

An Analysis of Third Party Logistics' Performance and Customer Loyalty

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Abstract

Although all over the world 3PL service providers has been an emerging demand; it is a developing business for Turkey. The main aims of this study are to identify of the logistics performance dimensions and to explore the impact of 3PL service providers' performance dimensions on the customer loyalty. Data has been collected from manufacturers which is the most important customers of 3PL service providers. The results of the study showed that logistics performance is a three dimensional structure; (i) cost performance, (ii) operational performance and (iii) relationship performance which explain 76% of logistics performance. These three dimensions have almost equal and positive impact on customer loyalty. Logistics performance explains an important part of customer loyalty, corresponding to 48% of variance. Cost performance ($\beta=0.476$) has the greatest positive and significant impact on customer loyalty. Operational performance ($\beta=0.394$) and relationship performance ($\beta=0.349$) have the positive and significant impact on customer loyalty.

Keywords: customer loyalty, logistics performance, third party logistics (3PLs)

1. Introduction

Today global competition forces manufacturing companies to work with third party logistics (3PL) as a strategic partner. 3PL can be defined as a provider of a single or multiple logistics services of a client company's logistics activities on a contractual basis (Razzaque & Sheng, 1998; Lai, 2004). Researchers refer to logistics outsourcing as 3PL, external logistics services and contract logistics (Razzaque & Sheng, 1998; Zailani et al., 2017). Services that a 3PL provide are transportation, warehousing, inventory management, material handling, cross-docking, reverse logistics, freight forwarding, customer service and information-related services (Ellinger et al., 2008; Mothilal et al., 2012; Park & Jeong, 2016; Zailani et al., 2017; Payaro & Papa, 2017). But not limited to only these, 3PL also performs various value-added activities like packaging, order processing, bar coding etc.

Manufacturers' willingness to focus on their own businesses, reduce logistics costs and improve the quality of logistics services is increasing the share of logistics service providers (3PLs) in the economy day by day. For example, in Japan about 70% of the companies outsourced its main logistics operations to 3PLs and in the United States, about 42% of the companies implemented logistics outsourcing (Li et al., 2012). In Italy in some industries, like food and fashion, it reached about 70% (Payaro & Papa, 2017). On the global scale, it is estimated that about 40% of the global logistics services will be outsourced (Jiang & Qureshi, 2006).

One of the most important customers of 3PLs is manufacturers and there is a business-to-business (B2B) trade relationship among them. However, due to the increasing competitiveness in 3PL sector, offer of low costs by 3PLs to manufacturers is deemed as being an insufficient performance and to be able to achieve customer loyalty beside cost performance, performance expectations relating with operational and relationship issues also arise. So that today global competition forces 3PLs to evaluate their performance (Kucukaltan et al., 2016). In this context, being able to set measurable performance targets and measure their ability whether they may achieve or not to these targets is crucial for 3PLs both in terms of protecting their own markets and increasing customer loyalty, as well as contributing to the performance of the businesses they serve.

Although 3PL's performance is important, there are limited studies about it (Lai, 2004; Gunasekaran & Kobu, 2007; Kucukaltan et al., 2016), especially from the customer perspective. This research aims to fill these gaps by

(i) identifying of the logistics performance dimensions and (ii) exploring the impact of 3PLs' logistics performance dimensions on the customer loyalty. The results of this study can suggest 3PLs how to establish customer loyalty and give useful information to manufacturers for measure their 3PL's performance. So that manufacturers can execute decision making process of 3PL provider selection successfully.

2. Literature Review and Research Hypotheses Development

2.1 Logistics Performance

Performance measurement is an important tool enabling for companies to evaluate and compare themselves both with their past situations and with the other companies. On the other hand, it is an indicator being considered with respect to the customers and being monitored. As performance is a multi-dimensional topic (Chow et al., 1994), performance measurement is an interdisciplinary field (Kucukaltan et al., 2016) and as it is desired to be measured including both short and long terms, performance measurement becomes a difficult task.

Performance measurement has a vital role for companies like at logistics companies. Logistics performance may be viewed as a subset of the larger notion of company performance (Chow et al., 1994). When logistics performance is the subject, there are multiple and conflicting goals and multiple service metrics such as lead time, low logistics cost, on-time delivery. So a great variety of definitions and measurement systems exist for logistics performance (Chow et al., 1994; Töyli et al., 2008).

Mentzer & Konrad (1991) defined logistics performance as an analysis of both effectiveness and efficiency in accomplishing a given task. From a broader perspective Fugate et al. (2010) defined logistics performance as the degree of efficiency, effectiveness and differentiation associated with the accomplishment of logistics services. Efficiency is about how economically the resources are utilized (Mentzer & Konrad, 1991) or more clearly "doing things right", effectiveness is about which goals are accomplished (Panayides & So, 2005) or more clearly "doing the right thing". Differentiation represents a valuable business capability (Karagöz & Akgün, 2015) and is more related with execution of logistic operations in a way to create more values for the customers.

From a different perspective related about logistics performance, Chow et al. (1994) stated that there is "hard" measures such as net income, transport cost, standard labour cost, number of shipments, order cycle time and "soft" measures such as customer satisfaction ratings. Although hard measures are usually accurate, easy and inexpensive to collect; they should be used with soft measures for accurate performance measurement. "*Optimal set of performance measures will depend on the purpose of the research, it will often include a collection of both hard and soft measures*" (Chow et al., 1994). On the other hand, Zailani et al. (2017) defined the relationship of logistics performance with customer satisfaction by claiming that 3PL provider selection criteria can be used for performance measurement. Different definitions in literature related to logistics performance have caused differentiation of the variables that will be used in logistics performance measurement.

On the other hand, studies related to the logistics performance in the literature are also different in terms of where data was collected due to the logistics performance is closely related to the internal dynamics of the businesses and their reflections to the customers. Some of these studies are focus on the performance of outsourcing logistics activities and this performance was either measured through 3PLs or judgments of customers. Some of the other studies are focus on performance of logistics activities performed by companies which the main business is not logistics. Accordingly, in this research, the studies in the literature relating with logistics performance are investigated as being divided into 3 groups in terms of companies where the data have been collected:

(1) *Researches in which 3PLs evaluate their own logistic performances (Lai, 2004; Ellinger et al., 2008; Wang et al., 2010; Liu & Lyons, 2011; Mothilal et al., 2012; Karia & Wong, 2013; Karagöz & Akgün, 2015)*: In these researches the data were collected based on the self-assessment of 3PLs. Meaning that they did not made evaluations through the eyes of customers but they evaluated their own performances themselves. Bülbül et al. (2013) chose respondents from employees in this study which examined companies' performances. Researches that examined 3PLs logistic performances, it was requested from respondents being selected from within the company, to evaluate their companies by making comparison with their competitors and sector average. For example, Ellinger et al. (2008) used variables such as increase in personnel efficiency through the years and increase in market share, whereas Wang et al. (2010) used operational variables such as customer service, delivery speed, and delivery reliability. Lai (2004) has used variables related to services such as assisting customers to solve problems, efforts shown in emergency cases, and assessing customer complaints, while Mothilal et al. (2012) and Liu & Lyons (2011) used financial and operational performance variables. Karia & Wong (2013) used variables which are directly related with logistics services such as better services, greater percentage of on-time and accurate delivery, quick responses, more unique solution, more satisfied with the

service level, more additional service, lower facility cost, lower distribution cost.

(2) *Researches in which logistics performance of 3PLs is evaluated from the customer perspective (Forslund, 2007; Wallenburg et al., 2010; Li, 2011; Zailani et al., 2017; Stank et al., 2003; Liu & Lyons, 2011)*: In these researches, the data were collected from users of logistics services as manufacturing, wholesale and retailing companies. For example, Forslund (2007) evaluated logistics performances of Swedish manufacturing companies, Zailani et al. (2017) examined logistics performances of electrical and electronics companies in Malaysia. Wallenburg et al. (2010) measured logistics performances of companies operating in production and trading industries in Germany and America. In these researches key items of 3PLs' logistics performance are generally about promised lead time, on-time delivery, logistics cost, flexibility and etc. Differ from these studies Stank et al. (2003) gathered data both from 3PLs and from their customers. In this study, customers of 3PLs evaluated their perceptions of service performance, overall satisfaction and loyalty to the provider. However, financial performance (market share) data gathered from 3PLs. In addition, Liu & Lyons (2011) have realized a comparative analysis from the perspective of two sides by gathering data both from 3PL providers and from customers (large manufacturing firms).

(3) *Researches investigating the performance of logistics activities carried out by companies -which main business is not logistics- such as manufacturers, retailers, or wholesalers (Fawcett & Cooper, 1998; Schramm-Klein & Morschett, 2006; Töyli et al., 2008; Green et al., 2008; Daugherty et al., 2009; Fugate et al., 2010)*: In order to measure logistics performance of Finnish small and medium-sized companies, Töyli et al. (2008) asked to the respondents selected within the company, to tell about their perception of their logistics performances and to compare their performances with competitors' and they have conducted analysis by using variables such as logistics cost efficiency, service level and time-related operational metrics. Green et al. (2008) gathered data from factory managers or production managers of USA manufacturers in this study they measured the impact of logistics performances and marketing performances of manufacturing companies on their financial performances. Green et al. (2008) used delivery speed, delivery dependability, responsiveness, delivery flexibility and order fill capacity variables to measure logistics performans. Daugherty et al. (2009) measured logistics performances of Fortune 500 companies by asking logistics and supply chain departments' managers to compare the logistics performance of companies with those of competitors. Schramm-Klein & Morschett (2006) investigated relationships between marketing performance, logistics performance and company performance in retailers, and have measured logistics performance by logistics quality and logistics costs.

Unlike the studies above, Fawcett & Cooper (1998) examined logistics performances by incorporating both the 3PL providers and companies whose focus is non-logistic into the same sample. Fawcett & Cooper (1998) studied large scale manufacturers, retailers and logistics companies situated in North America, Europe and Pacific Region and having a global size logistics organization. In this study, asset management, cost, customer service, productivity, quality have been used as main logistics performance variables.

Our literature review showed that studies about logistics performance differentiate in terms of sector where the data collected and performance items. These were summarizing in Table 1.

2.2 Research Hypotheses Development

This paper relates more spesifically about cost performance, operational performance, relationship performance of 3PLs and customer's loyalty. Although in measurement of performance in traditional sense financial variables such as cash flow and profit margins are used, intangibles and non-financial performance measures pose the greater challenge in today's competitive environment (Gunasekaran & Kobu, 2007). So that financial performance is not included this study.

Operational performance is related with focal work process outputs of companies. According to Panayides & So (2005), operational performance is measured with key competitive success factors and internal indicators of companies. Since 3PLs undertake logistics operations of customers, their success in operations relating with logistics, which is their focal business process, is significantly important. Based on previous literature (da Silveira & Cagliano, 2006; Wang et al., 2010; Liu & Lyons, 2011) operational performance of 3PLs was considered to be related with cost, quality, flexibility, on-time delivery, accurate delivery, undamaged delivery, delivery speed, short delivery lead-time and innovations for new and better services. From these factors, cost was considered as a stand-alone dimension (Stank et al., 2003; Töyli et al., 2008) rather than operational performance in some studies. The primary determining factor in the outsourcing of logistics activities in Turkey is cost. For this reason, it is appropriate to consider cost as a separate factor from operational performance in this study which the sample was selected in Turkey.

Logistics outsourcing was defined as a strategic and long-term relationship between 3PLs and company which is

in customer position (Cho et al., 2008). So, that relationship is a very important issue for both sides. In addition, closer relationship between 3PLs and customer is also positively affect logistics service effectiveness (Panayides, 2007) and supply chain performance (Panayides & So, 2005).

Table 1. Key items of logistics performance

Category	Author (year)	Focus / Content	Companies where the data were collected	Key items of logistics performance	Analysis
Researches in which 3PLs evaluate their own logistic performances	Lai, 2004	Service capability and performance of 3PLs	3PLs in Hong Kong	Overall logistics performance (helping customers to solve problems, cost reductions, handling customer complaints and etc.)	Exploratory factor analysis and ANOVA
	Ellinger et al., 2008	Market orientation, employee development practices and performance in 3PLs	3PLs in USA	Organizational performance (return on investment, productivity per employee, response time, market share, customer satisfaction etc.)	Hierarchical regression
	Wang et al., 2010	Performance drivers of 3PLs	3PLs in China	Operational performance (cost performance and service performance (quality, flexibility, on-time delivery, Innovation)) Financial performance (growth rate in market share, growth in annual sales, growth in return on sales, and growth in return on assets)	Partial least squares (PLS)
	Liu & Lyons, 2011	Relationship between the service capabilities and performance	3PLs and customers (large manufacturers) in Taiwan and UK	Operational performance (quality, cost, flexibility, delivery, innovation) Financial performance (gross profit margin and sales growth)	Cluster analysis, simple regression analysis and multiple regression analysis
	Mothilal et al., 2012	Relationships of the key success factors with operational and financial measures	3PLs in India	Operational performance (on-time delivery) Financial performance (revenue growth and profit growth)	Multiple regression analysis
	Karia & Wong, 2013	Impact of logistics resources on the performance of 3PLs	3PLs in Malaysian	Overall logistics performance (on-time and accurate delivery, quicker responses to customers, better services, lower distribution cost and etc.)	Exploratory factor analysis and stepwise multiple regression analysis
	Karagöz & Akgün, 2015	Correlation between information technology capability and organizational culture with logistics performance and firm performance	International logistics companies located in Turkey	Overall logistics performance (there isn't any information about variables of logistics performance)	Partial least squares (PLS) technique of structural equation modelling
Researches in which logistics performance of 3PLs is evaluated from the customer perspective	Forslund, 2007	Performance management and customers' expected logistics performance	Swedish manufacturers	Operational performance (promised lead time, on-time delivery, rush orders when needed, promised inventory availability, undamaged deliveries, accurate orders)	t-tests
	Wallenburg et al., 2010	Logistics outsourcing performance and loyalty behavior	German manufacturing and trade companies and USA manufacturing and trade companies	Goal achievement (close to the operational issues such as required quality, required time) Goal exceedance (expectations about improvements in cost performance such as "The relationship between costs and overall service performance is much better than expected)	Confirmatory factor analysis
	Li, 2011	Interaction among operational and relational service performance, customer satisfaction and repurchasing intention	USA manufacturers	Special treatment benefits (get competitive prices and shipping rates, reliable in delivery lead time, provides low costs) Value-added benefits (get information about product safety rules and compliance responsibility, understand the logistic service needs of the company, provide pre-sales service) Collaborative benefits (familiar with the business and work with, jointly predicting needs and plans, frequent and constructive communication)	Structural equation modeling

Zailani et al., 2017	Evaluate the impact of the extent of logistics outsourcing practices on logistics outsourcing performance	Electrical and electronics companies in Malaysia	<p>Strategic focus (concentration on core competence areas, able to prioritize types of business and operations, able to rationalize resources allocation)</p> <p>Operative ability (inventory level, order-to-delivery lead time, quality of logistics functions, production flexibility, best logistics technologies and experience, responding quickly, delivery reliability, customer service, geographical coverage for distribution)</p> <p>Financial benefit (lower cost of production, accelerate capital turnover, cost reduction due to economies of scale, increase sales growth, improve net annual profit relative to performance goal)</p>	Partial least squares (PLS) technique of structural equation modelling
Stank et al., 2003	Relationship among logistics service performance, customer satisfaction, customer loyalty and firm market share	3PLs and customers (manufacturers, retailers, distributors/wholesalers) in USA	<p>Operational performance (meet promised deadlines, undamaged orders, accurate orders)</p> <p>Relational performance (know the needs, cooperation stage, make recommendations)</p> <p>Cost performance (lowest total costs, offer competitive prices)</p> <p>Financial performance (market share-this data from 3PLs)</p>	Structural equation modelling
Liu & Lyons, 2011	Relationship between the service capabilities and performance	3PLs and customers (large manufacturers) in Taiwan and UK	<p>Operational performance (quality, cost, flexibility, delivery, Innovation)</p> <p>Financial performance (gross profit margin and sales growth)</p>	Cluster analysis, simple regression analysis and multiple regression analysis
Fawcett & Cooper, 1998	Logistics performance measurement and customer success	Large scale manufacturers, retailers, logistics companies in North America, Europe, Pacific Region	Logistics performance (asset management, cost, customer service, productivity, quality)	---
Schramm-Klein & Morschett, 2006	Impact of logistics performance and marketing performance on overall company performance	Retailers in the German-speaking countries	Logistics performance (logistics quality and logistics costs)	Structural equation modelling
Töyli et al., 2008	Logistics and financial performance	Finnish small and medium-sized manufacturers wholesalers and retailers	<p>Service level (perfect order fulfillment%, order-delivery)</p> <p>Operational metrics (average inventory days of supply, average sales outstanding, average payables outstanding)</p> <p>Logistics costs (transportation and cargo handling, warehousing, inventory and administration costs)</p>	Correlation
Green et al., 2008	Impact of logistics performance and marketing performance on financial performance	Manufacturers in USA	Logistics performance (delivery speed, delivery dependability, responsiveness, delivery flexibility and order fill capacity)	Structural equation modelling
Daugherty et al., 2009	Relationship between marketing and logistics relationships and firm performance.	Fortunes 500 companies	Logistics performance (reduce the time between order receipt and customer delivery, meet quoted or anticipated delivery dates and quantities, provide desired quantities, modify order size, volume, or composition during logistics operation, accommodate delivery times for specific customers)	Structural equation modelling
Fugate et al., 2010	Relationship between logistics performance and organizational performance	Manufacturers	<p>Overall logistics performance (comparison to major competitors)</p> <p>Logistics differentiation (damage free deliveries, finished good inventory, forecasting accuracy, line item fill rate, on time delivery, total inventory turns, time on backorder)</p> <p>Logistics Efficiency (line item fill rate, percent of orders shipped on time, percent of shipments requiring expediting, inventory turns per year, average order cycle time)</p> <p>Logistics Effectiveness (sales, transportation costs, warehousing costs, inventory costs and total logistics costs)</p>	Structural equation modelling

Researches investigating the performance of logistics activities carried out by companies -which main business is not logistics

Loyalty may be defined “as a long-term commitment to repurchase involving both a favorable attitude and repeated patronage” (Li et al., 2012). Gil-Saura et al. (2010) defines customer loyalty from 2 fundamental perspectives. One of them is the effective and significant behaviors of customer who continues to purchase as containing consumption within and the other one is a structure having an emotional component where emotions are important. In a competitive environment where there are different alternatives, to be able to attain customer loyalty, a strong desire is needed (Otim & Grover, 2006; Ramanathan, 2010). Because of many operational factors affect customer loyalty (Ramanathan, 2010), logistics plays an important role in customer loyalty. Additionally, customer loyalty was found to impact supply chain relationship (Li et al., 2012). So, 3PLs need to understand how to enhance loyalty in the relationships with their customers (Wallenburg et al., 2010). Li et al. (2012) indicated that 3PLs establish customer loyalty through better operation performances and good relationship with customers. Good relationship refers 3PL’s performance.

Literature shows performance (especially operational performance and customer relationship performance) has a positive impact on a customer loyalty. Stank et al. (2003) showed that logistics service performance has a positive impact on a customer loyalty. In another study, Wallenburg et al. (2010) supported that performance is an important factor to generate customer loyalty. Li et al. (2012) reported that relational benefits which one of the factors of logistics performance in a business-to-business service environment affect manufacturers’ loyalty.

Aim of this study is to investigate the impact of 3PLs’ logistics performance dimensions on the customer loyalty. Since logistics performance is considered to be a multidimensional structure in the literature, in this study, dimensions of logistic performance were determined with exploratory factor analysis and its validity and reliability were also tested. Afterwards, research hypothesis have been formed in a way to enable testing the correlation between the logistics performance dimensions and customer loyalty and testing the impact of logistics performance on customer loyalty. Accordingly, research hypothesis are as follows:

H1: Logistics performance dimensions (cost performance, operational performance and relationships performance) of 3PL’s and customer’s (manufacturer’s) loyalty influence each other positively.

H2: Logistics performance dimensions (cost performance, operational performance and relationships performance) of 3PL’s are positively impact on customer’s (manufacturer’s) loyalty.

3. Methodology

3.1 Methods of Research

In literature review, it has been seen that logistics performance is a multi-dimensional structure. Therefore, exploratory factor analysis has been used to determine the dimensions of logistics performance at the first stage of the research. H1 hypothesis is tested by measuring the correlation between the logistics performance dimensions which determined with exploratory factor analysis, and customer loyalty. Correlation analysis investigates the relationship between variables.

Afterwards, the impact of logistics performance sub-dimensions (cost, operational and relation performances) on customer loyalty (H2) is tested with multi-dimensional regression analysis. Multi-dimensional regression analysis is used to determine the impact of various numbers of independent variables on a dependent variable.

3.2 Questionnaire Design

Research is conducted by using face-to-face interview method. The scales that are stated on the standard questionnaire form being used a data collection tool, are formed by using 3PL and logistics service performance literature and the expert opinions. Logistics performance scale is adapted from Stank et al. (2003), on the basis of operational performance, relationship performance and cost performance dimensions and by benefiting from the studies of Panayides (2007), Liu & Lyons (2011) and Li (2011). Accordingly, items on the scale related to logistics operations are determined by using the items related to logistics operations from Stank et al. (2003), Liu & Lyons (2011) and Panayides (2007), items related to costs are determined by benefiting from the studies of Stank et al (2003); items related to the relationship between 3PL and customers are determined based on Li’s (2011) marketing literature and the items of Stank et al. (2003) and Panayides (2007).

Customer loyalty is accepted as multidimensional structure but, in literature there is still no consensus about it’s measurement (Wallenburg et al., 2010). For this reason, the customer loyalty scale is created based on the scales of Zeithalm et al. (1996), Stank et al. (2003), Wallenburg et al. (2010) ve Li (2011) which are densely used in service sector.

The draft questionnaire form is tested before the final form being created. Taking into consideration the evaluations of the three experts who have the characteristics of the study population, the necessary arrangements

for the clarity of the questionnaire are made and the final form is given to the questionnaire. All constructs were used 5-point likert scale. It was requested from respondents to evaluate the items between an interval, in which 1= "I absolutely disagree" and 5= "I absolutely agree". Responses range from 1= "I absolutely disagree" and 5= "I absolutely agree".

3.3 Sample

In this study, performances of 3PLs are measured from the perspectives of service buyers which are customers. For this reason, data is collected from manufacturers which are the most important customers of 3PLs. In this case, manufacturers are the buyers who outsource their logistic services and 3PLs are the suppliers of logistic services.

Population of the research was composed of manufacturers operate at Kayseri Organized Industrial Region in Turkey and outsource logistics activities from 3PLs. Due to the difficulty in determining the research population, it is requested from 3PLs to share information about their customers in Kayseri Region and data is collected from 58 companies on the basis of information reached from these companies.

4. Findings of Research

At the first stage of research, with the aim to provide a basic assumption of analysis to be realized, compliance of data set with normal distribution is observed. In Table 2, descriptive statistics for data set and skewness and kurtosis values have been given. It was observed that skewness and kurtosis values related to normal distribution of data ranged between -2 and +2 for skewness and between -7 and +7 for kurtosis (Hoyle & Panter, 1995).

Table 2. Descriptive statistics

Variables	N	Mean	Std. Dev.	Skew.	Kurt.
Our company often gets competitive prices and shipping rates from the 3PLs.	58	3.66	1.052	-.286	-.702
Logistics services with lowest costs are provided.	58	3.53	1.012	.008	-1.066
3PLs strives to reduce logistics costs.	58	3.41	1.200	-.168	-.941
3PL understands the logistic service requirement of our company.	58	3.81	.982	-.526	-.134
3PL is reliable in promised delivery dates.	58	3.90	1.021	-.914	.680
3PL efforts to reduce delivery lead time.	58	3.76	1.065	-.668	-.035
Orders are delivered accurately/correctly (for example items ordered arrived items which are not unordered not arrived and there won't be mistakes regarding quantities).	58	3.76	1.031	-.585	.085
3PL provides pre-sale services such as inspection, localization, one-stop service from door to door.	58	3.69	1.158	-.762	.007
3PL fulfills the conditions required for safe delivery of the product (provides information for safe delivery).	58	3.83	.994	-.752	.593
Orders are delivered without any damages.	58	3.60	.972	-.302	-.318
3PL acts as complying with product safety rules.	58	3.72	.933	-.218	-.788
3PL provides constant notification about changes (early delivery, late delivery, accident etc).	58	4.05	1.146	-1.191	.749
3PL has the capabilities to realize any change asked from them in a quick way.	58	3.72	1.121	-.433	-.570
3PL is familiar with our business.	58	4.05	1.016	-1.042	.539
3PL makes proposals according to our purchase history.	58	3.09	1.144	-.320	-.605
They work for achieve our mutual goals.	58	3.24	1.144	-.496	-.490
By estimating the logistics requirements of our company with 3PL, we plan for the capacity to be allocated to us by 3PL.	58	3.45	1.062	-.633	.123
As a result of constructive communication between 3PL and our company, we can collaborate regarding the adjustments relating with our work.	58	3.47	.941	-.552	.266
We are constantly making proposals for continuous achievements of both of us.	58	3.14	1.034	-.384	-.161
When we have a problem with 3PL, we can easily reconcile.	58	4.02	1.000	-.472	-1.084
3PL provides all services required by our company.	58	3.59	.974	-.015	-.446
Most of the time the service we get from 3PL exceeds our expectations.	58	3.02	1.017	-.139	-.116
3PL which we obtain services is primary logistics service provider of our company in last few years.	58	3.64	1.119	-.709	-.150
Our company will continue doing business with 3PL from which services are being obtained.	58	3.72	1.136	-.915	.327
Our company plans to carry out the business relationship with 3PL from which services are obtained.	58	3.76	1.189	-1.002	.363
Even if all of the features (price, quality etc) would be equivalent our company would obtain logistics services from the same 3PL.	58	3.64	1.195	-.658	-.121

In order to test the validity of logistics performance scale with which the manufacturers being specified on the questionnaire measure the logistics performance of 3PLs and to determine the dimensions of the scale, exploratory factor analysis has been used. Structural reliability of each dimension of logistics performance scale is given in Table 3.

Compliance of data with exploratory factor analysis is evaluated with KMO and Bartlett test of sphericity. KMO test controls whether the sample is sufficient for factor analysis or not and Bartlett test of sphericity controls compliance of questions on the scale for globalization test with the factor analysis. For KMO value, 0.60 and over are acceptable and for Bartlett values lower than 0.05 are acceptable. In Table 3, values related to compliance of data with exploratory factor analysis (KMO=0.882 and Bartlett test of sphericity=0.000) show that size of research sample is sufficient for factor analysis and that the items in the scale are appropriate.

Table 3. Logistics performance factor analysis results

Variables	Factor Loadings
Cost Performance (VE=% 18.271; α=0.866)	
Our company often gets competitive prices and shipping rates from the 3PLs.	.904
Logistics services with lowest costs are provided.	.810
3PLs strives to reduce logistics costs.	.826
Operational Performance (VE=% 30.710; α=0.931)	
3PL understands the logistic service requirement of our company.	.651
3PL is reliable in promised delivery dates.	.768
3PL efforts to reduce delivery lead time.	.683
Orders are delivered accurately/correctly (for example items ordered arrived items which are not unordered not arrived and there won't be mistakes regarding quantities).	.847
3PL fulfills the conditions required for safe delivery of the product (provides information for safe delivery).	.833
Orders are delivered without any damages.	.751
3PL has the capabilities to realize any change asked from them in a quick way.	.713
Relationship Performance (VE=% 26.687; α=0.915)	
3PL makes proposals according to our purchase history.	.775
They work for achieve our mutual goals.	.713
By estimating the logistics requirements of our company with 3PL, we plan for the capacity to be allocated to us by 3PL.	.878
As a result of constructive communication between 3PL and our company, we can collaborate regarding the adjustments relating with our work.	.836
We are constantly making proposals for continuous achievements of both of us.	.821
KMO=0.882, Bartlett's Sph. χ^2=670.536; p=0.000	
Total Explained Variance=% 75.668	

In the exploratory factor analysis conducted, expressions which the corrected item-total correlation coefficients are lower than 0.45 and which lower the reliability of structure in reliability analysis are removed from the scale. Outcomes of exploratory factor analysis show that logistics performance is a three dimensional structure. Three dimensions which are cost performance, operational performance and relationship performance explain 76% of logistics performance. Variance values being given in Table 3 show the ratio which the three dimensions influence each scale. Among logistics performance dimensions, cost performance explains %18.271 of scale, operational performance explains % 30.710 of it and relationship performance explains % 26.687 of it. Besides, as a result of reliability tests, internal consistencies of each dimension are tested with Cronbach's Alpha, cost performance of Cronbach's Alpha value is found out to be 0.866, operational performance is found as 0.931 and relationship performance is found as 0.915. Therefore, with the factor analysis, it is found that logistics performance is a three dimensional structure and that its dimensions are valid and reliable.

In order to investigate whether there is a correlation between logistics performance dimensions being stated above and customer loyalty of manufacturers buying services from 3PLs or not, correlation analysis is conducted. H1 hypothesis which is established related to this, has been tested. Outcomes of correlation analysis related to the correlations between customer loyalty and logistics performance dimensions are given in Table 4. Numerical value of Pearson correlation coefficient on the table shows the strength of correlation between the variables and

the sign of the figure (+, -) shows its direction. Besides, p value on the table defines statistically significant of the relationship. In this case, we can mention about the existence of statistically significant and strong correlation among the dimensions of logistics performance and customer loyalty; cost performance, operational performance and relationship performance. Among these, statistically significant and positive correlation at the level of 47.6% is determined between cost performance and customer loyalty; statistically significant and positive correlation at the level of 39.4% is determined between operational performance and customer loyalty and statistically significant and positive correlation at a level of 34.9% is determined between relationship performance and customer loyalty.

Table 4. Correlation results for customer loyalty and logistics performans dimensions

	Correlation and Sig.	Cost Performance	Operational Performance	Relationship Performance
Customer Loyalty	Pearson Correlation	.476	.394	.349
	P	.000	.002	.007

Analysis results show that cost performance, operational performance and relationship performance of 3PLs and customer loyalty of manufacturers influence each other positively. According to these results, H1 hypothesis is accepted.

In order to test the impact of logistics performance dimensions on customer loyalty (H2), multi-linear regression analysis is used. Preconditions of multiple linear regression analysis are to have normality and linear relationship between variables. Besides, it has been investigated whether there is auto-correlation and multicollinearity problem between the variables or not. One of the approaches used in determining multicollinearity is the investigation of simple correlation matrix. If correlation coefficient between two independent variables is high, it may cause for multicollinearity problem to arise. Because of that, when simple correlation matrices among independent variables in regression model are investigated (Table 4), it is seen that there is no relationship among them which could cause for multicollinearity problem to arise. According to Hair et al. (2006) and Pallant (2005), if VIF is equal to 10 or if it is greater ($VIF \geq 10$), there may be statistically significant multicollinearity problem. It can be seen from Table 5 that there is not such a problem.

The results of fulfilling the requirements of multiple linear regression indicate that there is no disadvantage in interpreting the results of the regression analysis. Therefore, according to ANOVA results that are used in verifying the model in Table 5, regression model is statistically significant ($p = .000$) and interpretable.

Table 5. Regression analysis results for customer loyalty and logistics performans dimensions

Independent Variables	Standardize Beta Coefficient	t-Value	P*	VIF
Cost Performance	.476	4.958	.000	1.000
Operational Performance	.394	4.105	.000	1.000
Relationship Performance	.349	3.639	.001	1.000
Dependent Variable	R ²	Adjusted R ²	F Value	Significance of the Model (p)
Customer Loyalty	.503	.475	18.225	.000

Note. *Significant at the 1% level.

As it can be seen from Table 5, logistics performance dimensions -cost performance, operational performance, and relationship performance- are statistically significant to explaining customer loyalty. Logistics performance can explain an important part of customer loyalty, as corresponding to 48%. Besides, beta coefficient of independent variables of cost performance, operational performance and relationship performance are all statistically significant. In other words, changes in the dependent variable of customer loyalty can be explained by the relationships among logistics performance dimensions, the independent variables of cost performance, operational performance and relationship performance. As it can be seen in Table 5, when each dimension is evaluated separately, it is determined that cost performance has the greatest impact on customer loyalty with a ratio of 0.476. Besides, it is found out that all dimensions of logistics performance influenced customer loyalty in a positive direction with ratios being close to one another. Operational performance and relationship

performance can explain customer loyalty with ratios of 0.394 and 0.349 respectively. As being based on all these findings, H2 hypothesis which tests statistically significance of logistics performance dimensions which are cost performance, operational performance and relationship performance, in explaining customer loyalty has been accepted.

5. Results

Although all over the world 3PL service providers has an emerging demand, they have to differentiate themselves from their competitors and have to work with high performance. As it is a strategic decision for customers to carry out their logistics operations by outsourcing, they wish to work with 3PLs which have high performance and which can offer value-added services. For these reasons, the findings of this study are important for 3PLs which under intensive competitive pressure.

Results of exploratory factor analysis that is used in our research show that logistics performance is a three dimensional structure. Logistics performance is composed of the sub-dimensions of cost performance, operational performance and relationship performance. These three dimensions explain 76% of logistics performance. Among logistics performance dimensions, cost performance explain %18.271 of the scale, whereas operational performance and relationship performance explain % 30.710 and % 26.687 of it respectively.

On the other hand, it is determined through the analysis that logistics performance dimensions which are cost performance, operational performance and relationship performance, can explain an important part of customer loyalty, corresponding to 48%. Logistics performance dimensions have almost equal influences on customer loyalty. Even though there are few number of studies in literature specifying that logistics performance does not have a direct impact on customer loyalty (Ramanathan, 2010), it was found out in majority of studies that logistics performance influences customer loyalty. For example Liu & Lyons (2011) obtained findings that when 3PLs increased their operational performances, customers would be more willing to buy services from them and that their financial performances could be improved at the same time. Liu & Lyons (2011) even stated that excellence in operations of 3PLs was more important than wide-ranging service provision. Related to cost performance, Payaro & Papa (2017) found out that among the reasons why companies get outsourcing services for their logistics operations, low costs and high service quality were important. Panayides (2007) stated that for improving general logistics service performance, strong relations built with the customers played an important role and efforts aiming to improve this relationship should be increased.

As findings similar to those in the literature are obtained in the example of Turkey, by considering the intensive competitive environment, it is seen that 3PLs should give importance to relationship performance in addition to cost performance and operational performance. 3PLs can obtain customer loyalty with cost performance by providing competitive prices and low costs, with operational performance by complying with delivery dates, by shortening delivery period and by providing on time delivery and accurate delivery and with relationship performance by collaborating, by making proposals for improvement, and by solving the problems quickly. It is thought that the results obtained from this study will provide important information to 3PLs about the matters they should pay attention to while they are carrying out their businesses and will make contribution to the companies which are customers to 3PLs, regarding the matters to be considered when choosing a 3PLs. Also it is expected that this study will contribute literature about the assesment of 3PLs performances from the perspective of customers

In this study, the data is collected from the companies in Kayseri Region in Turkey. Future research may expand the scope of the study to other countries and may also adopt cross-cultural perspectives. In future studies, more extensive and progressive studies can be conducted about expectations of the manufacturers and the extent to which these expectations are met.

Accordingly, measurement of 3PLs' service quality and the relationship of quality with logistics performance can be evaluated. Furthermore, the impact of 3PLs' performance to final users' loyalty can be a topic of another research. The performance criteria used can be different and various studies can be conducted related to different performance criteria as well.

References

- Bülbül, H., Ömürbek, N., Paksoy T., & Bektaş, T. (2013). An empirical investigation of advanced manufacturing technology investment patterns: Evidence from a developing country. *Journal of Engineering and Technology Management*, 30, 136-156. <https://doi.org/10.1016/j.jengtecman.2013.01.002>
- Cho, J. J. K., Ozment, J., & Sink, H. (2008). Logistics capability, logistics outsourcing and firm performance in an e-commerce market. *International Journal of Physical Distribution & Logistics Management*, 38(5),

- 336-359. <https://doi.org/10.1108/09600030810882825>
- Chow, G., Heaver, T. D., & Henriksson, L. E. (1994). Logistics performance: Definition and measurement. *International Journal of Physical Distribution & Logistics Management*, 24(1), 17-28. <https://doi.org/10.1108/09600039410055981>
- Da Silveira, G. J. C., & Cagliano, R., (2006). The relationship between interorganizational information systems and operations performance. *International Journal of Operations & Production Management*, 26(3), 232-253. <https://doi.org/10.1108/01443570610646184>
- Daugherty, P. J., Chen H., Mattioda, D. D., & Grawe, S. J. (2009). Marketing/logistics relationships: influence on capabilities and performance. *Journal of Business Logistics*, 30(1), 1-18. <https://doi.org/10.1002/j.2158-1592.2009.tb00096.x>
- Ellinger, A. E., Ketchen, D. J. Jr., Hult, G. T. M., Elmadağ, A. B., & Richey, R. G. Jr. (2008). Market orientation, employee development practices, and performance in logistics service provider firms. *Industrial Marketing Management*, 37, 353-366. <https://doi.org/10.1016/j.indmarman.2007.01.002>
- Fawcett, S. E., & Cooper, M. B. (1998). Logistics performance measurement and customer success. *Industrial Marketing Management*, 27, 341-357. [https://doi.org/10.1016/S0019-8501\(97\)00078-3](https://doi.org/10.1016/S0019-8501(97)00078-3)
- Forslund, H. (2007). The impact of performance management on customers' expected logistics performance. *International Journal of Operations & Production Management*, 27(8), 901-991. <https://doi.org/10.1108/01443570710763822>
- Fugate, B. S., Mentzer, J. T., & Stank, T. P. (2010). Logistics performance: Efficiency, effectiveness, and differentiation. *Journal of Business Logistics*, 31(1), 43-62. Retrieved from <http://www.emeraldinsight.com/doi/full/10.1108/09600030810857210>
- Gil-Saura, I., Servera-Francés, D., & Fuentes-Blasco, M. (2010). Antecedents and consequences of logistics value: And empirical investigation in the Spanish market. *Industrial Marketing Management*, 39, 493-506. <https://doi.org/10.1016/j.indmarman.2008.11.007>
- Green K. W. Jr, Whitten, D., & Inman, R. A. (2008). The impact of logistics performance on organizational performance in a supply chain context. *Supply Chain Management: An International Journal*, 13(4), 317-327. <https://doi.org/10.1108/13598540810882206>
- Gunasekaran, A. & Kobu, B. (2007). Performance measures and metrics in logistics and supply chain management: A review of recent literature (1995-2004) for research and applications. *International Journal of Production Research*, 45(12), 2819-2840. <http://dx.doi.org/10.1080/00207540600806513>
- Hair Jr., J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2006). *Multivariate data analysis*. New Jersey: Pearson-Prentice Hall.
- Hoyle, R. H., & Panter, A. T. (1995). Writing About Structural Equation Models. In R. H. Hoyle (Ed.), *Structural Equation Modelling: Concepts, Issues, and Applications*. London: Sage Publication Inc.
- Jiang, B., & Qureshi, A. (2006). Research on outsourcing results: Current literature and future opportunities. *Management Decision*, 44(1), 44-55. <https://doi.org/10.1108/00251740610641454>
- Karagöz, B. İ. & Akgün, A. E. (2015). The roles of it capability and organizational culture on logistics capability and firm performance. *Journal of Business Studies Quarterly*, 7(2), 23-45. Retrieved from <https://search.proquest.com/docview/1755031979?accountid=16645>
- Karia, N., & Wong C. Y. (2013). The impact of logistics resources on the performance of Malaysian logistics service providers. *Production Planning & Control*, 24(7), 589-606. <https://doi.org/10.1080/09537287.2012.659871>
- Kucukaltan, B., Irani, Z., & Aktas, E. (2016). A decision support model for identification and prioritization of key performance indicators in the logistics industry. *Computers in Human Behavior*, 65, 346-358. <https://doi.org/10.1016/j.chb.2016.08.045>
- Lai, K. (2004). Service capability and performance of logistics service providers. *Transportation Research Part E*, 40, 385-399. <https://doi.org/10.1016/j.tre.2004.01.002>
- Li, F., L. Li, C. Jin, R. Wang, H. Wang, & Yang, L. (2012). A 3PL supplier selection model based on Fuzzy sets. *Computers & Operations Research*, 39(8), 1879-1884. <https://doi.org/10.1016/j.cor.2011.06.022>
- Li, L. (2011). Assessing the relational benefits of logistics services perceived by manufacturers in supply chain.

- International Journal Production Economics*, 132, 58-67. <https://doi.org/10.1016/j.ijpe.2011.03.006>
- Liu, C., & Lyons, A. C. (2011). An analysis of third-party logistics performance and service provision. *Transportation Research Part E*, 47, 547-570. <https://doi.org/10.1016/j.tre.2010.11.012>
- Mentzer, J. T., & Konrad, B. P. (1991). An efficiency/effectiveness approach to logistics performance analysis. *Journal of Business Logistics*, 12(1), 33-61. Retrieved from <https://search.proquest.com/docview/212660593?accountid=16645>
- Mothilal, S., Gunasekaran, A., Nachiappan, S. P., & Jayaram, J. (2012). Key success factors and their performance implications in the Indian third-party logistics (3PL) industry. *International Journal of Production Research*, 50(9), 2407-2422. <https://doi.org/10.1080/00207543.2011.581004>
- Otim, S. & Grover, V. (2006). An empirical study on web-based services and customer loyalty. *European Journal of Information Systems*, 15, 527-541. <https://doi.org/10.1057/palgrave.ejis.3000652>
- Pallant, J., (2005). SPSS survival manual a step by step guide to data analysis using SPSS for Windows (Version 12), 2nd edition, Allen & Unwin, Australia.
- Panayides, P. M. (2007). The impact of organizational learning on relationship orientation, logistics service effectiveness and performance. *Industrial Marketing Management*, 36, 68-80. <https://doi.org/10.1016/j.indmarman.2005.07.001>
- Panayides, P. M., & So, M. (2005). Logistics service provider-client relationships. *Transportation Research Part E*, 41, 179-200. <https://doi.org/10.1016/j.tre.2004.05.001>
- Park, Y., & Jeong, Y. (2016). An empirical analysis on the performance of the third party logistics in the Korean exporter. *Journal of Korea Trade*, 20(1), 97-114. <https://doi.org/10.1108/JKT-03-2016-006>
- Payaro, A., & Papa, A. R. (2017). Logistics outsourcing: Why do not some Italian SMEs adopt the externalization? *Asian Business Research*, 2(2), 46-53. <https://doi.org/10.20849/abr.v2i2.164>
- Ramanathan, R. (2010). The moderating roles of risk and efficiency on the relationship between logistics performance and customer loyalty in e-commerce. *Transportation Research Part E*, 46, 950-962. <https://doi.org/10.1016/j.tre.2010.02.002>
- Razzaque, M. A., & Sheng, C. C. (1998). Outsourcing of logistics functions: a literature survey. *International Journal of Physical Distribution & Logistics Management*, 28(2), 89-107. <https://doi.org/10.1108/09600039810221667>
- Schramm-Klein, H., & Morschett, D. (2006). The relationship between marketing performance, logistics performance and company performance for retail companies. *International Review of Retail, Distribution and Consumer Research*, 16(2), 277-96. <http://dx.doi.org/10.1080/09593960600572399>
- Stank, T. P., Goldsby, T. J., Vickery, S. K., & Savitskie, K. (2003). Logistics service performance: Estimating its influence on market share. *Journal of Business Logistics*, 24(1), 27-55. <http://dx.doi.org/10.1002/j.2158-1592.2003.tb00031.x>
- Töyli, J., Häkkinen, L., Ojala, L., & Naula T. (2008). Logistics and financial performance: An analysis of 424 Finnish small and medium-sized enterprises. *International Journal of Physical Distribution & Logistics Management*, 38(1), 57-80. <https://doi.org/10.1108/09600030810857210>
- Wallenburg, C. M., Cahill, D. L., Goldsby, T. J., & Knemeyer, A. M. (2010). Logistics outsourcing performance and loyalty behavior: Comparisons between Germany and the United States. *International Journal of Physical Distribution & Logistics Management*, 40(7), 579-602. <https://doi.org/10.1108/09600031011072019>
- Wang, Q., Huo, B., Lai F., & Chu Z. (2010). Understanding performance drivers of thirdparty logistics providers in mainland China: A replicated and comparative study. *Industrial Management & Data Systems*, 110(9), 1273-1296. <https://doi.org/10.1108/02635571011087392>
- Zailani, S., Shaharudin, M. R., Razmi, K., & Iranmanesh, M. (2017). Influential factors and performance of logistics outsourcing practices: an evidence of Malaysian companies. *Review of Managerial Science*, 11, 53-93. <https://doi.org/10.1007/s11846-015-0180-x>
- Zeithaml, V. A., Berry, L. L., & Parasuraman, A. (1996). The behavioral consequences of service quality. *Journal of Marketing*, 60, 31-46. <https://doi.org/10.2307/1251929>

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