

# Sources of competitiveness for logistics service providers: a UK industry perspective

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**Abstract** This paper empirically examines perceptions on the sources of competitiveness for logistics service providers (LSPs) drawing on two influential theories of strategic management, Porter's competitive advantage theory and the resource-based view (RBV). In contrast to most previous studies of third-party logistics which have viewed the subject from the user's perspective, this study investigates the perceptions of competitiveness primarily from the LSP's point of view. It is based on questionnaire data which was collected from UK LSP managers. Standard statistical techniques were applied for the analysis. The empirical results reveal that capabilities are considered most important among the factors of competitiveness suggested by theory. The most critical aspect of an LSP's capabilities was found to be the service quality capability. At a more theoretical level, the study adds new evidence on the relative explanatory power of the two theories of strategic management used: it indicates that the RBV is the more appropriate in the context given, suggesting that capabilities (i.e., endogenous factor) inside companies are

more important in leading to an LSP's competitiveness and need greater attention than the environmental factors.

**Keywords** Logistics service providers · Competitiveness · Capabilities · Resource-based view · Porter's competitive advantage theory

## 1 Success in logistics service markets and the question of its causes

Logistics service providers (LSPs) are facing major challenges to remain competitive with increasing globalisation, the advent of the networked economy, greater customisation of products and services, more frequent mergers and acquisitions, the development of E-commerce and tightening environmental controls. Total logistics expenditure is rising and an increasing proportion of this spend is being used to pay for outsourced services, thus expanding the market for third-party logistics services. But those additional opportunities are also making it more difficult for LSPs to decide where to position themselves to maximise future growth opportunities.

Partly as a result of the huge growth of logistics outsourcing over the past two decades, LSPs have become indispensable in helping companies manage their transport and warehousing operations. They are playing an increasingly important role in the supply chain. As surveyed by Lieb and Bentz [40], 80% of Fortune 500 companies were using LSPs in 2004. LSPs can help a company secure a competitive edge through cost savings, customer service improvements and greater focusing on the core business [8, 9, 35, 42, 50, 52, 62, 72]. Beyond their potential impact on the "bottom lines" of their immediate customers, LSPs may improve the performance of entire supply chains [48].

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The pressures on LSPs to survive and their struggles to gain competitive advantage over their competitors are continuously increasing: customers' requirements for higher levels of complexity and sophistication are causing LSPs to rethink what they must. Some LSPs are adapting more effectively than others to these pressures and will survive, while others are failing to safeguard their competitive position and may go out of business.

The question of what it is that allows some companies to outperform others has been the primary concern for research in for the academic field of (general) Strategic Management. In this paper, the question should be answered for the specific situation of today's LSP market. Is it primarily the exogenous factors of the competitive situation and the characteristics of the broader business environment that are the main determinants of competitive success in the market? Or are the internal determinants of an LSP's competitiveness more critical? How are the most relevant determinants of success exerting their influence? So far, the existing LSP literature does not provide satisfactory answers to these questions.

To help to fill this gap, this study reports on an investigation of the sources of LSP competitiveness. As distinct from most previous studies of third-party logistics which view it from the user's perspective (e.g., [18, 32] and "Langley Series" surveys of third-part logistics conducted by Langley and his colleagues since 1996), this research investigates the questions primarily from the LSP's point of view.

The paper is divided into five sections. In the section immediately following, underlying theories and academic discussions with relevance to the topic are reviewed, and four specific research questions are proposed. This is followed by a preview of the research methodology. The analysis and results are presented in the fourth section. A discussion of the findings and directions for future study wrap up the paper.

## 2 Theoretical background and research questions

### 2.1 Two influential perspectives of strategic management

Most of the previous research on sources of a firm's competitiveness have been conducted in the field of strategic management where the central research question is how firms achieve and sustain competitive advantage [7, 67]. Identifying sources of a firm's competitive advantage<sup>1</sup>

<sup>1</sup> Day [19] uses competitiveness rather than competitive advantage in his study. In fact, there is no special distinction between competitive advantage and competitiveness in many discussions.

has become a major issue in research around this central question [4, 55, 64]. Porter's competitive advantage theory and the resource-based view (RBV) provide the two most influential perspectives on this issue. The foci of these two perspectives are the external environment and internal resources/capabilities, respectively.

In Porter's view, the strengths of a firm relative to the actors and forces in the external environment are suggested as the primary determinants of a competitive position, such as immediate and potential competitors, customers and suppliers [55]. The RBV, on the other hand, recognises internal resources/capabilities as the primary sources of competitive advantage. Resources are fundamentally considered to be the physical, financial, individual and organisational capital attributes of a firm, while capabilities relate a firm's ability to deploy resources efficiently to achieve a desired objective [1].

Another difference between these two perspectives relates to the unit of analysis. Porter's theory is built on the SCP (structure-conduct-performance) paradigm of industrial organisation (IO) economics. This paradigm was originally developed by Mason [41] and Bain [3] and emphasises the impact of industry structure and how firms can take action to defend their position against competitive forces [5, 20, 23, 67].

The RBV is founded in traditional economic theory. Its origins lie in early economic models of monopolistic competition [12, 63] and were further developed by Penrose [51], Foss [23], Peteraf [53] and Teece et al. [67]. These authors focused on firm heterogeneity and suggested that firm-specific resources may lead to the attainment of competitive advantage [20, 23, 67].

The two perspectives lead to quite different assumptions: Porter does not differentiate firms by their resources. There is a tacit assumption of resource homogeneity and resource mobility between competitors in a market. The RBV suggests that firms within an industry may be quite heterogeneous with respect to the resources they control. The assumption here is that resource heterogeneity matters and that they are large not mobile between competitors.

With respect to the unit of analysis, Porter's theory is industry-oriented, stressing the impact of industry structure and a firm's competitive position within it, while the RBV focuses on individual firms, noting the role of unique and costly-to-imitate resources in generating superior profits [4]. Consequently, the two perspectives have different strategic implications: the emphasis of Porter's theory is on how to create entry barriers to protect advantage, while the RBV focuses on the availability, development and efficient combination of resources [23, 67].

Notwithstanding the differences between Porter's theory and the RBV, there is an inherent complementarity between the two perspectives. Quite some time before the

two theories were spelled out, the SWOT framework was proposed by Learned et al. [39]. SWOT analysis suggested that a firm's success and competitive advantage are determined by four elements: (1) its strengths; (2) its weaknesses; (3) opportunities in competition; and (4) threats in competition. The former two elements relate to the internal analysis of a firm—anticipating the arguments of the RBV, while the latter anticipate some aspects of Porter's work. However, the SWOT framework “provides almost no guidance in identifying these four elements for a particular firm” and limits its usefulness for managements [6].

This is where Porter [54, 55], applying the SCP model of IO economics, provided a theoretical structure of how to identify critical threats and opportunities facing a firm in a competitive environment [6, 16]. The RBV added depth to the analysis of the internal aspects of the SWOT framework, suggesting the exploitation of idiosyncratic and costly-to-imitate resources/capabilities may bring a firm competitive advantage. The relationship between the two perspectives is shown in Fig. 1.

Porter himself acknowledged that a firm is both a collection of activities and a set of resources/capabilities. Both Porter [56] and some proponents of the RBV (e.g., [1, 16, 20, 23, 29, 36, 61]) suggested that integrating the two perspectives can probably help to interpret the sources of a firm's competitive advantage.

The integration of these two perspectives highlights the importance of capabilities, resources and environment and treats them as possible sources of competitive advantage. The main issue then becomes which of these factors of a company's competitiveness is most important.

## 2.2 Research on ranking the factors of competitiveness

A significant literature has been devoted to finding which of the potentially relevant factors of a company's competitiveness exerts the greatest influence on a firm's competitiveness (e.g., [33, 58, 59]). The OECD [47] identified six factors associated with capabilities to a firm's

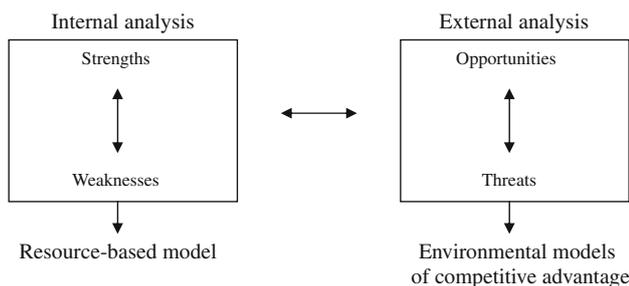
competitiveness: (1) the successful management of production; (2) successful organisation of effective integration of various mechanisms; (3) the capacity of blending R&D and innovation-related activities inside or outside firms; (4) the capability to formulate strategies based on demand characteristics and the evolution of markets; (5) the capability of organising relationships with suppliers upstream and with retailers downstream; and (6) investments in the vocational training of human resources and cultivation of employee's responsibility.

Porter, as has been shown above, focuses on the external environment of a firm, particularly the influence of industry structure, characteristics of the marketplace, such as bargaining power of supplier, bargaining power of customers, rivalry between players, the threat of substitutes, the threat of new entrants, the so-called the five forces, which can become critical factors in a firm's success. In his opinion the key issue is how firms cope with the five forces according to their own differing abilities [54].

Barney and Arikan [7] reviewed numerous empirical studies based on the RBV. In those studies, strategic management, human resources, marketing, information system, operations management and innovation were analysed as specific capabilities of a firm. For instance, Ray [60] investigated the relationship between capabilities to information systems and competitive advantage, indicating that firm-specific managerial IT knowledge has significant impact on customer service performance and is a source of sustainable competitive advantage.

In the literature on logistics and supply chain management, the Michigan State University Global Logistics Research Team [68] identified 17 universal capabilities of world class logistics, such as strategy, IT, network and organisation, and process assessment and benchmarking. The 17 capabilities were divided into four dimensions: positioning, integration, agility and measurement. Cheng and Yen [14] empirically examined the relationship between core competence and sustainable competitive advantage in the air-cargo forwarding industry. They found that capabilities are the most essential internal dimension influencing the sustainable competitive advantage of air-cargo forwarders. Further, staff capability to provide better customer service was the critical factor identified within the capabilities dimension.

In this research, the question about “most important” factors of a firm's competitiveness will be explored with specific reference to the logistics service provider industry. Answers to be found should be of practical relevance to the management of LSPs. At the level of the discussions of alternative strategic management theories, those answers will also provide evidence about which of the theories seem to have more explanatory power. The following research questions were formulated:



**Fig. 1** The relationship between traditional “Strengths-Weaknesses Opportunities-Threats” analysis, the resource-based model and models of industry attractiveness. Source: Barney [4]

1. What are the primary sources of an LSP's competitiveness?
2. To what extent does an LSP's competitiveness depend on the exogenous and endogenous factors?
3. What is the most critical source of an LSP's competitiveness?
4. How much of an LSP's competitiveness is attributed to this critical source?

### 3 Research methodology

LSPs in this study are defined in a broad way to include companies that provide logistics services such as transportation, warehousing, cross-docking, picking–packing and freight forwarding, and any combinations of these [17]. To examine the research issues posed, a sample of UK-based LSPs was surveyed by postal questionnaire in order to get their views on assumed sources of competitiveness.

The selection of items for the questionnaire was guided by the literature, discussions with academics and interviews with LSP professionals. For example, to construct a general capability factor, 13 specific sub-capabilities were identified (i.e., strategic management, operations management, service quality, customer relationship management (CRM), information technology (IT), service network, business process management (BPM), marketing, inventory management, innovation, human resource management (HRM) and cost management). The sources for the identification of specific factors were OECD [47], the RBV literature and previous studies concerning the factors contributing to the success of LSPs (e.g., [13, 22, 26–28, 37, 48, 71]). The questionnaire was pre-tested with managers in four UK LSPs to detect possible shortcomings, such as ambiguous wording, inapplicable questions, and also to assess its appropriateness for companies. Minimal revisions were made after pre-testing.

Three main sources were used to construct the sampling frame in the UK LSPs: trade publications, referral and Internet. A self-administered questionnaire was used in the survey. The questionnaire was mailed to senior and middle managers of 150 companies. It included a stamped addressed envelope with the questionnaire, a cover letter with assurances of confidentiality and anonymity, and a promise that a report of survey results would be sent to the respondents after completion of the study. Respondents were given 3 weeks to return the questionnaire.

Of the 150 questionnaires sent out, five questionnaires were returned as undeliverable owing to the change of address and the respondents targeted no longer being in business. Thus, the effective sample size was 145. The number of usable responses received was 35 for an

effective response rate 24%. Of the 35 respondents, 80% ( $n_1 = 24$ ) were in England, 14% ( $n_2 = 5$ ) in Scotland and the rest ( $n_3 = 6$ ) in Wales; there were no respondents from Northern Ireland.

A test of non-response bias was conducted to examine the extent of the potential bias in the results. The extrapolation method [2, 38] was used in the test by dividing the 35 responses into two groups, namely early ( $n_1 = 18$ ) and late ( $n_2 = 17$ ) respondents. The results showed that at the 0.05 level, there were no significant differences between the mean scores of the early and late responses in terms of surveyed items, such as three sources and 13 specific capabilities, in both samples. This suggests that non-response bias is not a problem in this study.

Statistical techniques used to analyse the data included a sample *t*-test, Friedman test, correlation analysis and stepwise regression [21, 65]. All data analysis was processed using SPSS 14.0 for windows.

### 4 Research results

#### 4.1 Profile of respondents

All respondents were managers in LSPs. The history of all responding companies ranged from several years to over 100 years. The responding companies also vary widely in size with numbers of employees ranging from fewer than 200 to 40,000. The responding companies offer services across a wide range of sectors but mainly retail and fast-moving consumer goods (FMCG).

#### 4.2 Primary sources of an LSP's competitiveness

All respondents were asked to rank the impact of the three general factors of competitiveness suggested by theory, i.e., resources, capabilities and business environment. A five-point Likert scale was used in the questionnaire with a score of 1 indicating “no impact” and a score of 5 indicating “high impact”. Results are presented in Table 1.

The mean score of capabilities is the highest for the three factors. This result, from the one sample *t*-test for the three variables, indicates that the impact of the three variables on competitiveness is highly significant. The mean ranks of the three variables are statistically significantly different from each other following the Friedman test, which is a non-parametric alternative to the one-way ANOVA that rests upon a parametric assumption. It is applied to test the difference among more than two independent variables within the same subject.

The mean rank of capabilities is the highest of the three variables, and the variation among the three variables is statistically significant at the 0.05 level with  $\chi^2 = 8.54$ ,

**Table 1** Three sources

Variable ( $x_j$ )	Mean score	Std. deviation	$p$ value (test value = 3)	$t$ -value (test value = 3)	Mean rank
Capabilities ( $x_2$ )	4.34	0.765	0.000	10.388	2.33
Resources ( $x_1$ )	3.89	0.718	0.000	7.295	1.91
Business environment ( $x_3$ )	3.66	1.083	0.001	3.589	1.76

$df = 2$ ,  $p$  value 0.014. This confirms that the importance of the three variables is not the same and that, in the judgment of the respondents, one may be more important than the other two. Given the mean scores of the three variables exhibited, the variable “capabilities” has a much greater impact on competitiveness than resources and business environment.

### 4.3 Importance of specific capabilities

Given the importance attributed by the respondents to the capability factor, the relative weight of 13 specific capabilities was thereby analysed based on the measurement by respondents using a five-point Likert Scale from 1 (unimportant) to 5 (very important). Table 2 displays basic statistics for the 13 specific capabilities.

The results show that service quality and operations management rank first. The one sample  $t$ -test for the 13 variables indicates that the importance of eleven of the 13 variables to capabilities is highly significant. The two exceptions are inventory management and marketing.

Multiple regression analysis was conducted with the capabilities factor as the dependent variable (DV) and the 13 specific capabilities as independent variables (IVs) or predictors to examine which specific capability is the most critical to an LSP’s competitiveness. This regression technique was appropriate to be used since this sample size of 35 cases permitted the use of regression analysis.

Specifically, the regression model was built by stepwise regression. This is a popular tool for selecting significantly correlated IVs. Using this approach, the contribution of each IV to the regression model can be estimated step by step. First of all, the IV with the largest contribution is selected. The remaining IVs are then selected for inclusion on the basis of their relative contribution to the explanation of the DV. The selection process stops when no variables in the model can be removed and no further variables can be introduced [65].

Stepwise regression was performed on all 13 IVs and resulted in two predictors being selected, service quality and IT. These two predictive variables were the most strongly correlated to the DV as shown in Table 3. The significance level used for entry and removal were  $\alpha_1 = 0.05$  and  $\alpha_2 = 0.1$ , respectively, the default values in SPSS.

Additional IVs could be selected if the significance levels  $\alpha_1$  and  $\alpha_2$  were enlarged. When the significance levels were set at  $\alpha_1 = 0.20$  and  $\alpha_2 = 0.25$ , strategic management became the third predictor selected.<sup>2</sup> The model is shown in the following equation, and more details are displayed in Table 4.

$$Y = 0.572x_1 + 0.298x_2 + 0.155x_3 - 0.041$$

where  $x_1$  = service quality,  $x_2$  = IT,  $x_3$  = strategic management and  $Y$  = capabilities.

The model indicates that three of the 13 IVs, i.e., service quality, IT and strategic management, explain around 60% of the variation in capabilities. The coefficients of the three specific capabilities show that raising them by 100% would result in an increase of each unit of them and will cause an increase in capabilities of 57, 30, and 16%, respectively. From the previous analysis, capabilities proved to be the most important source of an LSP’s competitiveness. The results of this analysis reveal that capabilities of an LSP are essentially affected by three specific capabilities, in particular, service quality, and suggest that three of the 13 specific capabilities account for a big part of the contribution to an LSP’s capabilities and hence competitiveness.

Compared with the findings of other logistics research on related topics which use multiple regression, the value of  $R^2$  (0.60) is fairly high and has good explanatory power. For example,  $R^2$  with 0.30–0.56 were found in a study by Knemeyer and Murphy [34] where the potential impact of relationship characteristics and customer attributes on the outcomes of third-party logistics arrangements was explored. Further,  $R^2$  values of only 0.20–0.30 were quoted as being significant in a study by Morash et al. [46] of the relationship between strategic logistics capabilities and firm success.

### 4.4 Critical measures of service quality

According to the regression analysis, service quality was the most important specific capability contributing to an LSP’s competitiveness as recorded by respondents. Its contribution was therefore investigated in greater detail.

<sup>2</sup> Nevertheless,  $\alpha_1 = 0.20$  and  $\alpha_2 = 0.25$  seem to be relatively high to be used as entry and removal levels. However, it will result in a better regression model as the adjusted  $R^2$  value with the three predictors is higher than the model with the two predictors. In addition, the constant is nearly zero as shown in the equation.

**Table 2** Importance of 13 specific capabilities by mean score, SD and ranking

Variable	Mean score	SD	Rank	<i>p</i> value (test value = 3)	<i>t</i> -value (test value = 3)
Service quality	4.51	0.658	1.5	0.000	13.605
Operations management	4.51	0.658	1.5	0.000	13.605
Cost management	4.31	0.676	3	0.000	11.500
Customer relationship management (CRM)	4.15	0.784	4	0.000	8.535
IT	3.97	0.954	5	0.000	6.021
Strategic management	3.88	0.844	6	0.000	6.093
Innovation	3.86	0.845	7	0.000	6.000
Corporate culture	3.74	0.919	8	0.000	4.785
Service network	3.69	0.758	9	0.000	5.351
Human resource management (HRM)	3.6	0.695	10	0.000	5.111
Business process management (BPM)	3.47	0.615	11	0.000	4.464
Inventory management	3.21	0.978	12	0.114	1.228
Marketing	2.83	0.954	13	0.852	-1.063

1 = unimportant, 5 = very important

**Table 3** Correlation between 13 IVs and capabilities

13 variables	Capabilities	
	<i>r</i>	<i>p</i> value
Strategic management	0.390*	0.023
Operations management	0.340*	0.045
<b>Service quality</b>	<b>0.632**</b>	<b>0.000</b>
CRM	0.372*	0.030
<b>IT</b>	<b>0.618**</b>	<b>0.000</b>
Service network	0.191	0.271
BPM	0.469**	0.005
Marketing	0.325	0.057
Inventory management	0.393*	0.021
Innovation	0.306	0.074
HRM	0.377*	0.026
Cost management	0.297	0.083
Corporate culture	0.171	0.326

\* Correlation is significant at the 0.05 level (2-tailed)

\*\* Correlation is significant at the 0.01 level (2-tailed)

Service quality is a perceptual concept resulting from “a comparison of customer expectations with actual service performance” [49]. It can be measured by the attributes

related to the creation of customer satisfaction by physically operational activities and marketing customer services, such as reliability, responsiveness and communication [25, 28, 43–45]. An examination was therefore conducted of the relationship between service quality and the nine customer service criteria surveyed.

Stepwise regression was conducted with service quality as the DV and the nine customer service criteria as the IVs. The primary data are summarised in Table 5. Across the nine correlation coefficients, it was found that two variables (i.e. staff conduct and billing accuracy) were not significantly correlated to the DV. Moreover, their correlation coefficients were shown to have minus signs, suggesting an inverse relationship between these variables and service quality. Therefore, these two variables were excluded from the list of IVs, and the remaining seven IVs are used to run a stepwise regression with the DV.

The results of the stepwise regression are presented in Table 6. The model was statistically significant, producing an *F*-test with *p* value 0.000. Reliability of delivery and customer loyalty/retention were found to be statistically significant predictors of service quality according to *t*-tests with *p* values, respectively, of 0.002 and 0.008. These two variables account for 56.2% of the variation in service

**Table 4** Stepwise regression of capabilities

Predictor	Coefficient ( <i>B</i> )	<i>p</i> value ( <i>t</i> -test)	<i>R</i>	<i>R</i> <sup>2</sup>	Adjusted <i>R</i> <sup>2</sup>	<i>p</i> value ( <i>F</i> -test)
Constant	-0.041	0.956	0.772	0.596	0.555	0
Service quality	0.572	0.002				
IT	0.298	0.008				
Strategic management	0.155	0.179				

*R* represents the correlation between predictors and DV

*R*<sup>2</sup> proportion of total variance on DV that is accounted for by predictors

Adjusted *R*<sup>2</sup> a reduced value of *R*<sup>2</sup> which takes the effect of the number of IV's into account

**Table 5** Correlation between nine customer service criteria and service quality

Customer service	Service quality	
	<i>r</i>	<i>p</i> value
Staff conduct	<b>-0.033</b>	<b>0.851</b>
Reliability of delivery	0.677**	0.000
Response time	0.533**	0.001
Billing accuracy	<b>-0.025</b>	<b>0.886</b>
Communication with client	0.450**	0.008
IT support	0.231	0.190
Complaint/claim procedure	0.346*	0.045
Value-added services	0.454**	0.008
Customer loyalty/retention	0.628**	0.000

\* Correlation is significant at the 0.05 level (2-tailed)

\*\* Correlation is significant at the 0.01 level (2-tailed)

quality. Moreover, the results also show that an increase of 100% in each predictor will cause an increase of 57 and 37%, respectively, in service quality.

## 5 Discussion and conclusions

The aim of this study was to develop a deeper understanding of the sources of LSP competitiveness by drawing on the experiences and views on a significant sample of UK-based LSP managers. If the assumption is made, that these views are correctly reflected in the survey data, then conclusions about the relevance of theories about firm-level competitiveness may be drawn:

### 5.1 Theoretical implications

The analysis suggests that all three general factors of competitiveness suggested by theory (i.e., resources, capabilities and business environment)—as expected—in fact are positively influencing an LSP’s competitiveness. Capabilities are considered the most important, followed by resources and business environment. These results, on the one hand, suggest that elements of both the RBV and the Porter’s theory are relevant in understanding an LSP’s competitiveness. On the other hand, they more strongly support the RBV, by suggesting that endogenous factors (i.e., capabilities and resources) inside companies are more

important than exogenous factors (i.e., business environment) in leading to an LSP’s competitiveness. Differences in the relative importance of the three sources are related to their specific attributes, as addressed by both the RBV and the Porter’s theory.

The RBV argues that a firm’s resources and its capability to convert these resources into sustainable competitive advantage are the key to superior performance. The essence of this theory is that resources and capabilities that competitors find it difficult to duplicate can bestow a sustainable competitive advantage. Usually resources—which include tangible and intangible assets—are necessary inputs for a service delivery process. The quantity and the quality of resources available to a company have an important influence on what it can do. However, it can be difficult to resist duplication of resources by competitors. Tangible assets, such as warehouses and transport fleets, are easily duplicated by competitors.

Intangible assets are more difficult to replicate in the short term, but they can still be available to competitors in the medium to long term. For instance, high-level IT support can be acquired by competitors. Nevertheless, as invisible assets, capabilities are quite complicated [31]. Capabilities involve “complex patterns of coordination between people and between people and other resources” [24]. Some capabilities may arise from the contribution of a single resource, while others may involve a highly complicated interrelation between different resources. The inherent complexity of capabilities makes them hard to replicate and more critical in maintaining sustainable competitive advantage.

In contrast to the endogenous characteristics of resources and capabilities, the business environment is an exogenous factor for companies. The environment may shape “how activities are configured, which resources can be assembled uniquely and what commitments can be made successfully” [56]. The influence of the environment on competitive advantage is exerted by many extraneous factors, such as technological advancement, demand, rivals and government, all of which belong to the macro-economy, market and industry.

For example, the proper role of the government is considered to be a “catalyst and challenger”, despite being partial and indirect [56]. The government can create an environment in which companies can freely and fairly compete rather than involve itself directly in the business process. This environment may not be the determinant

**Table 6** Model assessment of service quality

Model	Predicator	Coefficient ( <i>B</i> )	<i>p</i> value ( <i>t</i> -test)	<i>R</i>	<i>R</i> <sup>2</sup>	<i>p</i> value ( <i>F</i> -test)
UK	Constant	0.265	0.709	0.750	0.562	0.000
	Reliability of delivery	0.574	0.002			
	Customer loyalty/retention	0.365	0.008			

factor in affecting competitive advantage, because “firms sometimes fail not because their environment is unfavourable but because of organisational or managerial rigidities that block improvement and change. The environment can provide important pressures to advance, but firms differ in their responsiveness to them” [56]. LSPs can also behave proactively to gain competitive advantage by exploiting their particular capabilities and resources. This not only supports the RBV but also accords well with numerous conceptualised models of firm-level competitiveness (e.g., [30, 47, 59]).

The empirical investigation identified some specific capabilities as being especially important to an LSP’s competitiveness, mainly service quality and operations management. The significance of service quality for LSPs has also been confirmed by numerous studies (e.g., [10, 28, 70]). Operations management which, in essence, involves cost-effectively converting logistics inputs, such as truck capacity, into outputs, such as product availability, is clearly crucial to the implementation of corporate strategy and resultant financial performance, as discussed in the LSP literature (e.g., [66, 69, 71]).

The mean ranks of a few specific capabilities awarded in this study, e.g., innovation, are not very high. Nevertheless, they are still important to an LSP’s competitiveness in terms of *t*-test (see Table 3, where innovation received a mean score of 3.86, *p* value 0.000). Within the logistics and supply chain context, the extent of innovation ranges from the basic to the complex, such as “developing new software, designing new packaging, creating new delivery processes, building new and innovative facilities, and developing new services” [22]. Practically, the application of different innovative activities in management, technology and services may help companies develop key competencies and lead to competitive advantage. In this sense, the importance of the few capabilities to competitiveness should also be noted.

Further statistical analysis reveals that specific capabilities vary in the contribution they make to competitiveness. Service quality, IT and strategic management are the most important determinants of LSPs’ capabilities. Of these, service quality capability is the most critical source to an LSP’s competitiveness. Service quality can yield economic benefit by securing and maintaining business and creating the opportunity to charge premium rates. It is the most effective way of promoting market expansion and gaining market share [11]. IT is considered one of the few productivity tools that may both increase in capabilities and decrease in cost simultaneously [15]. IT can also be a significant source of competitive advantage to a firm [57]. The empirical study by Lai et al. [37] evidences a significant impact of IT on LSPs in obtaining competitive advantage. It is found that the high-level IT applications, such as integrating and coordinating IT systems with

clients and business partners, employing RFID tracking as well as optimised scheduling and routing, may bring companies the service variety advantage, service quality advantage and cost advantage. The effectiveness of strategic management is recognised as a very important determinant of an LSP’s success in several studies (e.g. [66, 69, 71]). The results thus support these views.

Service quality in the 3PL market is affected by a broad range of factors. However, it has been noted that if a company can focus on a limited number of high priority logistics service features, overall service quality can be more cost-effectively managed [28]. The two customer service attributes offering the greatest leverage are reliability of delivery and ability to maintain customer loyalty/retention. The attributes are clearly interrelated and closely associated with operational and relationship-building skills.

## 5.2 Managerial implications

If the database is interpreted as a representation of the collective experiences and insights of the survey respondents, then it will have important managerial implications as well. First, it suggests, that managers should recognise that an LSP’s competitiveness to be affected by a combination of capabilities, resources and business environment. Managers should examine the interrelationship between internal and external factors and how they are likely to evolve. This analysis is split into three parts: identify and appraise resources, appraise capabilities in accordance with the RBV and analyse the business environment using Porter’s five-forces framework.

Second, managers should develop specific capabilities and identify those likely to be most critical in their particular segment of the 3PL market. This might entail some diversification of the service portfolio in an effort to find capabilities that offer the greatest competitive leverage. Attention should also focus on those capabilities which are the most difficult to replicate. According to the empirical investigation, service quality, IT and strategic management are likely to prove the most fertile sources of specific capabilities offering sustainable competitive advantage.

Third, managers should develop key measures to assess each capability. This requires managers to exploit the key attributes of each capability and examine their relative influence on competitiveness. Given three capabilities identified critical to an LSP’s competitiveness in the investigation, for example, reliability of delivery and customer loyalty/retention would be suggested the KPIs of service quality capability. The KPIs of IT capability, likewise, might be identified through examining different measures like IT investment capacity, IT proprietary technology, IT applications, IT managerial potential and others for an LSP. As for strategic management capability,

managers might evaluate the extent to which LSPs have well-developed strategic planning, strategic positioning, implementation of growth strategy, geographical expansion of service network and diversification of service range. Ideally, the KPIs should be benchmarked against those of competitors to identify any capability gaps and target areas for future investment.

### 5.3 Direction for future research

This study investigated LSP's competitiveness drawing upon the two most influential strategic management perspectives, i.e., Porter's theory and the RBV. Future research could refine the dimensions of various sources of LSP competitiveness. In this study, capabilities were disaggregated into 13 specific dimensions, and an assessment made of their relative contribution to competitiveness. In contrast, little consideration has so far been given to company resources and the external business environment. These factors could be decomposed into a series of discrete elements, as has been done for capabilities.

The specific capabilities identified in this study could be analysed in greater depth. Only the most important capability, the ability to deliver service quality, has subjected to more detailed investigation in this paper. Through a combination of surveys and case studies, understanding of the other capabilities could be significantly improved.

The present study was constrained by the sample size of 35 UK LSPs. This limited the range of analytical techniques that could be used, the inferences that could be made from the statistical results and their overall generalisability. The results and implications are based on the views and opinions expressed by the respondents regarding the sources of competitiveness of LSPs, not on measures of actual successes in competitive markets. Future studies should aim to expand and diversify the samples of LSPs consulted and try to establish correlations between opinions about competitive successes and realised successes.

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