to meet unforeseen needs
- Calling in advance to advise of shipment or delivery problems
- Recommending alternative actions when difficulties arise.

These issues point to the fact that users and providers are required to work closely and tailor services when possible. Further, differences between high-performance logistics providers and those perceived as providing lower levels of performance are identified and discussed. While studying the 3PL services, Murphy and Poist [34] found a high degree of agreement between users and providers in terms of what they saw to be key factors in successful 3PL relationships, and each party's satisfaction with existing 3PL relationships.

Recently, Knemeyer and Murphy [4] investigated 388 users of outsourced logistics services and 31 providers of logistics services using relationship marketing elements and performance outcome constructs. Comparisons indicate that there are statistically significant differences between the two parties across 12 of the 13 constructs which shows a marked contrast to Murphy and Poist [34]'s findings. Only for the communication constructs are two parties generally in agreement.

In this study we investigate the outsourcing of 3PL services from the users'-providers' perspective. Literature related to different perspectives of 3PL has been summarized in Table 1.

Table 1: Three perspectives of 3PL - literature review

Perspective	Orientation of the study	Author
User perspectives	3PL practices and trend	Richardson [8], Sheffi [9], Bardi and Tracey [10], Lieb [1], Dapiran et al. [12], Gooley [13], Boyson et al. [14], Bhatnagar et al. [15], Robinovich et al. [38], Larson and Gammelgaard [16], Lieb and Bentz [39], Sohail and Sohal [23], Wilding and Juriado [40], Rahman [41]
	Comparison of 3PL practices and trend	Lieb et al.[5], Lieb and Randall [11], van Laarhoven [42], Sohal et al. [19] Arroyo et al. [17]
Provider Perspectives		Leahy et al. [26], Peters et al.[27], Sum and Teo [29], Larson and Gammelgaard [28], Lai and Cheng [30], Yeung et al. [31], Wang et al.[32]
User-provider Perspectives		Daugherty et al. [33], Murphy Poist [34], Knemeyer and Murphy[4]

3. Research Methodology

3.1 Data Collection and Respondents

For the Australian sampling space, a total of 1299 surveys were posted of which 1028 were Shipper surveys sent to relevant companies, and 271 LSP surveys were sent to Logistics Service Providers and others (e.g., industry support companies such as Consultants and IT providers). The survey resulted in 161 responses of which 97 were shippers (9.4%) and 64 were LSPs (23.4%). A summary of the industries represented by the Shippers who responded to the survey are given in Figure 1.

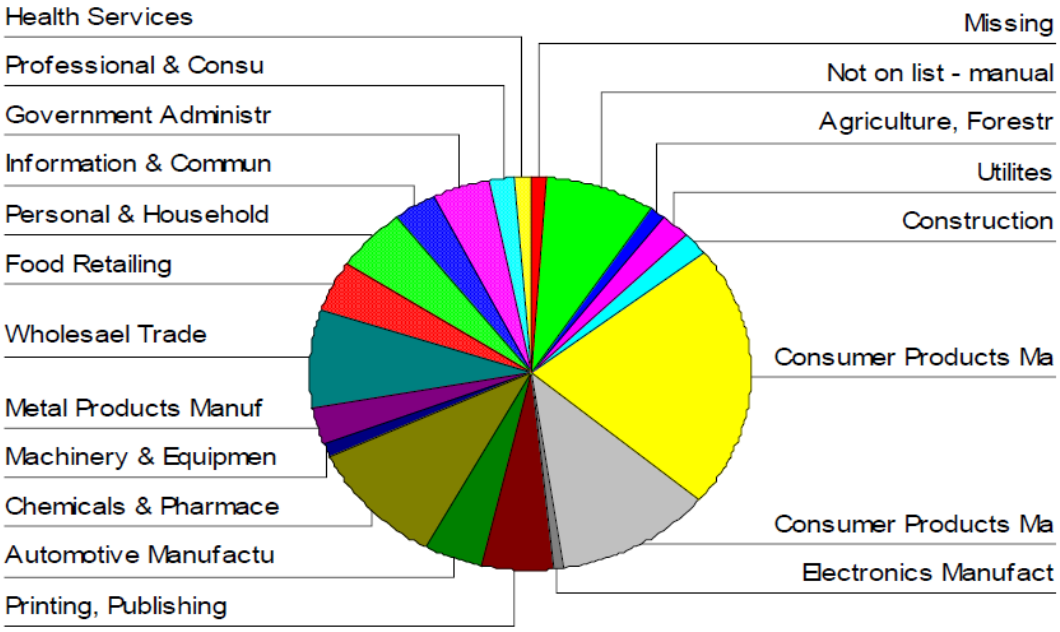


Figure 1: Distribution of the shippers who responded

For the UAE sampling space, a pilot study was conducted using a contact list of shippers and LSPs compiled with assistance from a senior executive of Dubai Logistics City. Of the 55 LSPs and 24 shippers contacted, respectively 15 LSPs and 9 Shippers responded, yielding a response rate of 27 and 38%. In addition, qualitative in-depth interviews were held with three executives from a LSP, and logistics departments of a large and midsize company, respectively.

3.2 Data Analysis Method - Importance-Performance Matrix Analysis

An IPM analysis uses a 2 X 2 format. An example is shown in Figure 2. The vertical axis represents the perceived importance of the criteria from low to high, and the horizontal axis represents the perceived performance of the criteria from low to high. Thus, it generates four quadrants such as ‘low priority’, ‘possible overkill’, ‘concentrate here’, and ‘keep up the good work’ (Figure 2).

One of the more widely known importance-performance gap-based methods is the importance-performance matrix (IPM) analysis proposed by Martilla and James [35]. The

utility of the IPM analysis lies in its capacity to represent both importance and performance perspectives with regards to the relative improvement priorities required in a competitive environment. It is relatively a simple to use, easy to understand and interpret, and a highly flexible technique [36]. In recent times the method has been applied widely in service operations [30, 36, 37].

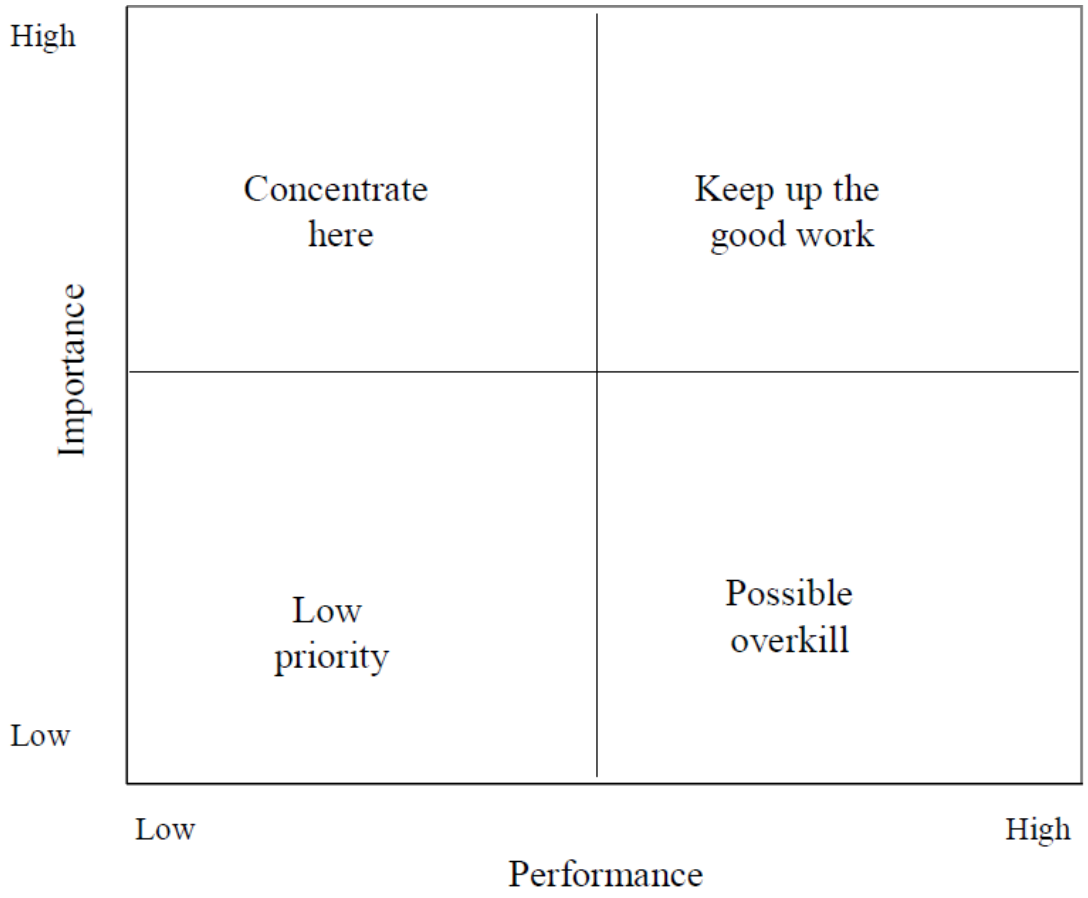


Figure 2: Importance-Performance matrix (Source: [35])

IPM analysis was conducted for the following five logistics service elements:

- Reasons for outsourcing logistics services,
- Reasons for selecting logistics partners,
- Contributions of 3-party logistics services,
- Extent of information and computer technology (ICT) usage, and
- Concerns in relation to outsourced logistics service provision.

4. Results

The IPM analysis was applied separately to each of the logistics service elements, and results are reported in the following sub-sections.

4.1 Reasons for outsourcing logistics services

It is apparent from the analysis that the main reason for outsourcing logistics function as viewed by both shippers (mean = 4.18) and LSPs (mean = 4.07). IPM analysis shows that the service elements such as customer satisfaction (1), productivity improvement (3), cost savings (4) and focus on core business (5) belongs in the 'keep up the good work' quadrant; flexibility (2) falls into the 'concentrate here' quadrant; access to up-to-date techniques & expertise (6) falls into the 'overkill quadrant'; and employee morale (7) falls into the 'low priority' quadrant (Figure 3).

	Australia		UAE	
Reason	LSP average	Shipper average	LSP average	Shipper average
Cust Satisf	4.1	4.2	4.83	4.00
Flexibility	3.55	4.05	4.00	4.43
Prod Impr	3.92	3.9	3.87	4.20
Cost savings	3.93	3.88	4.07	3.86
Core busin	3.75	3.72	4.21	3.67
Access	3.52	3.65	3.67	3.00
Emp Morale	2.55	2.45	3.23	3.50

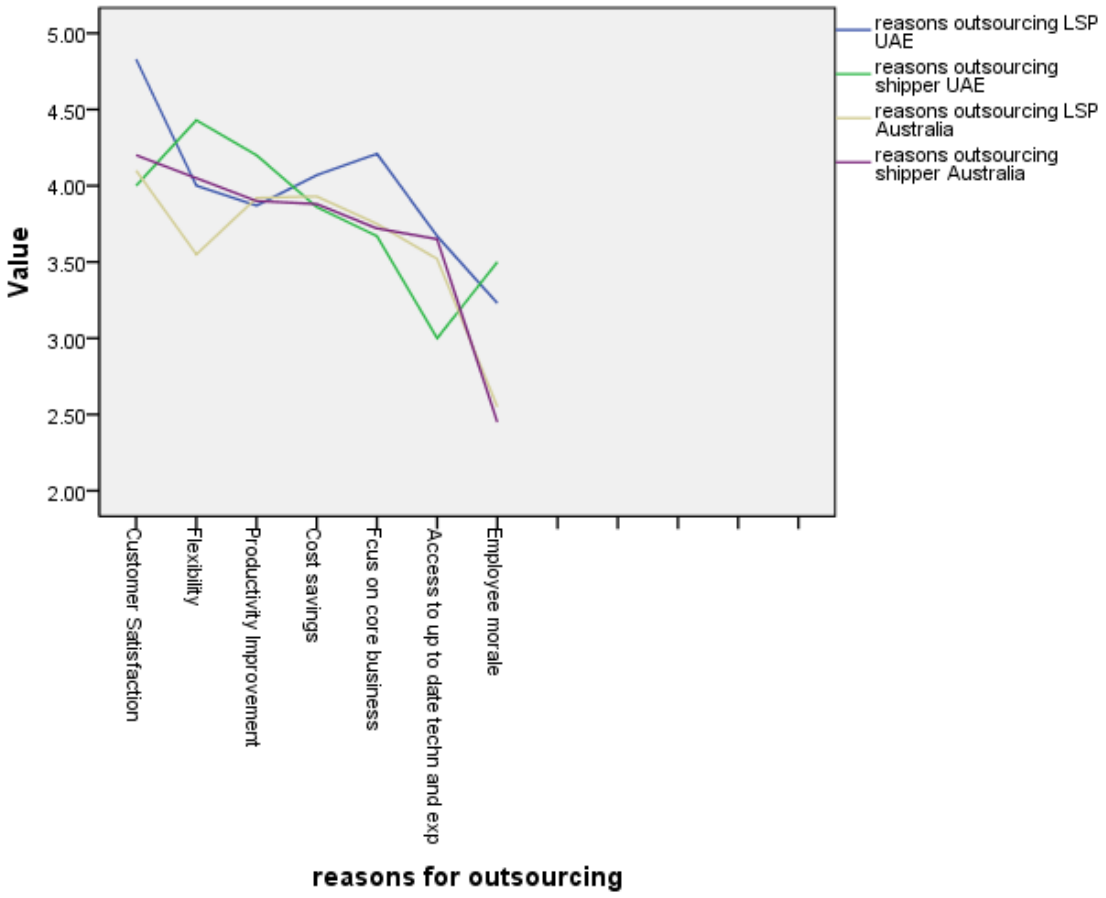


Figure 3: Reasons for outsourcing logistics services

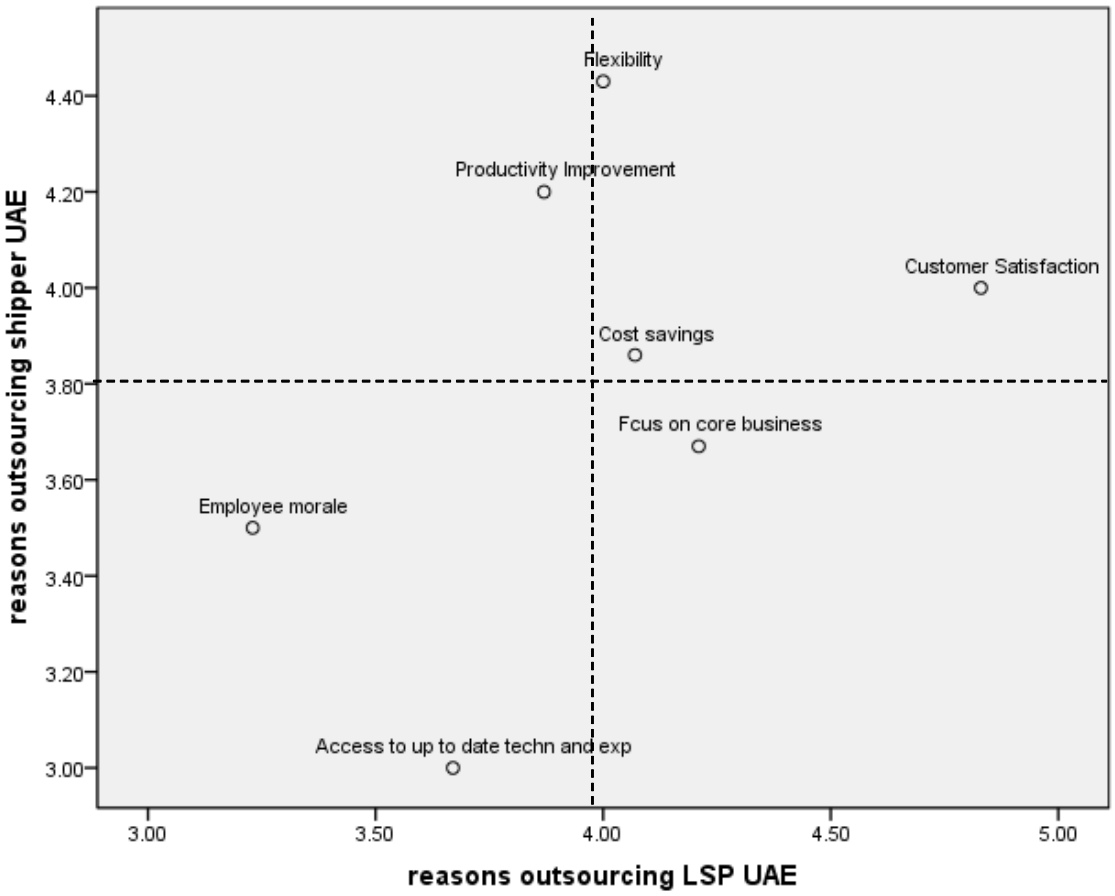


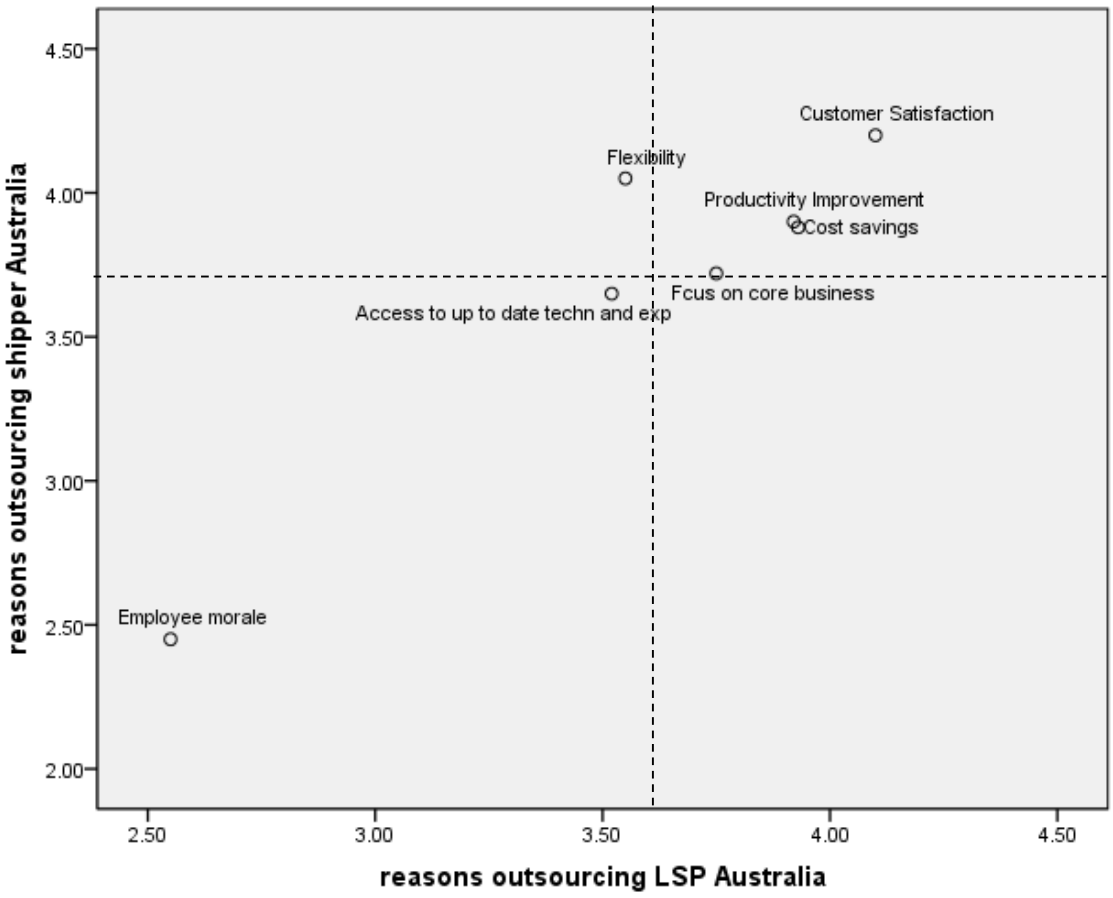
Figure 4: Reasons for outsourcing logistics services –IPM analysis UAE

Concentrate Here
Productivity improvement

Keep up the Good Work
Customer satisfaction
Cost savings
Flexibility

Low Priority
Employee morale
Access to up to date technology and expertise

Possible Overkill
Focus on core business



Concentrate Here
Flexibility

Keep up the Good Work
Customer satisfaction
Cost savings
Productivity improvement
Focus on core business

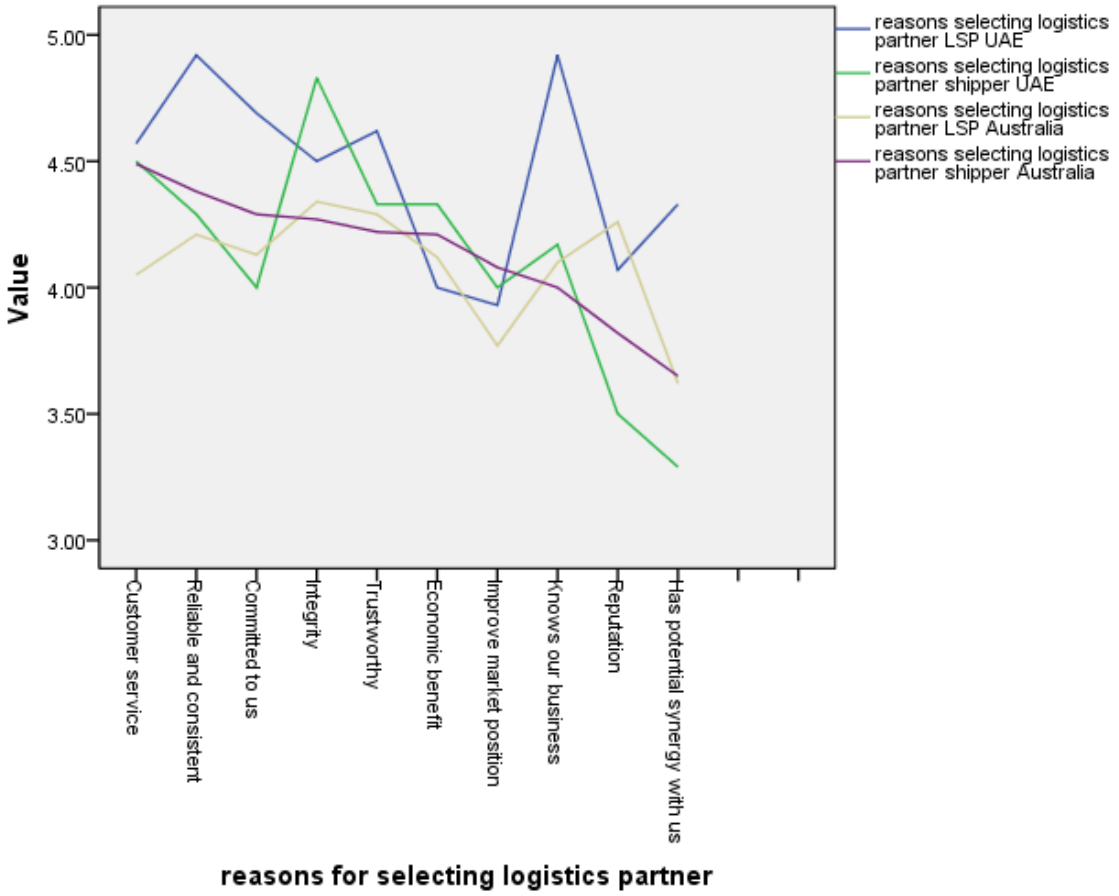
Low Priority
Employee morale
Access to up to date technology and expertise

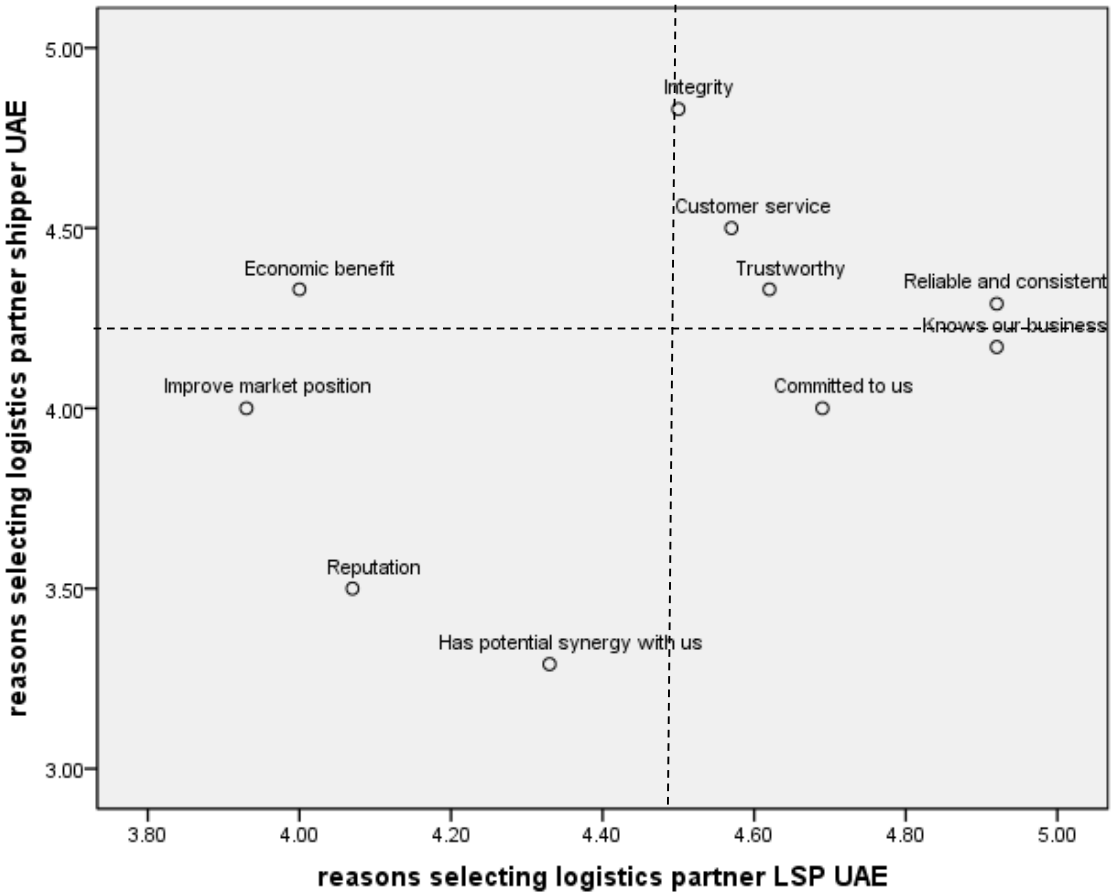
Possible Overkill
Focus on core business

4.2 Reasons for selecting logistics partners

The top three reasons for choosing logistics service providers by the shippers are 'supports the importance we give to customer service' (mean = 4.49), 'reliable and consistent in dealing with us' (mean = 4.38) and 'committed to us' (mean = 4.29). On the other hand LSPs perceive that the top three reasons for choosing LSPs are 'high degree of integrity' (mean = 4.34, 'trustworthy' (mean = 4.29), and 'strong reputation' (mean = 4.26). Figure 4 shows that two service elements such as 'improve our market position' (7) and 'has potential synergy with us' (10) fall into the 'low priority' quadrant; element such as 'support the importance we give to customer service' (1) falls into the 'concentrate here' quadrant; two items such as 'know our business' (8) and 'strong reputation' (9) fall in 'possible overkill' quadrant, and five items such as 'reliable and consistent in dealing with us' (2), 'committed to us' (3), 'high degree of integrity' (4), 'trustworthy' (5) and 'offers economic benefit (6) fall into the 'keep up the good work' quadrant.

	Australia		UAE	
Reason	LSP average	Shipper average	LSP average	Shipper average
Cust service	4.05	4.49	4.57	4.50
Reliable	4.21	4.38	4.92	4.29
Committed	4.13	4.29	4.69	4.00
Integrity	4.34	4.27	4.50	4.83
Trustworthy	4.29	4.22	4.62	4.33
Econ benefit	4.12	4.21	4.00	4.33
Comp market	3.77	4.08	3.93	4.00
Knows bus	4.10	4.00	4.92	4.17
Reputation	4.26	3.82	4.07	3.50
synergy	3.62	3.65	4.33	3.29


5.00
4.50
4.00
3.50
3.00
Value
reasons selecting logistics partner LSP UAE
reasons selecting logistics partner shipper UAE
reasons selecting logistics partner LSP Australia
reasons selecting logistics partner shipper Australia
Customer service
Reliable and consistentt
Committed to us
Integrity
Trustworthy
Economic benefit
Improve market position
Knows our business
Reputation
Has potential synergy with us
reasons for selecting logistics partner

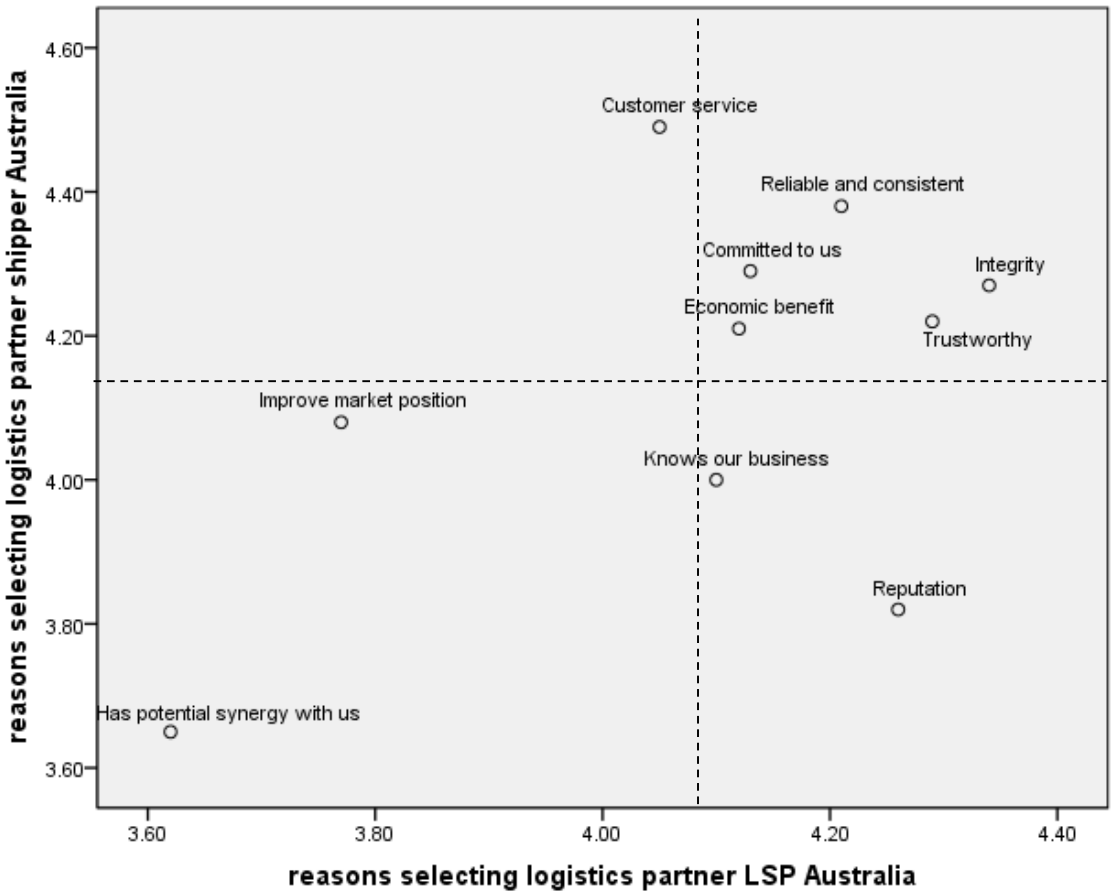


Concentrate Here
Economic benefit

Keep up the Good Work
- Customer satisfaction
- Reliable and consistent in dealing
- High degree of integrity
- Trustworthy

Low Priority
Improve market position
Reputation
Has potential synergy with us

Possible Overkill
Committed to us
Knows our business



Concentrate Here
Customer service

Keep up the Good Work
Reliable and consistent in dealing
High degree of integrity
Trustworthy
Economic benefit
Committed to us

Low Priority
Improve market position
Has potential synergy with us

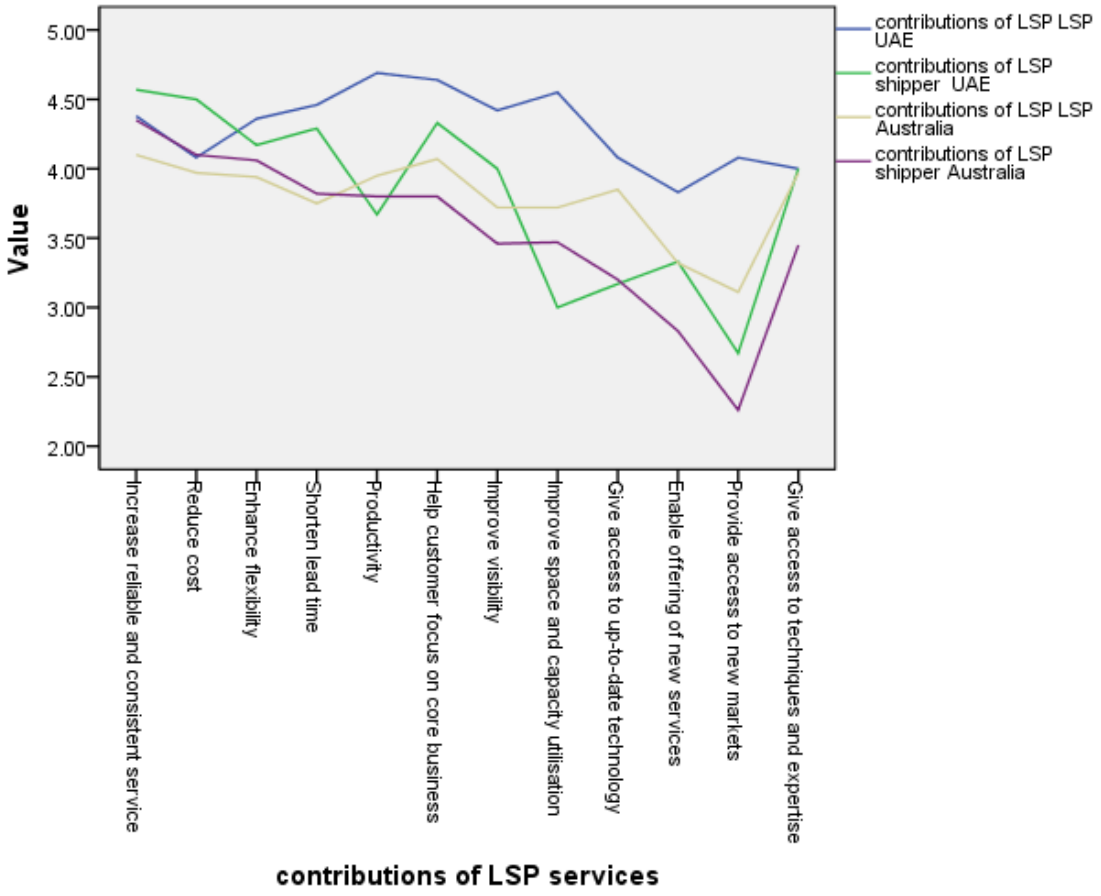
Possible Overkill
Reputation
Knows our business

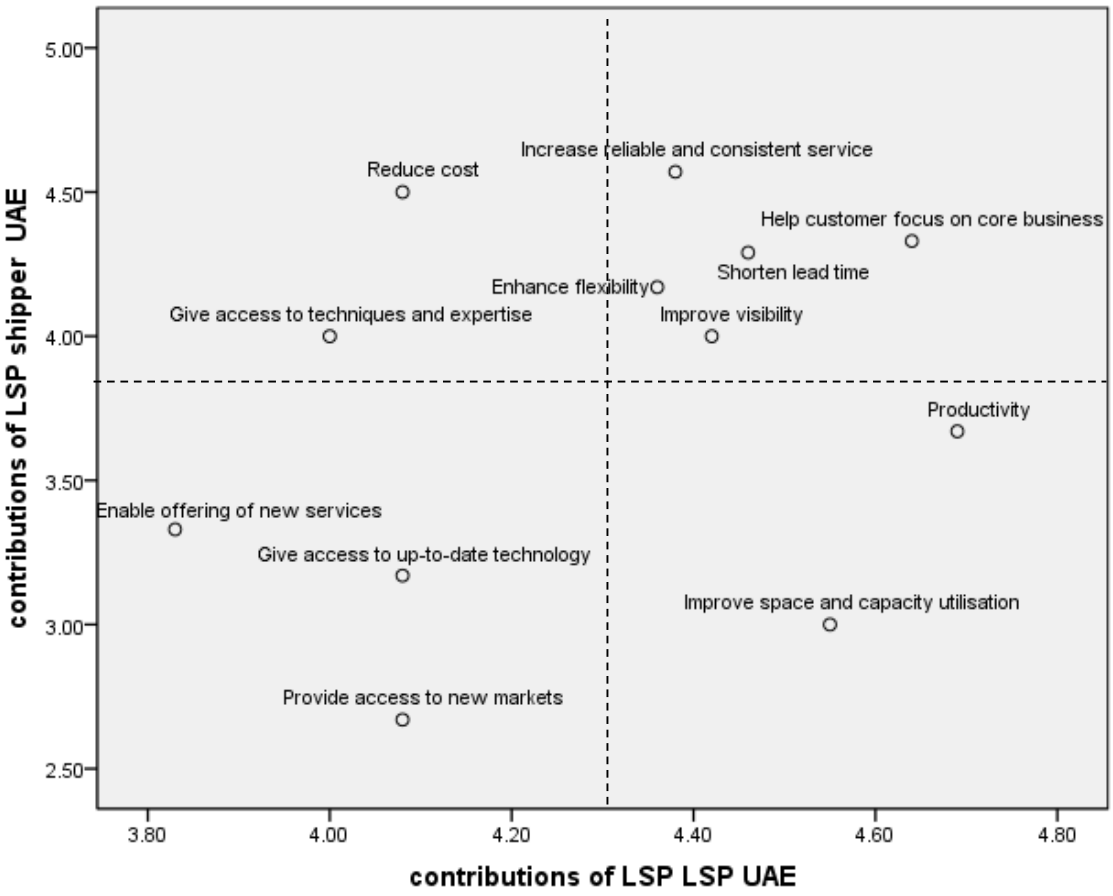
\

4.3 Contributions of 3-party logistics services

When asked to indicate the benefits which could be attained by outsourcing logistics services, four top benefits that the shippers perceive are 'increase reliable and consistent service' (mean = 4.35), 'reduce cost' (mean = 4.10), 'enhance flexibility' (mean = 4.06) and 'shorten delivery lead time' (mean = 3.82). In response to the same question the top four benefits that LSPs perceive are 'increase reliable and consistent service' (mean = 4.10), 'help customer focus on their core business' (mean = 4.07), 'give access to techniques and expertise' (mean = 3.97) and 'reduce cost' (mean = 3.97). IPM analysis indicates that four service items such as 'improve visibility' (7), 'improve space and capacity utilisation' (9), 'enable to offer new services' (11) and 'access to new markets' (12) falls into the 'low priority' quadrant; two elements such as 'give access to techniques and expertise' (8) and 'give access to up-to-date technology' (10) belong to the 'possible overkill' quadrant; one item 'shorten delivery lead time' (4) fall in the 'concentrate here' quadrant, and five items such as 'increase reliable and consistent service' (1), 'reduce cost' (2), 'enhance flexibility' (3), 'increase productivity' (5), and 'help customer to focus on core business' (6) belong to 'keep up the good work' quadrant (see Figure 5).

	Australia		UAE	
Reason	LSP average	Shipper average	LSP average	Shipper average
Reliable	4.10	4.35	4.38	4.57
Reduce cost	3.97	4.10	4.08	4.50
Flexibility	3.94	4.06	4.36	4.17
Shorten LT	3.75	3.82	4.46	4.29
Productivity	3.95	3.80	4.69	3.67
Core business	4.07	3.80	4.64	4.33
Visibility	3.72	3.46	4.42	4.00
Space and Cap	3.72	3.47	4.55	3.00
Technology	3.85	3.20	4.08	3.17
New services	3.32	2.83	3.83	3.33
New markets	3.11	2.26	4.08	2.67
Expertise	3.97	3.45	4.00	4.00*


5.00
4.50
4.00
3.50
3.00
2.50
2.00
Value
contributions of LSP LSP UAE
contributions of LSP shipper UAE
contributions of LSP LSP Australia
contributions of LSP shipper Australia
Increase reliable and consistent service
Reduce cost
Enhance flexibility
Shorten lead time
Productivity
Help customer focus on core business
Improve visibility
Improve space and capacity utilisation
Give access to up-to-date technology
Enable offering of new services
Provide access to new markets
Give access to techniques and expertise
contributions of LSP services



Concentrate Here

- Reduce cost

Give access to techniques and expertise

Keep up the Good Work

Reliable and consistent in dealing
Shorten lead time
Improve visibility
Enhance flexibility
Help focus on shippers' core business

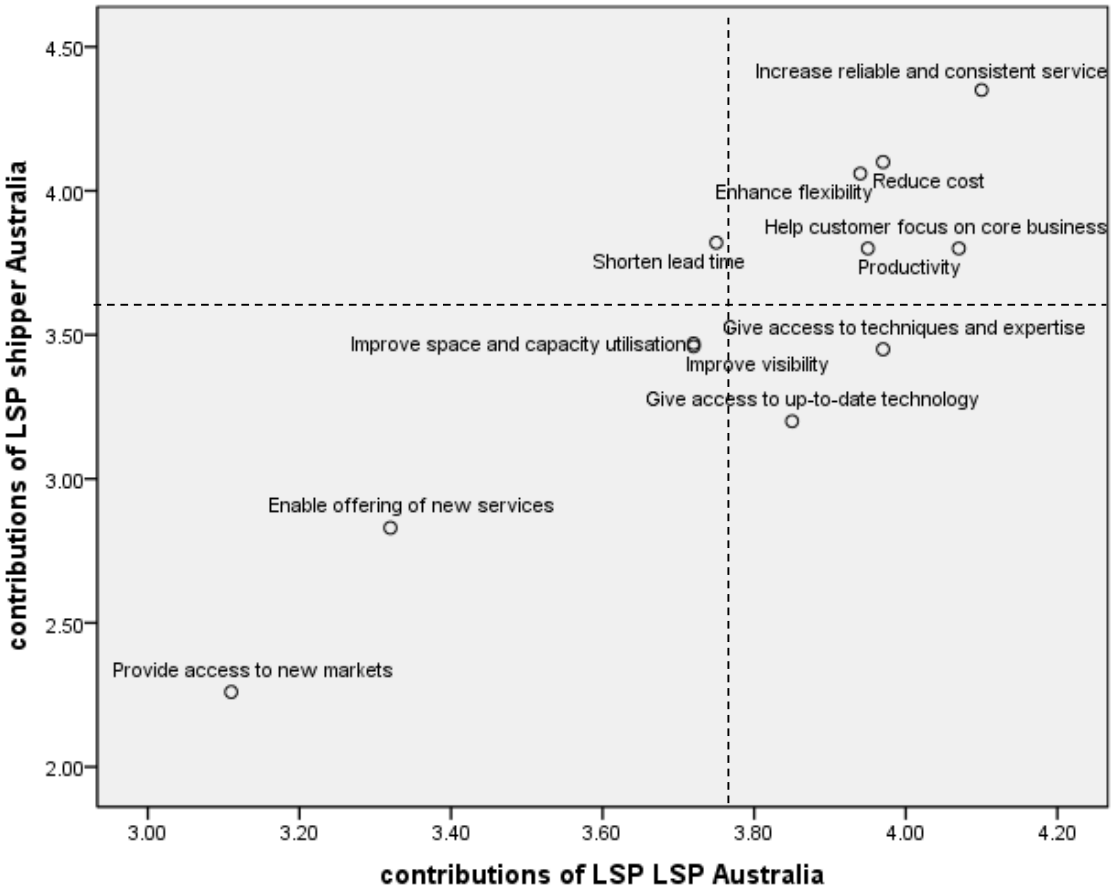
Low Priority

- Give access to up to date technology
- Enables to offer new services

Provide access to new markets

Possible Overkill

Productivity
Improve space and capacity utilisation



Concentrate Here
Shorten lead time

Keep up the Good Work
Reliable and consistent in dealing
Enhance flexibility
Help focus on shippers' core business
Reduce cost
Productivity

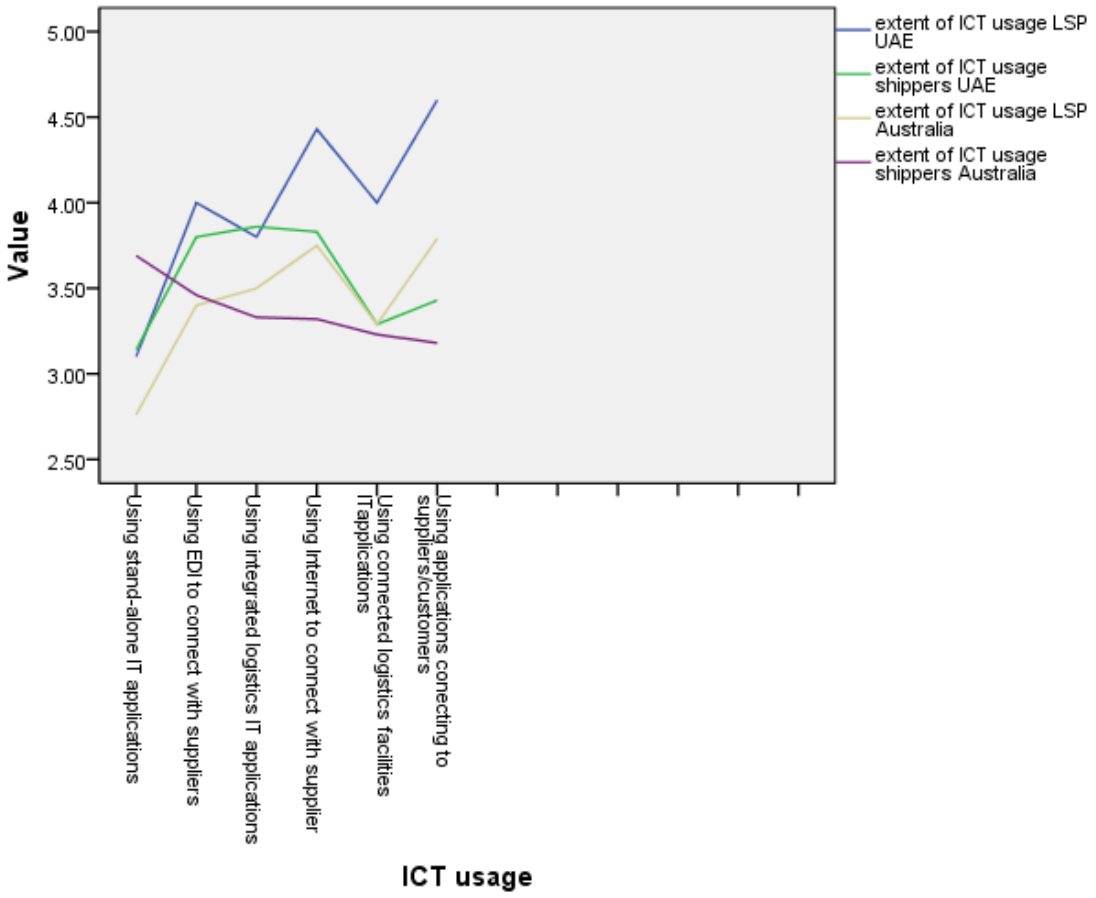
Low Priority
Improve space and capacity utilisation
Improve visibility
Enables to offer new services
Provide access to new markets

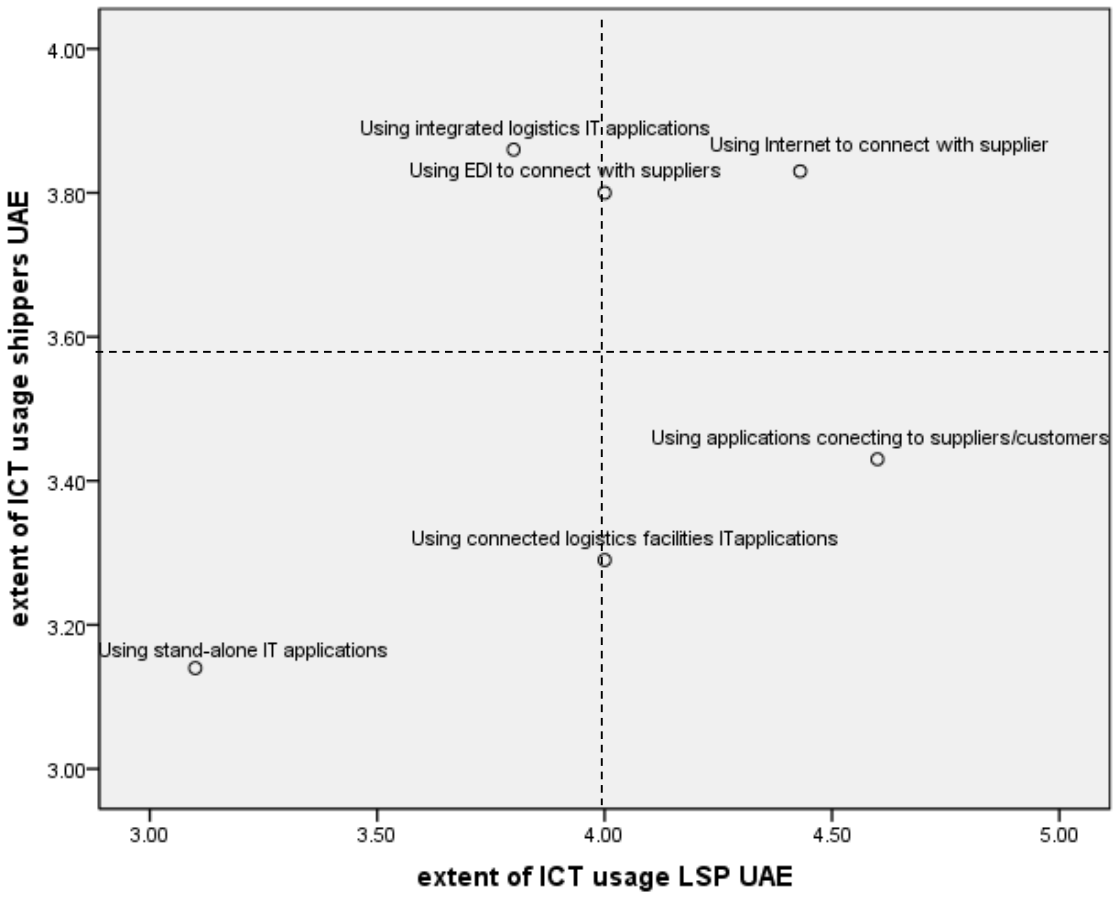
Possible Overkill
Give access to up to date technology
Give access to techniques and expertise

4.4 Extent of information and computer technology (ICT) usage

IPM analysis indicates that the 'using connected logistics facilities IT applications' (5) falls into the 'low priority' quadrant; three items such as 'using integrated logistics IT applications' (3), 'using internet to connect with supplier' (4) and 'using applications connecting to suppliers' (6) belong to the 'possible overkill' quadrant; and two items such as 'using stand-alone IT applications' (1), 'using EDI to connect with suppliers' (2) fall belong to 'concentrate here' quadrant (see Figure 6).

	Australia		UAE	
Reason	LSP average	Shipper average	LSP average	Shipper average
Stand alone IT	2.76	3.69	3.10	3.14
EDI	3.40	3.46	4.00	3.80
Int Log IT	3.50	3.33	3.80	3.86
Internet	3.75	3.32	4.43	3.83
Log facilities	3.29	3.23	4.00	3.29
Suppliers/cust	3.79	3.18	4.60	3.43



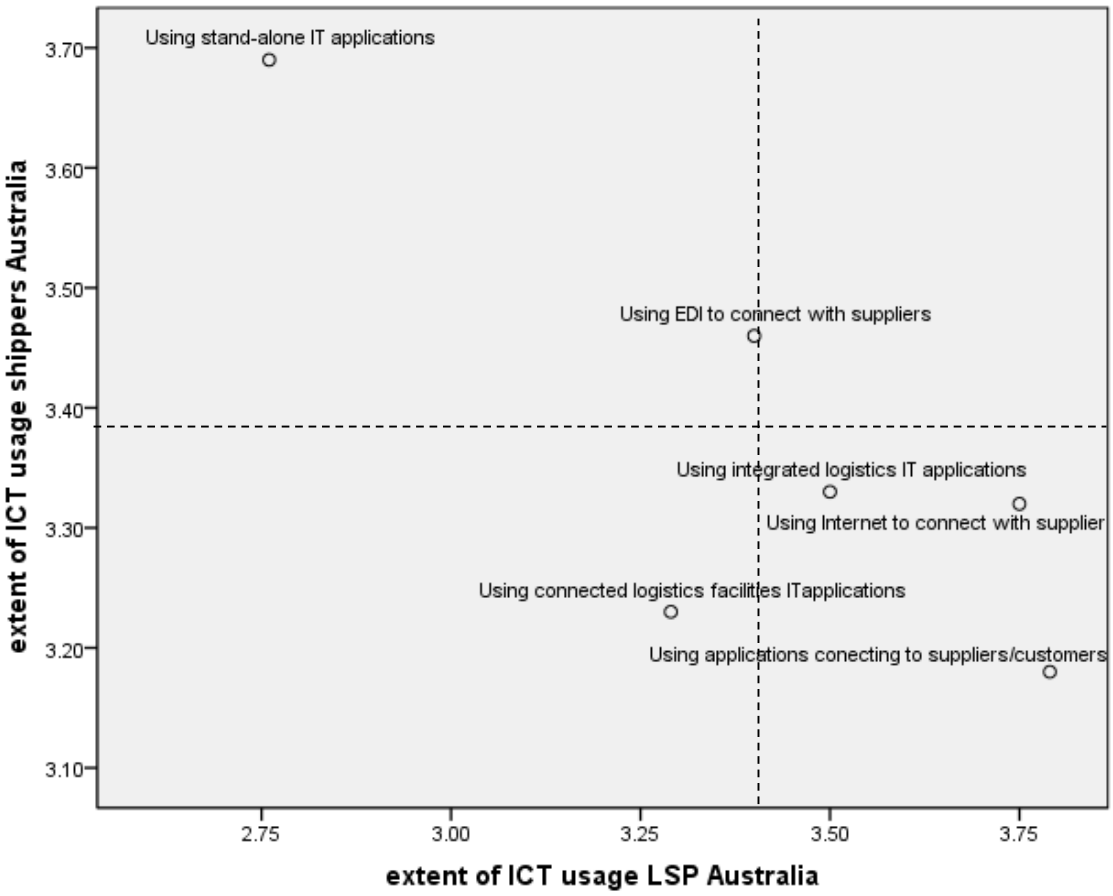


Concentrate Here
Using integrated logistics IT applications

Keep up the Good Work
Using internet to connect with supplier
Using EDI to connect with suppliers

Low Priority
Using stand-alone IT applications

Possible Overkill
Using connected logistics facilities IT applications
Using applications connecting to shippers



Concentrate Here
Using stand-alone IT applications
Using EDI to connect with suppliers

Keep up the Good Work

Low Priority
Using connected logistics facilities IT applications

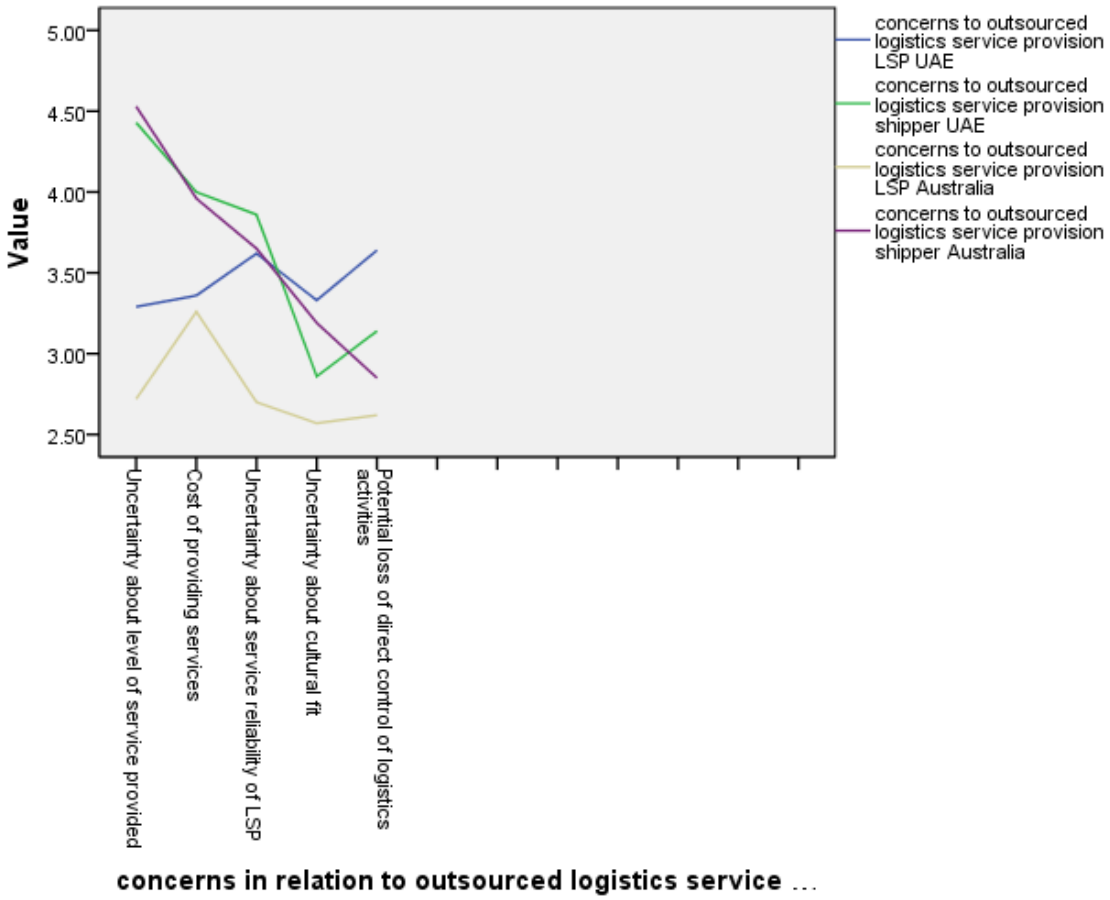
Possible Overkill
Using applications connecting to shippers
Using internet to connect with supplier
Using integrated logistics IT applications

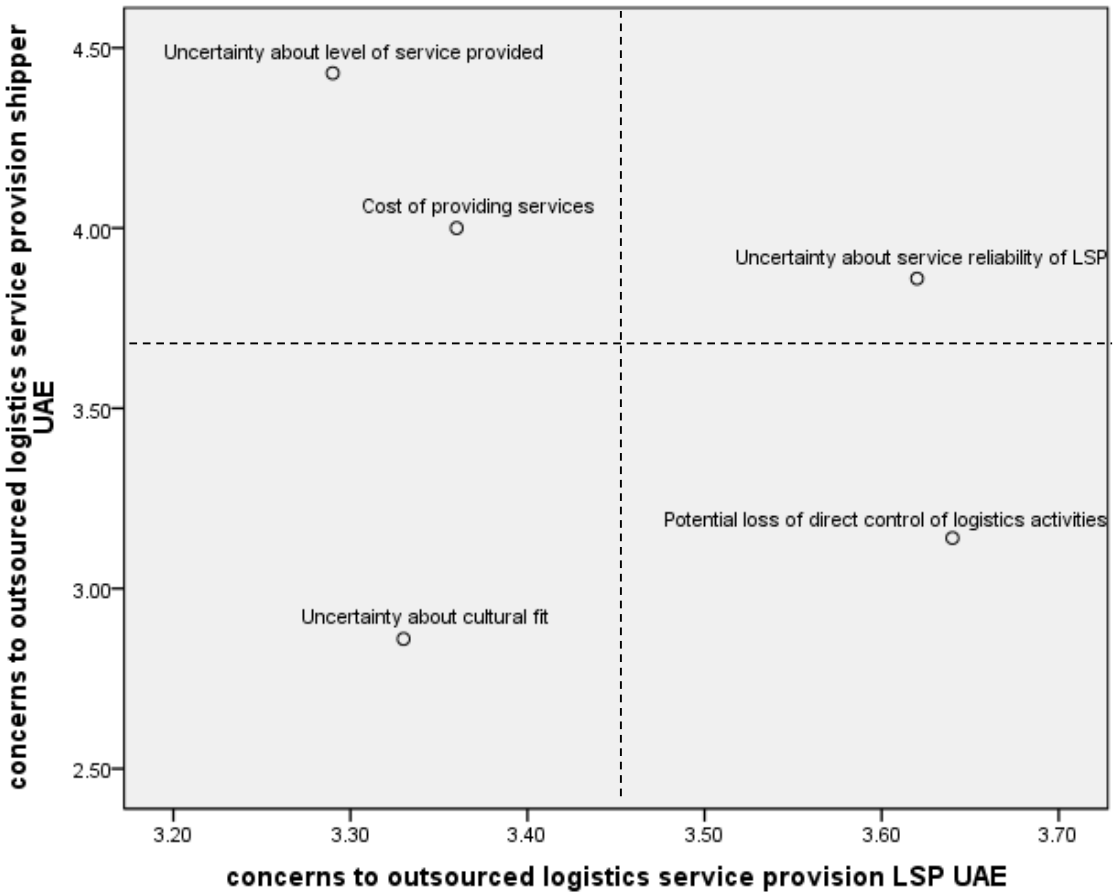
4.5 Concerns in relation to outsourced logistics service provision

'Uncertainty about the service quality provided by LSPs' is the main concern of the shippers (mean = 4.53), whereas 'cost of providing services' (2) is the main concern

expressed by the LSPs (mean = 3.26). IPM analysis indicates that two items such as 'uncertainty about cultural fit' (4) and 'potential loss of direct control of logistics activities' (5) falls into the 'low priority' quadrant; 'cost of service' (2) falls into 'keep up the good work' and two items such as 'uncertainty about the level of service provided by LSPs' (1) and 'uncertainty about service reliability of LSPs' (3).

	Australia		UAE	
Reason	LSP average	Shipper average	LSP average	Shipper average
Level of service	2.72	4.53	3.29	4.43
Cost of service	3.26	3.96	3.36	4.00
Reliability	2.7	3.65	3.62	3.86
Cultural fit	2.57	3.19	3.33	2.86
Loss of control	2.62	2.85	3.64	3.14



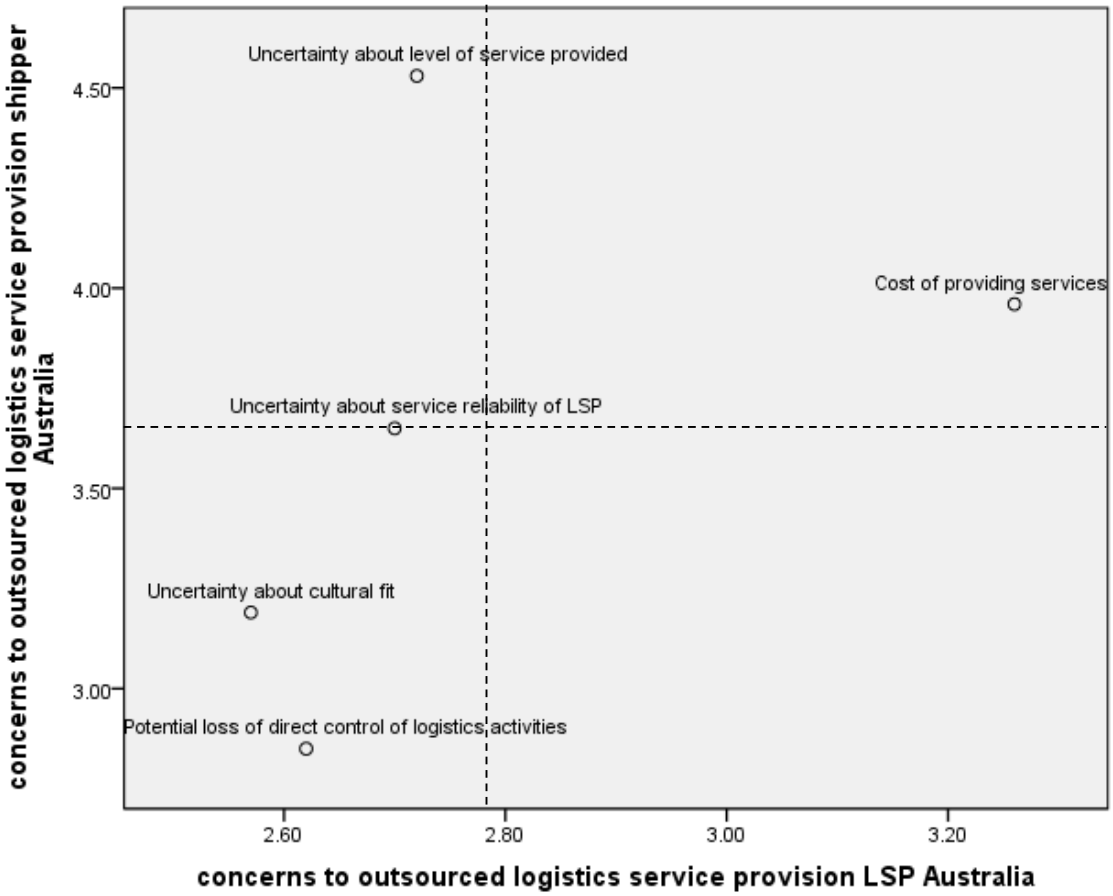


Concentrate Here
Uncertainty about the service quality
Cost of providing services

Keep up the Good Work
Uncertainty about service capability of LSPs

Low Priority
Uncertainty about cultural fit

Possible Overkill
Potential loss of direct control of logistics activities.



Concentrate Here
Uncertainty about the service quality
Uncertainty about service capability of LSPs

Keep up the Good Work
Cost of providing services

Low Priority
Uncertainty about cultural fit
Potential loss of direct control of logistics activities.

Possible Overkill

5. Discussion and Managerial Implications

The overall results can be summarized as:

UAE overall:

Concentrate Here
Productivity improvement
Economic benefit
Reduce cost
Give access to techniques and expertise
Using integrated logistics IT applications
Uncertainty about the service quality
Cost of providing services

Keep up the Good Work
Customer satisfaction
Cost savings
Flexibility
Customer satisfaction
Reliable and consistent in dealing
High degree of integrity
Trustworthy
Reliable and consistent in dealing
Shorten lead time
Improve visibility
Enhance flexibility
Help focus on shippers' core business
Using internet to connect with supplier
Using EDI to connect with suppliers
Uncertainty about service capability of LSPs

Low Priority
Employee morale
Access to up to date technology and expertise
Improve market position
Reputation
Has potential synergy with us
Give access to up to date technology
Enables to offer new services
Provide access to new markets
Using stand-alone IT applications
Uncertainty about cultural fit

Possible Overkill
Focus on core business

Committed to us
Knows our business
Productivity
Improve space and capacity utilization
Using connected logistics facilities IT applications
Using applications connecting to shippers
Potential loss of direct control of logistics activities.

Australia Overall:

Concentrate Here
Flexibility
Focus on core business
Customer service
Shorten lead time
Uncertainty about the service quality
Uncertainty about service capability of LSPs
Using stand-alone IT applications
Using EDI to connect with suppliers

Keep up the Good Work
Reliable and consistent in dealing
High degree of integrity
Trustworthy
Economic benefit
Committed to us
Customer satisfaction
Cost savings
Productivity improvement
Reliable and consistent in dealing
Enhance flexibility
Help focus on shippers' core business
Reduce cost
Productivity
Cost of providing services

Low Priority
Improve space and capacity utilization
Improve visibility
Enables to offer new services
Provide access to new markets
Improve market position
Has potential synergy with us
Employee morale
Access to up to date technology and expertise

Using connected logistics facilities IT applications
Uncertainty about cultural fit
Potential loss of direct control of logistics activities

Possible Overkill
Using applications connecting to shippers
Using internet to connect with supplier
Using integrated logistics IT applications
Give access to up to date technology
Give access to techniques and expertise
Reputation
Knows our business
Focus on core business

This study assessed the relative importance assigned by 97 shippers and 64 logistics service providers (LSP) to five elements of logistics services. The importance-performance matrix (IPM) analysis was conducted to assess the gap between what is required by the shippers and what is provided by the LSPs, and categorized the logistics service elements into four categories such as 'low priority', 'possible overkill', 'concentrate here', and 'keep up the good work'. The distribution of all service elements according to the IPM analysis is shown in Figure 8. The analysis shows that out of forty items 15 items (37.5%) fell in 'keep up the good work' category. This means that both shippers and LSPs place high level of importance to these 15 criteria when it comes to outsourcing logistics services.

On the other hand, 10 items (25%) fell in the category of 'Low priority' which means that shippers generally do not assign a great deal of importance to these items. Similarly, LSPs see these items to be relatively unimportant for them. Out of forty items employed by this study to assess third party logistics services, 8 items (20%) fell in the quadrant of 'possible overkill'. This means that the LSPs are putting more emphasizing on items which are not considered important by the shippers. It can be suggested that LSPs need to divert their effort and resources where there is a greater need. A total of 8 items fell in the 'concentrate here' quadrant and they are;

- Flexibility
- Support the importance shippers' give to customer service
- Shorter delivery lead time

- Using stand-alone IT applications
- Using EDI to connect with shippers
- Uncertainty about the level of service, and
- Uncertainty about service reliability of LSPs.

These findings indicate that the LSPs must improve their image in terms of their capability to provide service and providing service at a necessary quality level. They must be able to shorten delivery time, reduce product/service cost and be flexible while providing services. It is critical that they develop information technology platform to integrate with the shippers.

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