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COMPARISON OF THIRD PARTY LOGISTICS SERVICE PROVIDER SELECTION CRITERIA FOR TURKISH AND EUROPEAN COMPANIES

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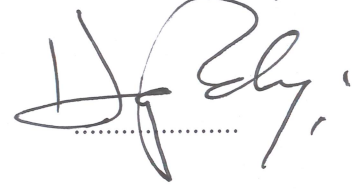
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ABSTRACT

COMPARISON OF THIRD PARTY LOGISTICS PROVIDER SELECTION CRITERIA FOR TURKISH AND EUROPEAN COMPANIES

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In this study, third-party logistics (3PL) service provider selection criteria between Turkish and European companies are compared. A survey, consisting of two main parts, is prepared for comparison. The first part of the survey contains questions regarding the general information about the companies and the second part contains questions to determine the importance degree of thirteen third-party logistics provider selection criteria, which are determined based on the literature review. The Five-point Likert scale is used in the survey, where 1 indicates strongly disagree, 2 disagree, 3 undecided, 4 agree and 5 strongly agree. One hundred three responses are received from Turkey and 36 are received from Europe for the survey. The data is analyzed using SPSS software. Dependability, service quality and management quality are determined as the most important criteria for third-party logistics service provider selection in Turkey, and dependability, flexibility and good communication skills are determined as the most important criteria for third-party logistics service provider selection in Europe according to survey results. Parametric and nonparametric, Independent Samples T and Mann Whitney U tests are performed in SPSS for survey response analysis. According to the results of the tests, system capabilities, location and financial stability criteria are statistically different between Turkey and Europe. These criteria are much more important for Turkish companies compared to the European companies. Lastly, a comparison is made for the selection criteria according to participating company profiles.

Keywords: 3PL service provider, selection criteria, outsourcing

ÖZ

ÜÇÜNCÜ PARTİ LOJİSTİK HİZMET SAĞLAYICISI SEÇİM KRİTERLERİNİN TÜRK VE AVRUPALI ŞİRKETLER İÇİN KARŞILAŞTIRILMASI

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Bu çalışmada, Türk ve Avrupalı şirketler arasındaki üçüncü parti lojistik servis sağlayıcı seçim kriterleri kıyaslanmaktadır. Değerlendirme için iki ana bölümden oluşan bir anket hazırlanmıştır. Anketin ilk kısmında şirket hakkında genel bilgiler sorulmuştur. İkinci kısımda ise literatür taramasına dayalı olarak belirlenmiş 13 tane üçüncü parti lojistik servis sağlayıcısı seçim kriterinin değerlendirilmesi istenmiştir. Bu kriterlerin önem dereceleri beş puanlık Likert ölçeği ile değerlendirilmiştir. Ölçekteki 1- kesinlikle katılmıyorum, 2-katılmıyorum, 3-kararsızım, 4-katılıyorum ve 5- kesinlikle katılıyorum anlamına gelmektedir. Anket için Türkiye'den 103 ve Avrupa'dan 36 cevap alınmıştır. Türkiye'deki şirketler için güvenilirlik, hizmet kalitesi ve yönetim kalitesi en önemli kriterler olarak belirlenmiştir. Avrupa'daki şirketler için ise güvenilirlik, müşteri odaklı hizmet çeşitliliği ve iyi iletişim becerileri en önemli kriterler olmuştur. Anket cevaplarının analizi için SPSS yazılımı kullanılarak hem parametrik hem de parametrik olmayan testler yapılmıştır. Bu testler Bağımsız Örneklem T Testi ve Mann Whitney U testidir. Her iki test sonucuna göre; sistem kaynaklarının yeterliliği, lokasyon ve mali istikrar kriterleri açısından Türkiye ve Avrupa arasında istatistiksel olarak farklılık bulunmuştur. Bu kriterler, Avrupa'ya kıyasla Türkiye için daha önemlidir. Son olarak, SPSS kullanılarak katılımcı firmaların özelliklerine göre seçim kriterlerinin nasıl değiştiği incelenmiştir.

Anahtar Kelimeler: Üçüncü parti lojistik sağlayıcısı, seçim kriterleri, dış kaynak kullanımı

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TEXT OF OATH

I declare and honestly confirm that my study, titled "COMPARISON OF THIRD PARTY LOGISTICS PROVIDER SELECTION CRITERIA FOR TURKISH AND EUROPEAN COMPANIES" and presented as a Master's Thesis, has been written without applying to any assistance inconsistent with scientific ethics and traditions. I declare, to the best of my knowledge and belief, that all content and ideas drawn directly or indirectly from external sources are indicated in the text and listed in the list of references.

Gizem Sağım

Signature

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September 6, 2018

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CHAPTER 1
INTRODUCTION

Supply chain management is the integration of the entire business processes from supplying goods and services to the final delivery of outputs to the end users. It can be defined as "a set of approaches utilized to efficiently integrate suppliers, manufacturers, warehouses, and stores, so that merchandise is produced and distributed at the right quantities, to the right locations, and at the right time, in order to minimize system-wide costs while satisfying service level requirements." (Simchi-Levy, Kaminsky & Simchi-Levy 2003, p.1).

Supply chain management requires the control of material flow among sellers, factories, warehouses, and customers. The goal of each member of the supply chain is to transfer the newest information to other businesses in the chain and provide a better balance between the supply and the demand. The short-term aim of the supply chain is to remove unnecessary inventories and increase the response speed to customers. The long-term aim is to increase market share and profit and meet customer expectations by delivering the right product at the right place and time (Çiçek and Bay, 2007).

Logistics, as old as human history, has become more important, especially after World War II. An effective logistics management was necessary for the military operations to be successful. The most accepted definition of logistics is made by the Council of Supply Chain Management Professionals (2016); logistics "plans, implements, and controls the efficient, effective forward and reverse flow and storage of goods, services and related information between the point of origin and the point of consumption in order to meet customers' requirements." Nowadays, the reason for the popularity of the concept of logistics increased is globalization. Any area of logistics, such as transportation or storage, is not sufficient by itself because of globalization.

Corporations expand their businesses to foreign markets and try to exist in different areas of the world to protect their competitive advantage on a global scale. Logistics operations become more complicated and expensive in the global market. Logistics is the most critical part of the supply chain, which has a great impact on the efficiency and the cost of the entire supply chain. Companies should identify their core competencies and determine the areas that they will require support. Most of the companies do not have to be in charge of logistics activities in the global markets. Therefore, logistics outsourcing or third-party logistics (3PL) is a necessity for the most of these companies in the global market. A 3PL service provider offers services such as transportation, warehousing, logistics information system, inventory management, and packaging. Companies may increase customer satisfaction by outsourcing these activities due to focusing on their core activities (Liu and Wang, 2009).

Logistics costs can be reduced by using 3PL because of economies of scale (merits from large truck fleets, warehouses, etc.) and economies of scope. Also, firms can reduce capital investments by outsourcing and this reduces financial risks. Logistics investments such as buying trucks or warehouses required to high costs (Vasiliauskas and Jakubauskas, 2007). Moreover, strategic and operative risks of the company are reduced by outsourcing because assets are outsourced rather than making investments and missed deadlines, unexpectedly surging costs or quality problems in logistics processes are under the responsibility of 3PL (Çakır, 2009).

1PL- First party logistics provider is a company or an individual which have cargo, freight, goods or merchandise requiring transportation from one point to another. The term of first party logistics providers refers to both cargo sender and cargo receiver.

2PL- Second party logistics (asset-based logistics) provider is a company that has its own transportation means such as trucks, warehouses, airlines, ships etc. 2PL logistics providers ensure traditional transportation and warehousing services (Kotlars and Skribans, 2016).

3PL- A Third-party logistics (light asset logistics) provider is a company that uses their partners' assets such as vehicles, warehouses, airlines, ships to meet

requests of clients. They manage 2PL's assets and use own IT tools, customer service, and cargo tracking and tracing. They work as an intermediary between 1PLs and 2PLs (Kotlars and Skribans, 2016).

4PL- A Fourth-party logistics provider is "a supply chain integrator who assembles and manages the resources, capabilities, and technologies of its organization with those of complementary service providers to deliver a comprehensive supply chain solution" (Bade and Mueller,1999, p. 80). Supply chain consulting companies can be considered as 4PLs.

5PL- There is a new approach which is defined as fifth party logistics. 5PL provider is a company that manages networks of supply chains with an extensive e-business by focusing on all logistics operations. 5PL providers manage by focusing on ensuring innovative logistics solutions at the strategic level during the whole supply chain. Effective integration of IT and computer systems are the key factors to be successful in these applications (Hosie et. al., 2007).

When the 3PL-4PL differences are examined, the applicability of 4PL is negotiable. Companies may not afford restructuring their entire supply chain which can exceed one year in a fierce competitive environment. However, 3PL companies can deliver the required services to their customers in a very short period. In this case, the claim to 4PL can be expected to be extremely low. According to the study of Ozdemirel, which presents the results of / developed a survey about using 4PL providers in Turkey, the companies do not prefer getting service by 4PL companies in Turkey (Ozdemirel, 2004).

Comparison of the importance degree of 3PL service provider selection criteria between companies Turkey and Europe is performed in this study. Thirteen of the most commonly used 3PL service provider selection criteria are determined based on the literature review. The criteria selected for evaluation are price offering (reducing costs such as labor, facilities, equipment, etc.), dependability (low shipment error rate, on-time delivery, document accuracy, etc.), service quality (safety, global capabilities, having quality system certifications, effectiveness, etc.), system capabilities (company's assets, equipment, IT infrastructure, technological capabilities, etc.), flexibility (responsiveness, customized service, variety of services, etc.),good

communication skills (customer support services, accessibility of contact persons in urgency, personal relationships, client relationship etc.), cultural fit (easy to work with), location, reputation (experience of the company in the similar industry), trained logistics personnel, value- added services (kitting and assembling, packaging and repackaging, labeling, quality inspection, etc.), financial stability (profitability, market share of the company, etc.) and management quality (problem solving capability, continuous improvement, key process indicators measurement and reporting, etc.). An online survey is prepared in Turkish and English. Questionnaires are sent to companies who get 3PL provider service in Turkey and Europe. General information about the company is asked at the first part and criteria are scored according to the 5-point Likert scale (1-Strongly Disagree, 2-Disagree, 3-Undecided, 4-Agree, 5-Strongly Agree) at the second part to measure the importance degree of 3PL selection criteria.

1.1. Problem Definition

Operational blindness is the problem that the methods used in the company, the mistakes in the applications, the potential opportunities and risks in the future cannot be perceived by employees. Employees get used to the current business flows at the company, so it becomes difficult to identify problems, risks, and opportunities. Moreover, this situation is much more distressing for the managers. Indeed, managers who are busy with daily problems may find it difficult to find solutions to problems that are very easy to solve due to business blindness and they can cause significant losses to the company or deprive the company of high profits (Altınay et. al., 2012).

The pattern of global business is frequently changing. Due to trends towards globalization and the development of integrated logistics and information systems, companies reshape their business models around the world. They need to satisfy their customers' requirements from any segment of the market to stay competitive in the world market (Kumar, 2007).

3PL providers can also have operational blindness because of working with the same companies. They cannot improve themselves due to serve similar services. Therefore, they need to think outside the box and get a new perspective in order to enter different markets for keeping pace with globalization.

Turkey is a natural logistics center due to its geographical location. Foreign trade, especially exports, is a major factor in countries' ability to increase economic growth rates and to gain more share from global markets. Sustainability of export depends on countries which are exporting high added value products and increasing product and market diversity. For this, nationally, Turkish companies need to develop export and marketing strategies, establish long-term cooperation by focusing on these strategies and increase their market share rather than profit margins (Erkan,2014).

1.2. Objectives of the Study

Importance of using 3PL is increasing in the world because of globalization. 3PL has become more of an issue in Turkey due to its geographical location and economic condition (Gürcan et. al., 2016).

The purpose of this study is to compare 3PL service provider selection criteria between Turkish and European companies to help and improve 3PL service providers' capabilities at the local and global scale. The study aims to ensure a competitive advantage to native 3PL providers. Also, the study aims to prevent operational blindness by comparing the preference of two different industry region's selection criteria.

CHAPTER 2
LITERATURE REVIEW

3PL service provider selection is a multi-criteria decision-making problem. Therefore, it attracts the attention of many researchers. The literature review is performed to determine the most commonly used 3PL service provider selection criteria and selection methods by the companies.

Lehmusvaara et. al. (1999) proposed an integrated approach for truck carrier selection by combining analytical hierarchy process (AHP) and mixed integer linear programming. Three main criteria and 9 sub-criteria, which are customer service (reliability, flexibility, quality, and facilities/equipment), pricing and rates (basic rates, and flexibility of rates), and strategic compatibility (long-term relationship, strategic fit, and continuous improvement), are determined.

Thakkar et. al. (2005) proposed a hybrid approach by using interpretive structural modeling (ISM) and analytical network process (ANP) to select a 3PL provider. Twenty six selection criteria are determined, which are financial background, experience, readiness to work under brand name of contact-giving organization, necessary certifications, trained logistics personnel, IT infrastructure, flexibility, margins provided to organizations by 3PL, readiness to long-term contact, location, operational needs, readiness to share experiences in system design, attitude toward just in time practices, information sharing, trustworthiness, margins provided to contractor by 3PL, attitude toward open-book accounting, honesty and reputation, reliability, origin to contractor, ability to understand the needs of consignor, attitude toward hygienic practices, conditions for subtracting, confidentially of data, negotiation of escape clause. This approach is used in real life case of Khadi and Village Industry Commission, (India) organic food sector. Criteria are classified into four sectors which are autonomous, dependent, linkage, and driver/independent in ISM method to show the relationship between criteria. They use the ISM due to providing relationship inputs for ANP. After applying the ANP, the best candidate of 3PL is chosen.

Bottani and Rizzi (2006) proposed a multi-attribute approach to rank and select the most suitable 3PL provider. Selection criteria that are the breadth of service, business experience, characterization of service, compatibility, financial stability, the flexibility of service, performance, price, physical equipment and information systems, quality, strategic attitude, trust, and fairness are determined from the literature review. They adopted fuzzy set theory due to weights between 3PL candidates and selection criteria are better with linguistic judgments rather than numerical values. After applying the TOPSIS (Technique for Order Preference by Similarity to Ideal Solution), the best candidate is chosen.

Işıklar et. al. (2007) proposed an intelligent decision support framework for effective 3PL evaluation and selection. The model is created by integrating case-based reasoning, rule-based reasoning and compromise programming techniques in a fuzzy environment. The selection criteria are divided into two groups in this study. The first group includes criteria which are financial stability, successful track record, similar size, comparable culture, similar values and goals, and fit to develop a sustainable relationship to focus strategic aspects of the 3PL providers. The second group includes criteria information technology, performance, quality, cost, and services to measure important aspects of the supplier's business. Customers may select the degree of importance and the ratings of each business evaluation criterion when she/he decides on logistics service in the intelligent decision support tool. Decision-making time reduced and making right choices provided by this decision tool.

Jharkharia and Shankar (2007) proposed a comprehensive methodology for the selection of 3PL provider. The method has two parts. The first part is scanning of suitable 3PL providers. The second part is applying the ANP-based final selection. 3PL selection criteria are determined that are compatibility with the users, cost of service, quality of service, the reputation of the company, long-term relationships, performance measurement, willingness to use logistics manpower, flexibility in billing and payment, quality of management to construct ANP model. After application of ANP, compatibility between customer and 3PL service provider is determined as the most important criterion and the best candidate is chosen according to results.

Göl and Çatay (2007) highlighted the efforts of a Turkish automobile company for restructuring its supply chain for exporting. The company redesign its logistics operation and select 3PL service provider. AHP methodology is applied for selection. Five main titles for criteria are determined that are general company considerations, capabilities, quality, client relationship, labor relations. Total of 27 criteria is considered for the study. The analysis helps the company to consider different aspects for its supply chain problem rather than only financial considerations. Moreover, the project shows that 3PL providers should adopt the customer expectations rapidly in Turkey.

Efendigil et. al (2008) aimed to provide an integrated fuzzy AHP-ANN (Analytical Hierarchy Process - Artificial Neural Networks) model for the selection of the most appropriate third-party reverse logistics provider to help decision makers. Twelve selection criteria are determined that are on time delivery ratio, confirmed fill rate, service quality level, unit operation cost, capacity usage ratio, total order cycle time, system flexibility index, integration level index, increment in market share, research and development ratio, environmental expenditures, and customer satisfaction index to construct the model. A numerical example is also included in the study in order to show the steps of the proposed model.

Soh (2009) proposed a decision model for selecting 3PL providers by using fuzzy analytical hierarchy process. Selection criteria are identified in order for evaluating alternatives with a literature survey. Five main criteria are specified that are finance, service level, relationship, management, and infrastructure. Also, 13 sub-criteria are identified which are logistics costs, financial stability, reliability and timeliness, quality of service, flexibility and responsiveness, compatibility, trust and fairness, benefit and risk sharing, performance management, security and safety, reputation and experience, information technology capability, logistics man power. Applying fuzzy AHP with these criteria, best alternative of 3PL provider is chosen and the study shows that information technology capability is the most important criterion for 3PL selection.

Liu and Wang (2009) proposed an integrated fuzzy approach for the selection of 3PL provider alternatives. This approach consists of 3 steps that are

using fuzzy Delphi method for identifying important selection criteria, applying fuzzy inference method for eliminating unsuitable 3PL provider candidates and developing a fuzzy linear assignment approach for the last selection. A case study is performed to demonstrate to the proposed method. Twenty-six 3PL selection criteria are determined by experts from literature, then unimportant criteria are eliminated so 17 criteria remained. After then, inappropriate 3PL candidates are eliminated and the best alternative is chosen.

Gupta et. al. (2010) proposed a methodology by integrating fuzzy Delphi and fuzzy TOPSIS method. A case study is made to select a 3PL provider for an automobile company in north India. Thirty selection criteria are determined from the literature review. Unimportant criteria are eliminated by the Delphi method and 13 criteria remained such as experience in the same field, cultural fit, quality of service, financial stability, reputation, and price. Possible candidates of the 3PL provider are listed and unqualified providers are eliminated by the same method. Then, the best supplier is chosen with fuzzy TOPSIS.

Kumar and Singh (2012) proposed an integrated approach of fuzzy AHP and TOPSIS to evaluate 3PL providers for effective supply chain management. Selection criteria are determined as logistics cost, service quality, compatibility with the user, consignment tracking capability, on-time delivery, information systems, total revenue, geographical coverage and the range of service provided from the literature review. The relative weights of criteria are determined and 3PL alternatives are ranked by using fuzzy AHP with TOPSIS. According to importance weights, logistics cost and service quality are the most important criteria. The best 3PL alternative that has the low cost is chosen with TOPSIS analysis.

Falsini et. al. (2012) proposed an integrated model by combining AHP, data envelopment analysis (DEA) and linear programming (LP) for evaluation and selection of 3PL provider. Seven main selection criteria are determined that are quality and reliability, the speed of service, flexibility, costs, equipment, operators' safe, environmental safeguard. AHP is one of the most popular methodologies to evaluate and select a 3PL service provider. However, there is a limitation that if the respondent's consistency ratio (CR) exceeds a certain threshold, some results can be rejected so AHP interviews should be repeated.

This causes a waste of time. Proposed model aims to prevent the limitation of AHP. An LP model is defined to correct the AHP weights with considering past performance of 3PL providers by using DEA rather than discarding high CR values. The model is validated with a real-life case study in an international logistics service provider and best alternative is chosen.

Bansal and Kumar (2013) studied for bringing a new perspective in multi-criteria decision making in 3PL provider selection. They suggested a hybrid model which consists of AHP and PROMETHEE (Preference Ranking Organization Method for Enrichment Evaluation). Major selection criteria that are logistic cost, quality of service, compatibility, information technology capability, delivery performance, trust factor, the geographical range of services, the number of value-added services and environmental sustainability were determined via the literature review. AHP is used to find relative importance among selection criteria and PROMETHEE is applied to find the complete ranking of four alternative 3PL providers. After rankings, the best alternative is chosen for the buyer. They observed that this model is an effective and easier tool to select a 3PL provider and also the model may guide solving similar problems in the future.

Daim et. al. (2013) studied to propose a decision model for selecting a 3PL provider. Cost of service, service level performance and quality, comprehensive global capabilities, information technology capabilities and integration, expertise and experience specific to your industry, strong local presence and capability are determined as selection criteria by deliberations and literature review. A survey study is made with experts and exporters as two different groups to construct the pairwise matrix to apply AHP and compares weights of criteria according to these groups' opinions. Although, service and cost criterion are the two top-ranked criteria for both groups, the global capabilities and IT capabilities are the opposite. They made this comparison for the first time in the literature.

Percin and Min (2013) proposed a hybrid quality function deployment (QFD) and fuzzy decision-making methodology for solving a 3PL provider selection problem. Selection criteria are determined as costs, timeliness (including on-time order fulfillment and delivery), service quality, flexibility, and reputation (brand recognition) from the literature review and interviews with the project team which consists of four engineers and three managers. Firstly, QFD is used to

structure customer needs and match them to the specialties of candidate 3PL providers. Then, fuzzy linear regression is applied to determine the relationship between 3PL user's needs and 3PL specialties. Lastly, a zero-one goal programming is applied in order to select the most suitable 3PL alternative.

Aguezzoul (2014) presented a literature review by scanning 67 articles which are published within 1994-2013 about the decision of 3PL provider selection in terms of criteria and methods. Firstly, 11 main selection criteria are identified that are cost, relationship, services, quality, information & equipment system, flexibility, delivery, professionalism, financial position, location, reputation. Cost is the most important criteria for selection and followed by relationship, services, and quality. Secondly, MCDM techniques, statistical approaches, artificial intelligence, mathematical programming, and hybrid methods are determined as 3PL service provider evaluation methods in this study.

Yayla et al. (2015) proposed a hybrid data analytic methodology for 3PL transportation provider evaluation by using fuzzy multi-criteria decision making. Selection criteria are gathered from the literature review and the final decision is made by experts purchasing, sales, logistics and finance departments. Eleven criteria are determined such as optimization capabilities, firm's infrastructure, technological sophistication, quality of dispatch personnel, delivery reliability, the response in the emergency, on-time delivery, similar values, provider reputation, financial health, and transportation cost. Selection criteria weights are determined by using Buckley's fuzzy-AHP extension algorithm. Then, the fuzzy-TOPSIS technique is applied by using fuzzy-AHP results for selecting most suitable 3PL providers.

Hwang et al. (2016) studied determining main third-party logistics provider selection criteria in the integrated circuit manufacturing industry in Taiwan to cope with globalization by using outsourcing. They use the triangulation method which combines qualitative and quantitative approaches. The qualitative part includes discussions among focus group, senior management in integrated circuit manufacturing industry and 3PL industries for creating decision framework of the 3PL service provider selection criteria. Two-level hierarchy is developed with six criterion groups which are cost, service, quality assurance, intangible and information technology and 22 sub-criteria. The quantitative part includes an

analytical hierarchy process for finding relative importance of 3PL selection criteria. After ranking sub-criteria in six main criteria; document accuracy, problem-solving capability, continuous cost reduction, value-added services and associated cost control capability is determined as the top five criteria. Lastly, an in-depth interview is made for interpretation of the results.

Toksoy (2016) aims to rank the criteria which are used in the 3PL provider selection problems by the DEMATEL (The Decision-Making Trial and Evaluation Laboratory) method and to develop a model that determines the risk of the alternatives by using the Fuzzy Regression Analysis with the help of the criteria. Ten criteria are selected from the literature review such as financial position, cost, conformity to specifications, technological capability, past performance and experience, social and environmental considerations, lead time, delivery quality, client relationship, and location. According to their importance degree, four criteria are eliminated that are social and environmental considerations, delivery condition, client relationship, location. After then 3PL alternatives are determined from the market. The least risky alternative is chosen at the end of the study.

Kucukaltan et. al. (2016) proposed a decision support model for identification and prioritization of key performance indicators in the logistics industry from logisticians' perspective. Forty-three indicators are determined by in-depth literature review and experts' opinions. All indicators are placed in one of four appropriate perspectives of the BSC model which are financial, learning and growth, internal process and stakeholders. Then, an online survey is prepared and sent to related people. A score from the 5-point Likert scale (1-not important, 2-slightly important, 3-somewhat important, 4-important, 5-very important) are assigned for 43 indicators to determine the degree of importance for each one. After the mean values of the indicators are ranked in descending order, the reliability test is made to check the overall reliability of each perspective. All reliability scores are in acceptable limits. Then, 43 indicators are reduced to 15 in the stakeholder-informed BSC decision model to construct the ANP model. These indicators are cost, profitability, sales growth, equity ratio, IT infrastructure managerial skills, educated employee, social media usage for brand building, on-time delivery, the circumstance of delivery transport capacity, warehouse

capacity, customer satisfaction employee satisfaction, government satisfaction. An ANP pairwise comparison survey study is prepared and sent to experts with Saaty's 1-9 scale. Three experts scored the pairwise comparison of the indicators. As a result, the educated employee is determined as the most important indicator for the competitiveness of logistics companies.

Gürcan et. al. (2016) applied the AHP methodology to solve a 3PL service provider selection problem for a company in İstanbul with tangible and intangible criteria. Compatibility, financial performance, the reputation of the 3PL provider and long-term relationship are determined as the selection criteria from the literature review. Three candidates of logistics service provider are determined from the sector. While compatibility is found as the most important criterion for selection, long-term relationship is the least importance among criteria. The best candidate is chosen at the end of the study.

It is seen that the comparison of the 3PL service provider selection criteria between Turkish and European companies is studied for the first time in the literature.

Forty selection criteria are determined from the literature review as given in Appendix 1. It is seen that some criteria have the same meaning and some criteria include the other criteria's meaning. Therefore, an elimination is made among criteria. Finally, thirteen main criteria that are most commonly used in the literature are chosen.

A summary table for the selection criteria is given in Table 2.1. The most commonly observed selection criteria from the literature are price offering, service quality, and system capabilities based on total column. On other hand, the least used criteria are trained logistics personnel, management quality, and value-added services. The explanations of the selection criteria are given the below.

Price offering: Outsourcing cost such as labor, facilities, equipment should be minimum for competition. (Çakır, 2009)

Dependability: Trust is required for long-term partnerships**.** The customer expects low shipment error rate, on-time delivery, document accuracy, etc. If customer needs are not met, trust does not occur. (Bottani and Rizzi, 2006)

Service quality: Service quality of 3PLs have many perspectives such as safety, global capabilities, having quality system certifications, effectiveness, etc.

System capabilities: It refers to many aspects such as the company's assets, equipment, IT infrastructure, technological capabilities, etc.

Flexibility: Flexibility is the capability of the 3PL service providers to respond to changing customer requests and conditions. It shows that how the 3PLs overcome unexpected situations. It is also known as responsiveness, customized service, the variety of services, etc. (Wang et. al., 2015)

Good communication skills: It includes customer support services, accessibility of contact persons in urgency, personal relationships, client relationship etc.

Cultural fit: Ability to deal with company culture and policies. It refers easily to work with the companies. (Göl and Çatay, 2007)

Location: It indicates that whether the company which receives the service and the outsourcing company are in the same city.

Reputation: It emphasizes how the company illustrates in the industry and related to the experience of the company in the similar industry. It is important for the first impression. (Hwang et. al., 2016)

Trained logistics personnel: People who have the expertise of a particular field increases the flexibility of the supply chain. (Thakkar et. al., 2005)

Value-added services: The capability of providing high-value features to customers such as kitting and assembling, packaging and repackaging, labeling, quality inspection, etc. (Hwang et. al., 2016)

Financial stability: It provides service continuity and revamps equipment regularly that are used in the logistics operations. It is related to profitability and market share of the company. (Aguezzoul, 2014).

Management quality: It refers to many perspectives such as problem-solving capability, continuous improvement, key process indicators measurement and reporting, etc. (Aguezzoul, 2014).

Table 2.1. Summary Table of 3PL Provider Selection Criteria

	Price offering	Service quality	System capabilities	Dependability	Good comm. skills	Financial stability	Flexibility	Reputation	Cultural fit	Location	Trained logistics personnel	Management quality	Value-added services
Lehmusvaara et. al. (1999)	X	X	X	X	X		X					X	
Thakkar et. al. (2005)	X	X	X	X	X	X	X	X		X	X		
Bottani&Rizzi (2006)	X	X	X	X		X	X	X	X			X	
Işıklar et. al. (2007)	X	X	X		X	X			X		X	X	
Jharkharia& Shankar (2007)	X	X			X		X	X	X		X	X	
Göl and Çatay (2007)	X	X	X		X	X	X	X	X	X	X	X	
Efendigil et. al (2008)	X	X		X	X	X	X					X	
Soh (2009)	X	X	X	X	X	X	X	X	X		X		
Liu&Wang (2009)	X	X	X	X	X	X	X	X	X	X	X	X	X
Gupta et. al. (2010)	X	X	X	X	X	X	X	X	X	X	X	X	X
Kumar& Singh (2012)	X	X	X	X		X			X	X			
Falsini et. al. (2012)	X	X	X	X			X						
Bansal&Kumar (2013)	X	X	X	X	X				X	X			X
Daim et. al. (2013)	X	X	X					X		X			
Percin and Min (2013)	X	X		X			X	X					
Aguezzoul (2014)	X	X			X	X	X	X		X			X
Yayla et al. (2015)	X	X	X	X		X	X	X			X		
Hwang et al. (2016)	X	X	X	X	X	X	X	X	X	X		X	X
Toksoy (2016)	X		X	X	X	X		X	X	X			
Kucukaltan et. al. (2016)	X		X	X	X	X					X		
Gürcan et. al. (2016)					X	X		X	X				
Total	20	18	16	15	15	15	14	14	12	10	9	9	5

CHAPTER 3
METHODOLOGY

The survey is developed to compare 3PL service provider selection criteria between companies in Turkey and Europe.

The important principles in preparing surveys are that the survey questions should be clear and understandable and should not include open-ended and leading questions (DeVaus, 2002). Privacy of the collected data is also an important issue in the development of surveys and it would enhance the objectivity of the survey results. The five-point Likert scale is used for comparing the level of importance of the 3PL provider selection criteria in the developed survey.

The evaluation survey used in this study is consisted of two parts. The first part is consisted of the questions about general information of the company and the second part is consisted of the questions on the importance degree of the selection criteria. Thirteen main selection criteria are determined from the literature review. It takes approximately 10 minutes to complete the survey on average. Personal information is not required to fill in the survey. No personal information is stored so the survey respondents remained anonymous.

The most commonly used scale setting technique is the "Likert Scale" in surveys, especially in applied social science studies. Likert Scale is developed by Lensis Likert to measure psychological attitudes scientifically in 1932. The 5-point scale is the most commonly used scale from strongly disagree to strongly agree. The 4-point Likert scale is not allowed to undecided option. If there is no neutral point, respondents are forced to choose. (Bertram, 2007)

Respondents may not distinguish Likert scale points if they are in the wide range such as 7 or 10 and they may not want to fill out the survey. The 5-point scale is clear and easy for the score. The respondents performed the selection and the comparison between the selection criteria based on the level of importance.

Five-point Likert scaling is used in the survey with the following categories: "Strongly Disagree", "Disagree", "Undecided", "Agree", "Strongly Agree".

Positive proposals are used in the survey. The surveys are created by using Google Forms (Sağım and Öner, 2017). They are given in Appendix 2 and Appendix 3. The link to the questionnaire is mailed to authorized people who are working in the related departments. Mail addresses are found from business cards, on the internet or the websites of industry chambers. The survey is sent to 2370 different companies in Turkey and Europe. Total of one hundred and thirty-nine responses, 103 from Turkey and 36 from Europe, are received in 6 months. The number of respondents for Europe is considered to be adequate to perform the analysis in this study. Results of the survey are analyzed by using SPSS software (IBM,2012).

CHAPTER 4
RESULTS AND DISCUSSIONS

A hundred three participants from Turkey and 36 participants from Europe filled out the survey. Participating companies' characteristics are examined in the first part of the survey. Importance degree of selection criteria is examined in the second part of the survey.

4.1. Participating Companies Characteristics

The first question is about the number of employees who works for the participating company. The most participation is provided by companies which have less than 100 employees with 41 responses (39.81% of all responses) in Turkey and with 19 responses (52.78% of all responses) in Europe as shown in Figure 4.1a and 4.1b. The frequencies of question 1 are given in Table 4.1.
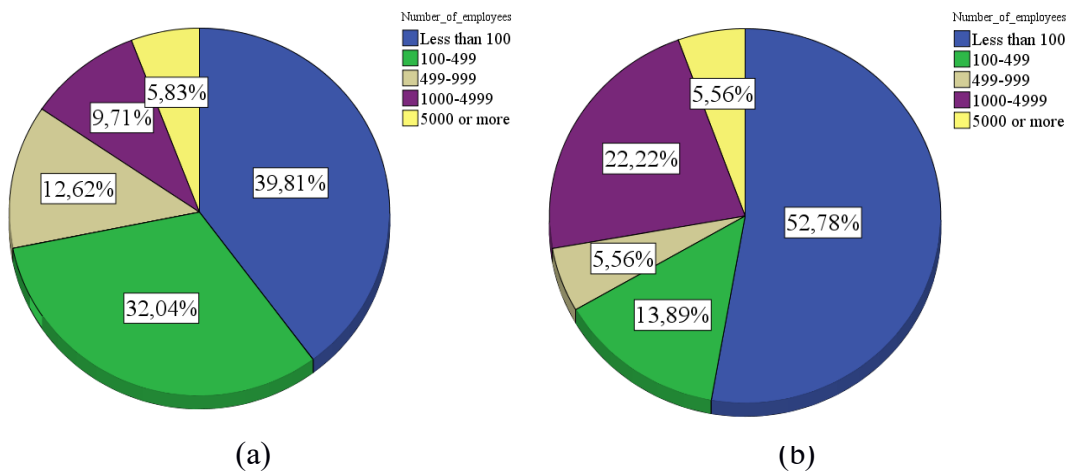
Figure 4.1. The Number of Employees of Participating Companies: a) Turkey; b) Europe

Table 4.1. The Number of Employees of Participating Companies

	Turkey		Europe	
	Frequency	Percent	Frequency	Percent
Less than 100	41	39.8	19	52.8
100-499	33	32.0	5	13.9
499-999	13	12.6	2	5.6
1000-4999	10	9.7	8	22.2
5000 or more	6	5.8	2	5.6
Total	103	100	36	100

The second question is about the foundation year of companies. The most participation is provided by companies which have been founded between 2001 and 2010 with 27 responses (26.21% of all responses) in Turkey as shown in Figure 4.2a. The most participation is provided by companies which are founded before 1980 with 17 responses (47.22% of all responses) in Europe as given in Figure 4.2b. The frequencies of question 2 are given in Table 4.2.

(a)   (b)
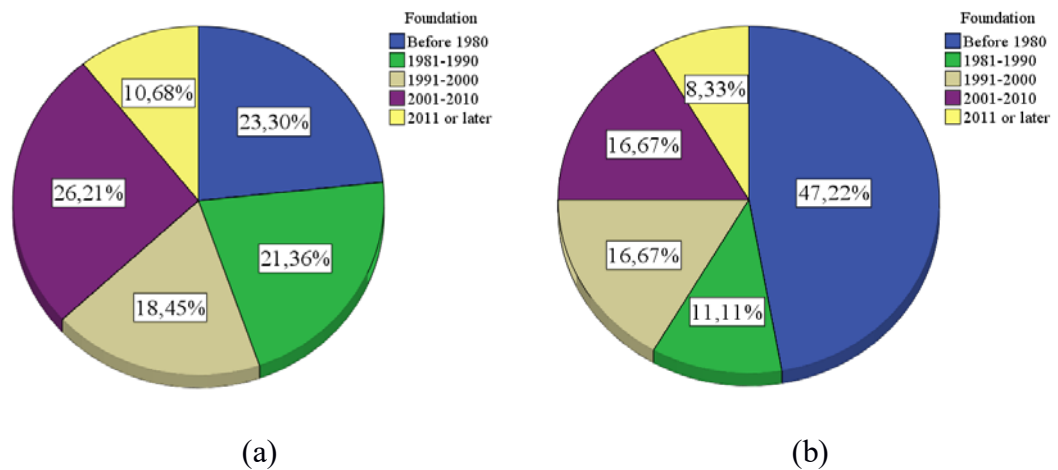
Figure 4.2. The Foundation Years of Participating Companies: a) Turkey; b) Europe

Table 4.2. Foundation Years of Participating Companies

	Turkey		Europe	
	Frequency	Percent	Frequency	Percent
Before 1980	24	23.3	17	47.2
1981-1990	22	21.4	4	11.1
1991-2000	19	18.4	6	16.7
2001-2010	27	26.2	6	16.7
2011 or later	11	10.7	3	8.3
Total	103	100	36	100

The third question is about which sector the firm is operating in. The most participation is provided by chemistry sector with 20 responses (14.71% of all responses) in Turkey. The most participation is provided by food sector with 7 responses (12.73% of all responses) in Europe as shown in Table 4.3.

Also, the contribution is provided by other sectors which are did not mentioned in the survey with 54 responses (39.71% of all responses) for Turkey and 22 responses (40% of all responses) for Europe. These sectors are automotive, paper, logistics, infrastructure construction, aluminum, corrugated cardboard, service, agriculture, music instruments, packaging, energy, printing, medical consumable, fasteners, metal kitchenware, plastic, concrete, protective equipment, component, custom services and medical equipment. The company which joined the survey can choose more than one sector for operating in.

Table 4.3. Sectors the Participating Companies Are Operating In

	Frequency	Percent	Frequency	Percent
Cement, Glass or Ceramics	7	5.15	2	3.64
Chemistry	20	14.71	4	7.27
Electronics	5	3.68	4	7.27
Food	8	5.88	7	12.73
Machinery	15	11.03	3	5.45
Metallurgy	9	6.62	3	5.45
Textile or Leather	12	8.82	5	9.09
Wood or Furniture	6	4.41	5	9.09
Others	54	39.71	22	40.00
Total	136	100	55	100

The fourth question is about describing the ownership types of the participating companies. The most participation is provided by private companies with 88 responses (85.4% of all responses) in Turkey and with 31 responses (86.1% of all responses) in Europe as shown in Figure 4.3a and 4.3b. The frequencies of question 4 are given in Table 4.4.

(a)   (b)
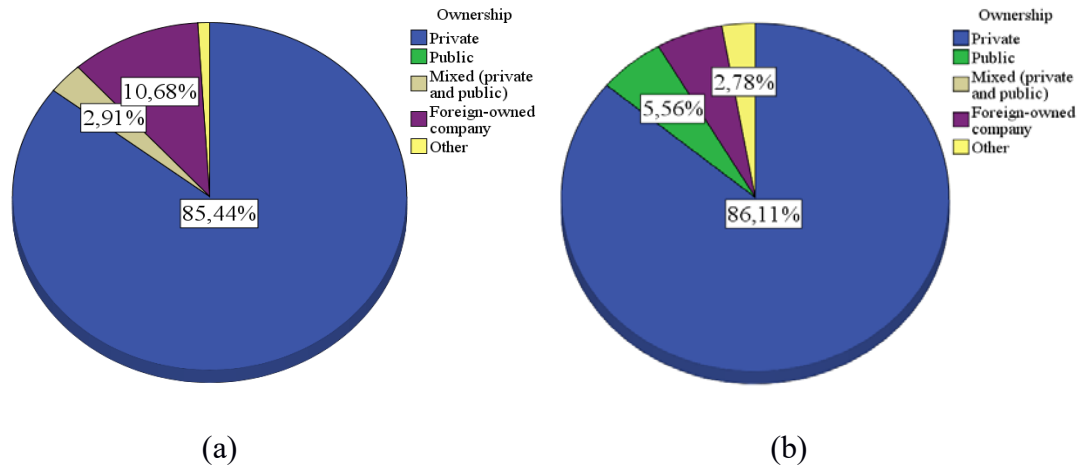
Figure 4.3. The Types of Ownership of Participating Companies: a) Turkey; b) Europe

Table 4.4. The Types of Ownership of Participating Companies

	Turkey		Europe	
	Frequency	Percent	Frequency	Percent
Private	88	85.4	31	86.1
Public	0	0.0	2	5.6
Mixed (private and public)	3	2.9	0	0.0
Foreign-owned company	11	10.7	2	5.6
Other	1	1	1	2.8
Total	103	100	36	100

The fifth question is asked to know what the job title of participating people is to make sure that authorized people answer the survey. Bar chart of job titles of participating people is given below in Figure 4.4. There are 22 different job titles. According to Figure 4.4, the most participation is ensured by general managers with 21 people and import-export managers follow them in the second order with 11 people in Turkey. Also, the most participation is provided by general managers with 13 people and logistics specialist follow them in the second order with 6 people in Europe.
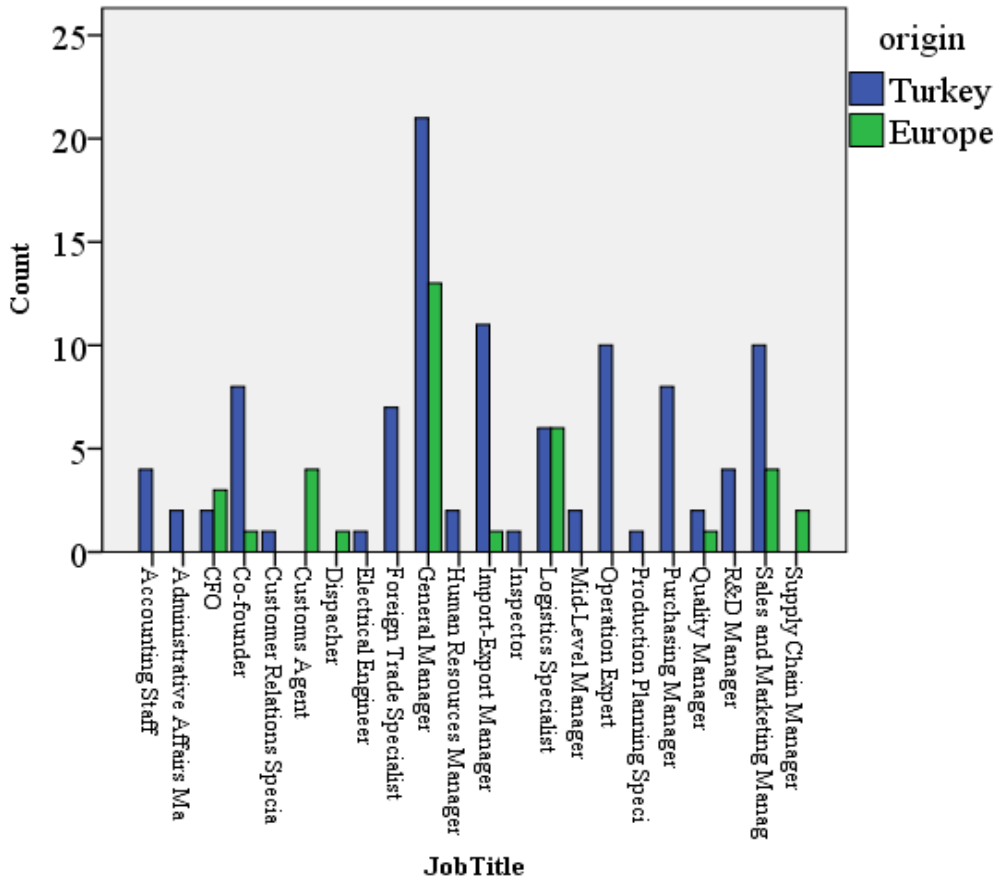
Figure 4.4. Job Titles of Participating People

The sixth question is asked to know where the participating company located is to describe the origin of the company. The cities which are joined the survey in given Table 4.5 for Turkey and the countries which are joined the survey in given Table 4.6 for Europe. Companies that are in 24 different cities from 7 different geographic regions of Turkey participated in the survey. The most contribution is provided by Izmir with 46 responses and Istanbul with 19 responses. Companies which are from 12 different countries in Europe participated in the survey. The most contribution is provided by Germany with 12 responses and England with 7 responses.

Table 4.5. Geographical Region of Survey for Turkey

	Frequency	Percent
Ankara	3	2.9
Aydın	1	1.0
Balıkesir	2	1.9
Bursa	2	1.9
Çanakkale	1	1.0
Çorum	1	1.0
Denizli	2	1.9
Diyarbakır	1	1.0
Erzurum	1	1.0
Gaziantep	3	2.9
İstanbul	19	18.4
İzmir	46	44.7
Kahramanmaraş	1	1.0
Kayseri	1	1.0
Kocaeli	4	3.9
Konya	1	1.0
Kütahya	2	1.9
Malatya	1	1.0
Manisa	4	3.9
Mersin	2	1.9
Sakarya	1	1.0
Samsun	2	1.9
Uşak	1	1.0
Zonguldak	1	1.0
Total	103	100

Table 4.6. Geographical Region of Survey for Europe

	Frequency	Percent
Austria	6	16.7
Bulgaria	1	2.8
England	7	19.4
France	3	8.3
Germany	12	33.3
Holland	1	2.8
Ireland	1	2.8
Italy	1	2.8
Luxembourg	1	2.8
Macedonia	1	2.8
Spain	1	2.8
Switzerland	1	2.8
Total	36	100

The other questions measure that the degree of agreement for each of the statements for selecting a 3PL service provider. Thirteen of the most commonly used 3PL service provider selection criteria are determined based on the literature review which are price offering, dependability, service quality, system capabilities, flexibility good communication skills, cultural fit, location, reputation, trained logistics personnel, value-added services, financial stability, and management quality.

4.2. 3PL Service Provider Selection Criteria

The first statement measures that the importance degree of price offering. According to Figure 4.5a and 4.5b, most of the participants are positive about price offering is an important criterion for choosing a 3PL service provider with 85 responses (82.5% of all responses) in Turkey and with 30 responses (83.4% of all responses) in Europe. The frequencies of third party logistics provider selection criteria 1 (TPLPS1) are given in Table 4.7.

| (a) | (b) |
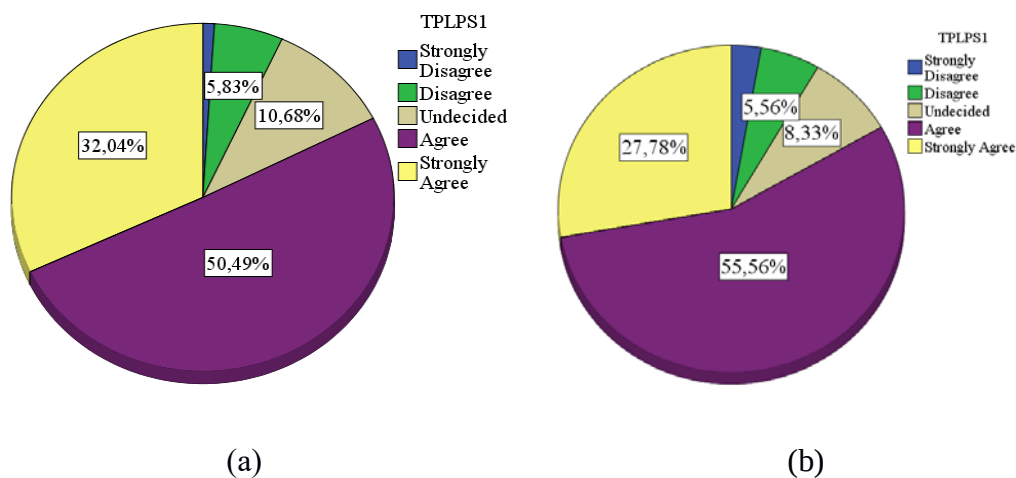
Figure 4.5. The Importance Degree of Price Offering for Companies a) Turkey; b) Europe

Table 4.7. The Importance Degree of Price Offering for Companies

	Turkey		Europe	
	Frequency	Percent	Frequency	Percent
Strongly Disagree	1	1.0	1	2.8
Disagree	6	5.8	2	5.6
Undecided	11	10.7	3	8.3
Agree	52	50.5	20	55.6
Strongly Agree	33	32.0	10	27.8
Total	103	100.0	36	100

The second statement measures that the importance degree of dependability. According to Figure 4.6a and 4.6b, most of the participants are positive about dependability is an important criterion for choosing a 3PL service provider with 99 responses (96.1% of all responses) in Turkey and with 35 responses (97.3% of all responses) in Europe. The frequencies of TPLPS2 are given in Table 4.8.

(a)   (b)

Figure 4.6. The Importance Degree of Dependability for Companies a) Turkey; b) Europe

Table 4.8. The Importance Degree of Dependability for Companies

	Turkey		Europe	
	Frequency	Percent	Frequency	Percent
Strongly Disagree	1	1.0	1	2.8
Disagree	2	1.9	0	0.0
Undecided	1	1.0	0	0.0
Agree	35	34.0	11	30.6
Strongly Agree	64	62.1	24	66.7
Total	103	100.00	36	100.00

The third statement measures that the importance degree of service quality. According to Figure 4.7a and 4.7b, most of the participants are positive about service quality is an important criterion for choosing a 3PL service provider with 99 responses (96.1% of all responses) in Turkey and with 33 responses (91.7% of all responses) in Europe. The frequencies of TPLPS3 are given in Table 4.9.

(a)   (b)

Figure 4.7. The Importance Degree of Service Quality for Companies a) Turkey; b) Europe

Table 4.9. The Importance Degree of Service Quality for Companies

	Turkey		Europe	
	Frequency	Percent	Frequency	Percent
Strongly Disagree	1	1.0	1	2.8
Disagree	1	1.0	1	2.8
Undecided	2	1.9	1	2.8
Agree	44	42.7	11	30.6
Strongly Agree	55	53.4	22	61.1
Total	103	100.00	36	100.00

The fourth statement measures that the importance degree of system capabilities. According to Figure 4.8a and 4.8b, most of the participants are positive about system capabilities are important criterion for choosing a 3PL service provider with 95 responses (92.3% of all responses) in Turkey and with 28 responses (77.8% of all responses) in Europe. The frequencies of TPLPS4 are given in Table 4.10.

(a)   (b)

Figure 4.8. The Importance Degree of System Capabilities for Companies a) Turkey; b) Europe

Table 4.10. The Importance Degree of System Capabilities for Companies

	Turkey		Europe	
	Frequency	Percent	Frequency	Percent
Strongly Disagree	0	0	1	2.8
Disagree	2	1.9	3	8.3
Undecided	6	5.8	4	11.1
Agree	63	61.2	22	61.1
Strongly Agree	32	31.1	6	16.7
Total	103	100.00	36	100.00

The fifth statement measures that the importance degree of flexibility. According to Figure 4.9a and 4.9b, most of the participants are positive about flexibility is an important criterion for choosing a 3PL service provider with 94 responses (91.2% of all responses) in Turkey and with 34 responses (94.4% of all responses) in Europe. The frequencies of TPLPS5 are given in Table 4.11.

(a)   (b)
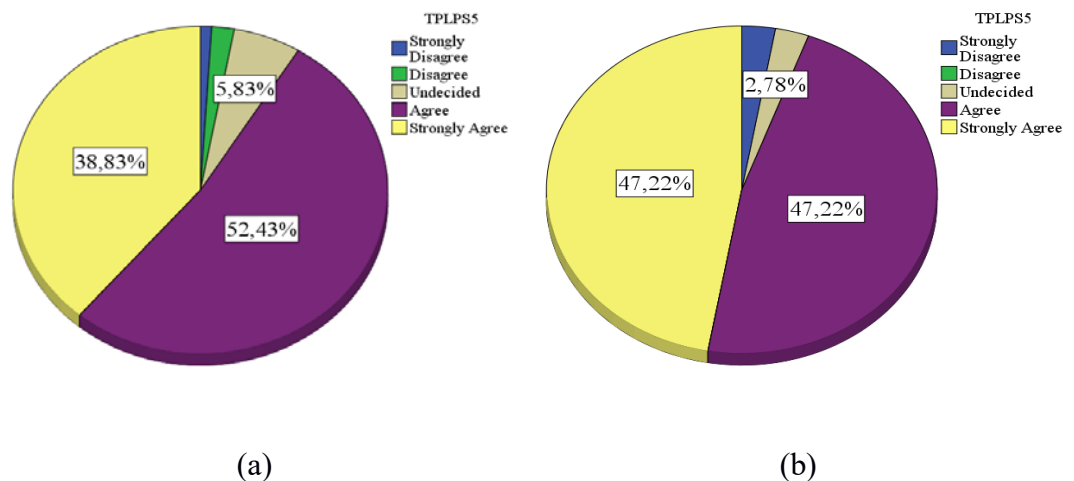
Figure 4.9. The Importance Degree of Flexibility for Companies a)Turkey; b)Europe

Table 4.11. The Importance Degree of Flexibility for Companies

	Turkey		Europe	
	Frequency	Percent	Frequency	Percent
Strongly Disagree	1	1.0	1	2.8
Disagree	2	1.9	0	0.0
Undecided	6	5.8	1	2.8
Agree	54	52.4	17	47.2
Strongly Agree	40	38.8	17	47.2
Total	103	100.00	36	100.00

The sixth statement measures that the importance degree of good communication skills. According to Figure 4.10a and 4.10b, most of the

participants are positive about good communication skills are important criterion for choosing a 3PL service provider with 98 responses (95.1% of all responses) in Turkey and with 34 responses (94.4% of all responses) in Europe. The frequencies of TPLPS6 are given in Table 4.12.

(a)   (b)
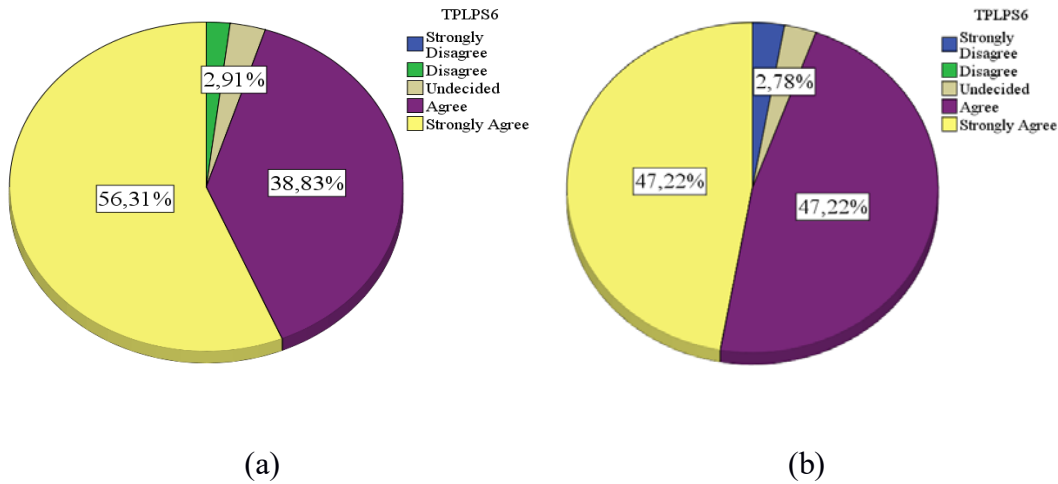
Figure 4.10. The Importance Degree of Good Communication Skills for Companies a) Turkey; b) Europe

Table 4.12. The Importance Degree of Good Communication Skills for Companies

	Turkey		Europe	
	Frequency	Percent	Frequency	Percent
Strongly Disagree	0	0.0	1	2.8
Disagree	2	1.9	0	0.0
Undecided	3	2.9	1	2.8
Agree	40	38.8	17	47.2
Strongly Agree	58	56.3	17	47.2
Total	103	100.00	36	100.00

The seventh statement measures that the importance degree of cultural fit. According to Figure 4.11a and 4.11b, most of the participants are positive about cultural fit is an important criterion for choosing a 3PL service provider with 72 responses (69.9% of all responses) in Turkey and with 25 responses (69.4% of all responses) in Europe. The frequencies of TPLPS7 are given in Table 4.13.

28

(a)   (b)
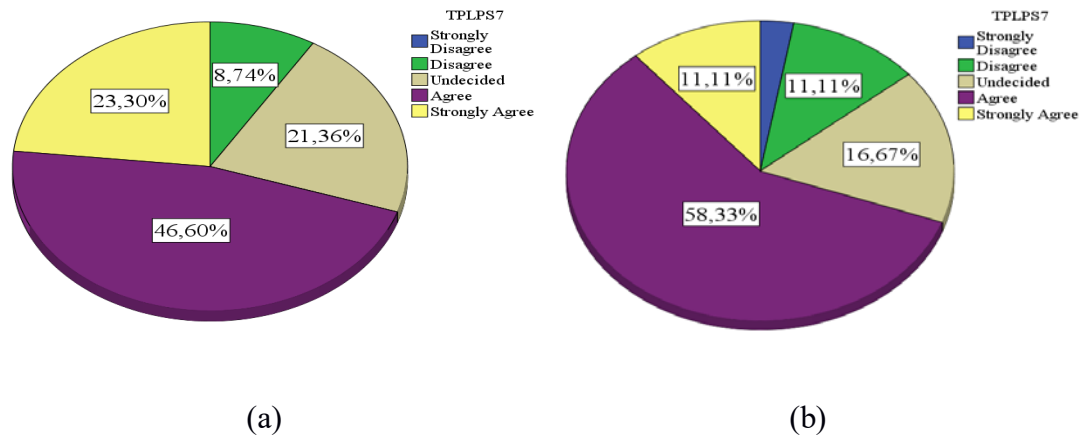
Figure 4.11. The Importance Degree of Cultural Fit for Companies a) Turkey; b) Europe

Table 4.13. The Importance Degree of Cultural Fit for Companies

	Turkey		Europe	
	Frequency	Percent	Frequency	Percent
Strongly Disagree	0	0.0	1	2.8
Disagree	9	8.7	4	11.1
Undecided	22	21.4	6	16.7
Agree	48	46.6	21	58.3
Strongly Agree	24	23.3	4	11.1
Total	103	100.00	36	100.00

The eighth statement measures that the importance degree of location. According to Figure 4.12a, most of the participants are positive about location is an important criterion for choosing a 3PL service provider with 70 responses (67.9% of all responses) in Turkey.   According to Figure 12b, most of the participants are undecided and negative with 22 responses (61.2% of all responses) in Europe. The frequencies of TPLPS8 are given in Table 4.14.

(a)   (b)
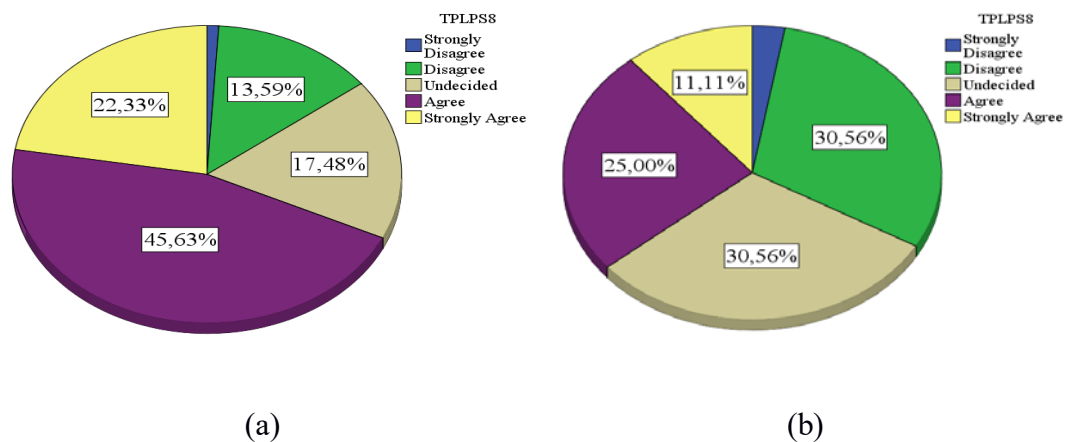
Figure 4.12. The Importance Degree of Location for Companies a) Turkey; b) Europe

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Table 4.14. The Importance Degree of Location for Companies

	Turkey		Europe	
	Frequency	Percent	Frequency	Percent
Strongly Disagree	1	1.0	1	2.8
Disagree	14	13.6	11	30.6
Undecided	18	17.5	11	30.6
Agree	47	45.6	9	25.0
Strongly Agree	23	22.3	4	11.1
Total	103	100.00	36	100.00

The ninth statement measures that the importance degree of reputation. According to Figure 4.13a and 4.13b, most of the participants are positive about reputation is an important criterion for choosing a 3PL service provider with 64 responses (62.1% of all responses) in Turkey and with 25 responses (69.4% of all responses) in Europe. The frequencies of TPLPS9 are given in Table 4.15.

(a)   (b)
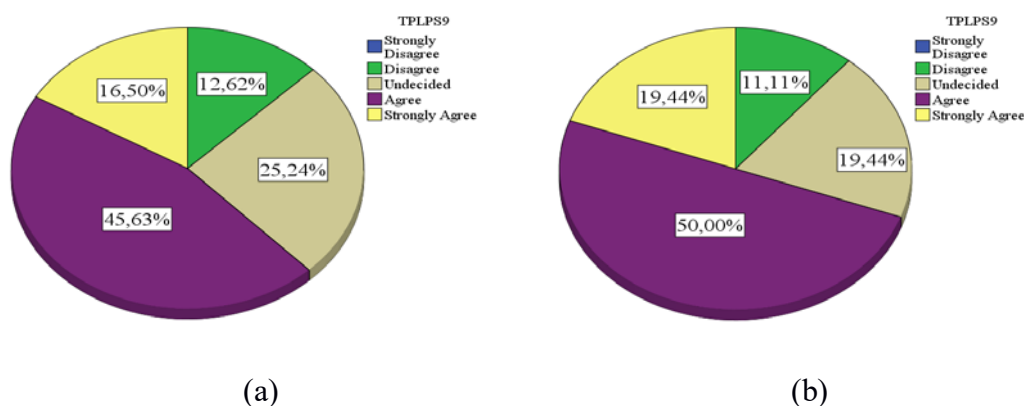
Figure 4.13. The Importance Degree of Reputation for Companies a) Turkey; b) Europe

Table 4.15. The Importance Degree of Reputation for Companies

	Turkey		Europe	
	Frequency	Percent	Frequency	Percent
Strongly Disagree	0	0.0	0	0.0
Disagree	13	12.6	4	11.1
Undecided	26	25.2	7	19.4
Agree	47	45.6	18	50.0
Strongly Agree	17	16.5	7	19.4
Total	103	100.00	36	100.00

The tenth statement measures that the importance degree of trained logistics personnel. According to Figure 4.14a and 4.14b, most of the participants are positive about trained logistics personnel are important criterion for choosing a 3PL service provider with 88 responses (85.4% of all responses) in Turkey and

with 30 responses (83.3% of all responses) in Europe. The frequencies of TPLPS10 are given in Table 4.16.

(a)   (b)
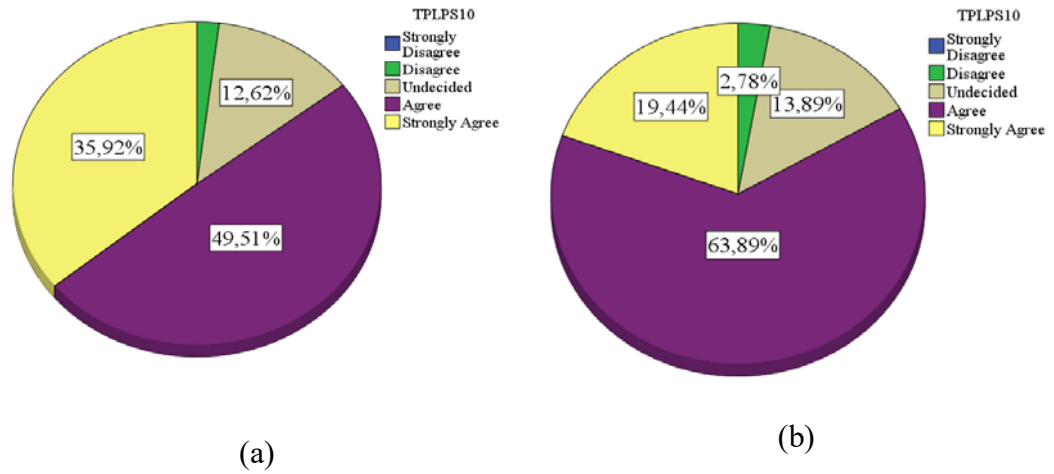
Figure 4.14. The Importance Degree of Trained Logistics Personnel for Companies a) Turkey; b) Europe

Table 4.16. The Importance Degree of Trained Logistics Personnel for Companies

	Turkey		Europe	
	Frequency	Percent	Frequency	Percent
Strongly Disagree	0	0.0	0	0.0
Disagree	2	1.9	1	2.8
Undecided	13	12.6	5	13.9
Agree	51	49.5	23	63.9
Strongly Agree	37	35.9	7	19.4
Total	103	100.00	36	100.00

The eleventh statement measures that the importance degree of value-added services. According to Figure 4.15a and 4.15b, most of the participants are positive about value-added services are important criterion for choosing a 3PL service provider with 80 responses (77.7% of all responses) in Turkey and with 20 responses (55.5% of all responses) in Europe. The frequencies of TPLPS11 are given in Table 4.17.
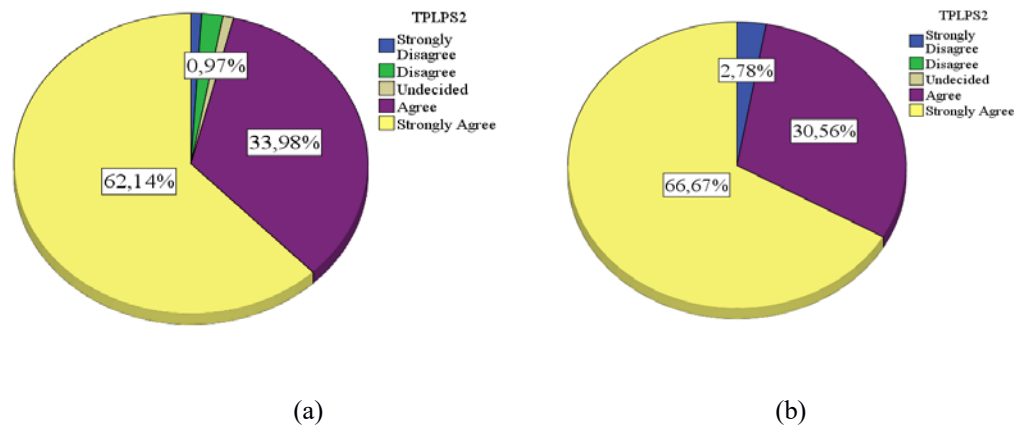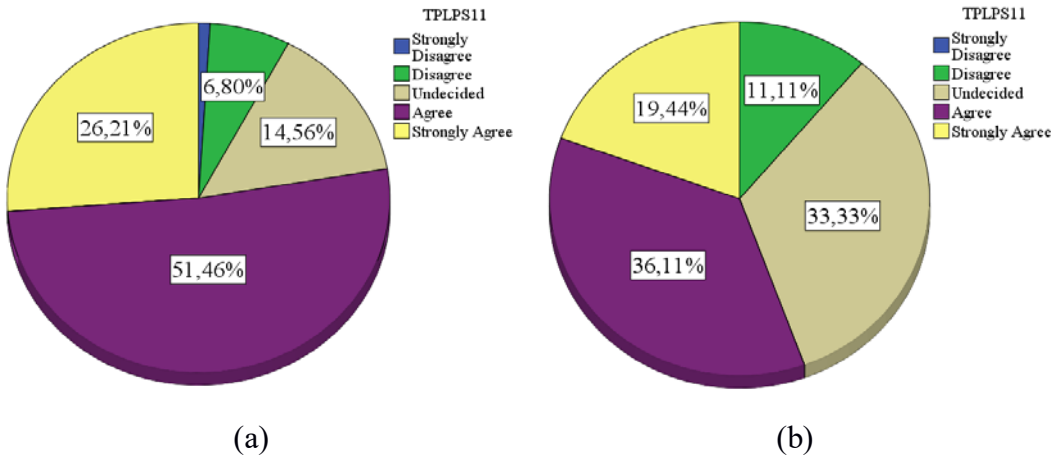
Figure 4.15. The Importance Degree of Value-Added Services for Companies a) Turkey; b) Europe

Table 4.17. The Importance Degree of Value-Added Services for Companies

	Turkey		Europe	
	Frequency	Percent	Frequency	Percent
Strongly Disagree	1	1.0	0	0.0
Disagree	7	6.8	4	11.1
Undecided	15	14.6	12	33.3
Agree	53	51.5	13	36.1
Strongly Agree	27	26.2	7	19.4
Total	103	100.00	36	100.00

The twelfth statement measures that the importance degree of financial stability. According to Figure 4.16a and 4.16b, most of the participants are positive about financial stability is an important criterion for choosing a 3PL service provider with 82 responses (79.6% of all responses) in Turkey and with 26 responses (72.2% of all responses) in Europe. The frequencies of TPLPS12 are given in Table 4.18.
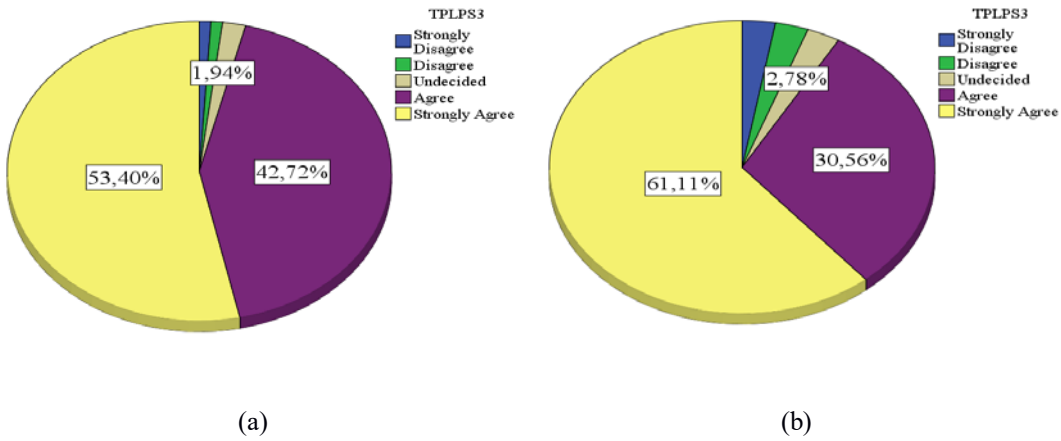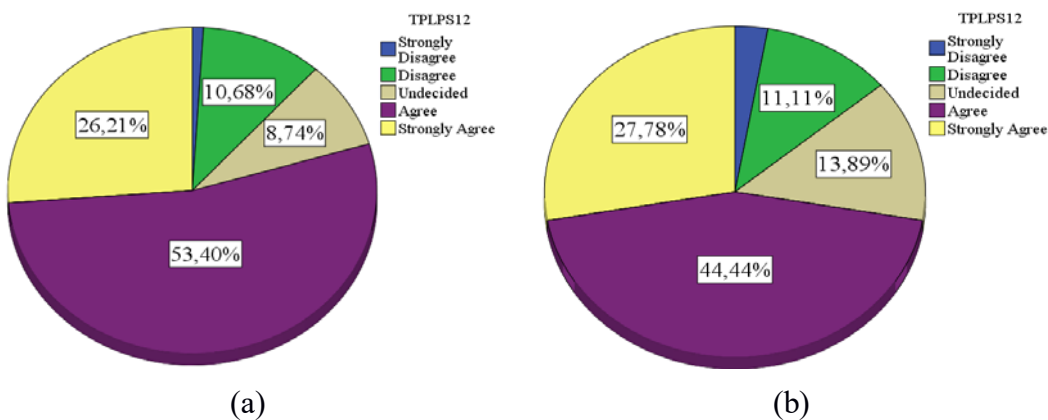

Figure 4.16. The Importance Degree of Financial Stability for Companies a) Turkey; b) Europe

Table 4.18. The Importance Degree of Financial Stability for Companies

	Turkey		Europe	
	Frequency	Percent	Frequency	Percent
Strongly Disagree	1	10	1	2.8
Disagree	11	10.7	4	11.1
Undecided	9	8.7	5	13.9
Agree	55	53.4	16	44.4
Strongly Agree	27	26.2	10	27.8
Total	103	100.00	36	100.00

The thirteenth statement measures that the importance degree of management quality. According to Figure 4.17a and 4.17b, most of the participants are positive about management quality is an important criterion for choosing a 3PL service provider with 98 responses (95.1% of all responses) in Turkey and with 27 responses (75% of all responses) in Europe. The frequencies of TPLSP13 are given in Table 4.19.
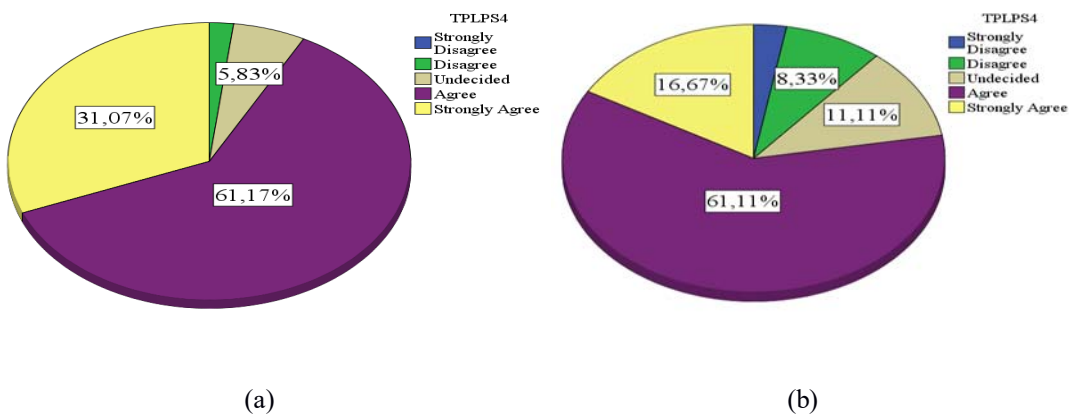

(a)   (b)
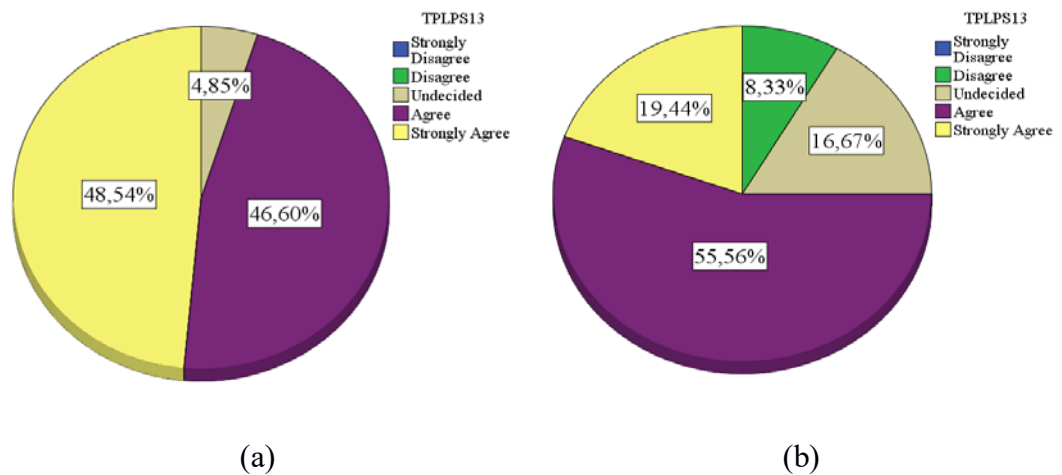
Figure 4.17. The Importance Degree of Management Quality for Companies a) Turkey; b) Europe

Table 4.19. The Importance Degree of Management Quality for Companies

	Turkey		Europe	
	Frequency	Percent	Frequency	Percent
Strongly Disagree	0	0.0	0	0.0
Disagree	0	0.0	3	8.3
Undecided	5	4.9	6	16.7
Agree	48	46.6	20	55.6
Strongly Agree	50	48.5	7	19.4
Total	103	100.00	36	100.00

The last question offers that please write any additional comments about the survey and criteria you use for selecting third-party logistics provider to know any other opinions of participating people. Comments and recommendations of participants are given in Appendix 4 for Turkey and Appendix 5 for Europe.

4.3. Survey Reliability Test

Reliability concerns about the ability of a tool measuring coherently. Reliability analysis allows you to study the properties of measurement scales and the items that compose the scales. The reliability analysis procedure calculates a number of commonly used measures of scale reliability and also provides information about the relationships between individual items in the scale. Intraclass correlation coefficients can be used to compute inter-rater reliability estimates. The Cronbach's Alpha is a model of internal consistency, based on the average inter-item correlation (IBM Corp, 2012). Cronbach's alpha is the objective measure of the reliability, which is the most widely used. The alpha has been devised by Lee Cronbach in 1951 to measure an internal consistency of a test or scale. It is stated as a number that is between 0 and 1. Internal consistency means that whether all the items in the test measure the same concept and they are interrelated to each other. The acceptable value of alpha for reliability is greater or equal to 0.7. The length of the test affects the alpha value. The value which is lower than 0.7 may refer that a low number of questions and low interrelation between items. Also, too high coefficient alpha may show that some items are unnecessary because they are testing the same question but in a different way. The maximum alpha value is recommended as 0.90 (Tavakol and Dennick, 2011).

Cronbach's alpha is calculated by using SPSS for Likert Scale part of the survey. This part includes 13 items. The alpha value is found as 0.845 which shows that the test is the reliable and internal consistency of the items are acceptable. The survey reliability statistics are given in Table 4.20.

Table 4.20. The Survey Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.845	.853	13

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
TPLPS1	49.1439	36.037	.343	.262	**.845**
TPLPS2	48.6403	36.029	.446	.554	**.837**
TPLPS3	48.7338	34.863	.570	.561	**.830**
TPLPS4	49.0863	33.992	.684	.525	**.823**
TPLPS5	48.9065	34.897	.557	.512	**.831**
TPLPS6	48.7338	35.472	.542	.456	**.832**
TPLPS7	49.4029	34.880	.448	.261	**.838**
TPLPS8	49.6115	34.399	.405	.311	**843**
TPLPS9	49.5036	34.469	.488	.365	**.835**
TPLPS10	49.0504	35.787	.481	.372	**.835**
TPLPS11	49.3237	34.394	.496	.385	**.834**
TPLPS12	49.2878	33.554	.534	434	**.832**
TPLPS13	48.9065	34.882	.607	.482	**.828**

According to item-total statistics, Cronbach alpha does not increase if any item is deleted. Therefore, there is no redundant item.

4.4. Summary of the Survey Results

After results are gathered from 139 participants, a summary table of 3PL service provider selection criteria for Turkey and Europe is prepared. According to Likert scale, 1 means strong disagreement with the statements, 2-disagree, 3-undecided, 4-agree and 5-strongly agree, respectively in the Table 4.21 and 4.22. The numbers in parenthesis show the number of responses to the statements.

Table 4.21. Summary of Turkish Companies' Responses to Selection Criteria Statements

3PL service provider selection criteria	Strongly disagree (1)	Disagree (2)	Undecided (3)	Agree (4)	Strongly agree (5)
Price offering	1% (1)	5.8% (6)	10.7% (11)	50.5% (52)	32% (33)
Dependability	1% (1)	1.9% (2)	1% (1)	34% (35)	62.1% (64)
Service quality	1% (1)	1% (1)	1.9% (2)	42.7% (44)	53.4% (55)
System capabilities	0% (0)	1.9% (2)	5.8% (6)	61.2% (63)	31.1% (32)
Flexibility	1% (1)	1.9% (2)	5.8% (6)	52.4% (54)	38.8% (40)
Good communication skills	0% (0)	1.9% (2)	2.9% (3)	38.8% (40)	56.3% (58)
Cultural fit	0% (0)	8.7% (9)	21.4% (22)	46.6% (48)	23.3% (24)
Location	1% (1)	13.6% (14)	17.5% (18)	45.6% (47)	22.3% (23)
Reputation	0% (0)	12.6% (13)	25.2% (26)	45.6% (47)	16.5% (17)
Trained logistics personnel	0% (0)	1.9% (2)	12.6% (13)	49.5% (51)	35.9% (37)
Value-added services	1% (1)	6.8% (7)	14.6% (15)	51.5% (53)	26.2% (27)
Financial stability	1% (1)	10.7% (11)	8.7% (9)	53.4% (55)	26.2% (27)
Management quality	0% (0)	0% (0)	4.9% (5)	46.6% (48)	48.5% (50)

Table 4.22. Summary of European Companies' Responses to Selection Criteria Statements

3PL service provider selection criteria	Strongly disagree (1)	Disagree (2)	Undecided (3)	Agree (4)	Strongly agree (5)
Price offering	2.8% (1)	5.6% (2)	8.3% (3)	55.6% (20)	27.8% (10)
Dependability	2.8% (1)	0% (0)	0% (0)	30.6% (11)	66.7% (24)
Service quality	2.8% (1)	2.8% (1)	2.8% (1)	30.6% (11)	61.1% (22)
System capabilities	2.8% (1)	8.3% (3)	11.1% (4)	61.1% (22)	16.7% (6)
Flexibility	2.8% (1)	0% (0)	2.8% (1)	47.2% (17)	47.2% (17)
Good communication skills	2.8% (1)	0% (0)	2.8% (1)	47.2% (17)	47.2% (17)
Cultural fit	2.8% (1)	11.1% (4)	16.7% (6)	58.3% (21)	11.1% (4)
Location	2.8% (1)	30.6% (11)	30.6% (11)	25% (9)	11.1% (4)
Reputation	0% (0)	11% (4)	19.4% (7)	50% (18)	19.4% (7)
Trained logistics personnel	0% (0)	2.8% (1)	13.9% (5)	63.9% (23)	19.4% (7)
Value-added services	0% (0)	11.1% (4)	33.3% (12)	36.1% (13)	19.4% (7)
Financial stability	2.8% (1)	11.1% (4)	13.9% (5)	44.4% (16)	27.8% (10)
Management quality	0% (0)	8.3% (3)	16.7% (6)	55.6% (20)	19.4% (7)

Column 1 and 2 and column 4 and 5 are summed for the interpretation of positive and negative responses on the most commonly used selection criteria. The summation results table is given below in Table 4.23 for Turkey and Table 4.24 for Europe. All the criteria evaluated by the respondents are found to be important in the selection of the 3PL service provider as expected. The highest importance rating values show that dependability, service quality and management quality are the most important criteria with 96.1% and 95.1% of positive responses for Turkish companies. Location, reputation, and financial stability are the least important criteria for the selection when compared to the other selection criteria in Turkey.

Table 4.23. Summary of The Results for Turkey

Selection Criteria	Sum of negative responses (1 and 2)	Sum of positive responses (4 and 5)
Price offering	6.8%	82.5%
Dependability	2.9%	**96.1%**
Service quality	2%	**96.1%**
System capabilities	1.9%	92.3%
Flexibility	2.9%	91.2%
Good communication skills	1.9%	77.8%
Cultural fit	8.7%	69.9%
Location	**14.6%**	67.9%
Reputation	**12.6%**	62.1%
Trained logistics personnel	1.9%	85.4%
Value-added services	7.8%	77.7%
Financial stability	**11.7%**	79.6%
Management quality	0%	**95.1%**

The highest importance rating values show that dependability, flexibility and good communication skills are the most important criteria with 97.3% and 94.4% of positive responses for European companies. Location, cultural fit and financial stability are the least important criteria for the selection when compared to the other selection criteria in Europe.

Table 4.24. Summary of The Results for Europe

Selection Criteria	Sum of negative responses (1 and 2)	Sum of positive responses (4 and 5)
Price offering	8.4%	83.4%
Dependability	2.8%	**97.3%**
Service quality	5.6%	91.7%
System capabilities	11.1%	77.8%
Flexibility	2.8%	**94.4%**
Good communication skills	2.8%	**94.4%**
Cultural fit	**13.9%**	69.4%
Location	**33.4%**	36.1%
Reputation	11%	69.4%
Trained logistics personnel	2.8%	83.3%
Value-added services	11.1%	55.5%
Financial stability	**13.9%**	72.2%
Management quality	8.3%	75%

4.5. Analysis of the Survey Results for the Selection Criteria

Parametric and nonparametric tests are used to decide whether a hypothesis about a distribution of one or more populations should be rejected or not rejected (Heena, 2016).

Hypothesis tests are used to test the validity of an assertion for a population. This claim is called the null hypothesis which is denoted as H_0. The alternative hypothesis means that if the null hypothesis is not true. It is denoted as H_1 (Walpole et. al.,1993).

There are six assumptions for using parametric tests (Leard Statistics, n.d.). If these assumptions do not be ensured, nonparametric tests should be used for testing hypotheses. Six assumptions are given the below.

Assumption 1: Dependent variable must be measured on a continuous scale. For example, it should be measured in hours, in kilograms, from 0 to 100, and so forth.

Assumption 2: Independent variable must comprise of two independent groups such as gender (female and male). In my study, these groups are Turkey and Europe.

Assumption 3: There should be the independence of the observations. It means that there is no relationship between the observations in each group or between the groups themselves. For instance, there must be different participants

in each group with no participant being in more than one group. This is about to design of the study rather than testing something.

Assumption 4: There must not be significant outliers. Outliers are a point that does not follow the standard pattern. Outliers may affect negatively independent t-test by reducing the validity of the results.

Assumption 5: Dependent variable should be approximately normally distributed for each group of the independent variable.

Assumption 6: The homogeneity of variances is needed. This assumption can be tested with Levene's test in the SPSS. Homogeneity of variances means having same variances for all comparison groups.

4.5.1. Normality Test for Responses

In order to test if dependent variables should be approximately normally distributed for each group of the independent variable Kolmogorov-Smirnov test or Shapiro-Wilk's W test is used. They are most commonly used hypothesis tests in the literature for the normality test. Both are sensitive for outliers. Shapiro-Wilk test should be preferred for smaller samples and the Kolmogorov-Smirnov test is preferred for larger samples.

A.N Kolmogorov improved a goodness of fit test in 1933 for a sample. Another Russian mathematician N.V Smirnov improved a goodness of fit test for two independent samples. These tests are similar, and they are known as the Kolmogorov-Smirnov goodness of fit test in the application. This test is for variables which are measured at equal intervals (Gamgam and Altunkaynak, 2012).

Shapiro-Wilk improved the Shapiro-Wilk goodness of fit test in 1965. This test can detect departures from normality because of skewness or kurtosis, or both (Razali and Yap, 2011). If the sample size is greater than 35, the Kolmogorov-Smirnov test should be used and if it is less, the Shapiro-Wilk test should be used for testing normality (Demir et. al., 2016). The results of these normality tests are given below in Table 4.25 and 4.26 for Turkish and European Companies.

H_0= At the 0.05 level of significance, the data follows the normal distribution.

H_1= At the 0.05 level of significance, the data do not follow the normal distribution.

Table 4.25. Normality Test for Turkish Companies' Responses

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
TPLPS1	.294	103	**.000**	.805	103	**.000**
TPLPS2	.361	103	**.000**	.622	103	**.000**
TPLPS3	.317	103	**.000**	.669	103	**.000**
TPLPS4	.321	103	**.000**	.744	103	**.000**
TPLPS5	.274	103	**.000**	.744	103	**.000**
TPLPS6	.343	103	**.000**	.693	103	**.000**
TPLPS7	.269	103	**.000**	.856	103	**.000**
TPLPS8	.281	103	**.000**	.860	103	**.000**
TPLPS9	.268	103	**.000**	.866	103	**.000**
TPLPS10	.249	103	**.000**	.805	103	**.000**
TPLPS11	.299	103	**.000**	.829	103	**.000**
TPLPS12	.325	103	**.000**	.804	103	**.000**
TPLPS13	.316	103	**.000**	.727	103	**.000**
a. Lilliefors Significance Correction						

Table 4.26. Normality Test for European Companies' Responses

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
TPLPS1	.333	36	**.000**	.779	36	**.000**
TPLPS2	.372	36	**.000**	.544	36	**.000**
TPLPS3	.341	36	**.000**	.640	36	**.000**
TPLPS4	.361	36	**.000**	.785	36	**.000**
TPLPS5	.270	36	**.000**	.666	36	**.000**
TPLPS6	.270	36	**.000**	.666	36	**.000**
TPLPS7	.345	36	**.000**	.815	36	**.000**
TPLPS8	.185	36	**.003**	.900	36	**.003**
TPLPS9	.292	36	**.000**	.851	36	**.000**
TPLPS10	.333	36	**.000**	.787	36	**.000**
TPLPS11	.207	36	**.000**	.881	36	**.001**
TPLPS12	.285	36	**.000**	.848	36	**.000**
TPLPS13	.316	36	**.000**	.829	36	**.000**
a. Lilliefors Significance Correction						

Lilliefors test is a modification of the Kolmogorov-Smirnov (KS) test. The KS test is appropriate in a situation where the parameters of the hypothesized distribution are completely known. However, when they are unknown, the parameters should be estimated based on the sample data. When the original KS statistic is used in such situation, the results can be inaccurate since the probability of type I error tend to be smaller than the ones given in the standard table of the KS test. On the contrary, the parameters for LF test are estimated based on the sample (Lilliefors, 1967). Therefore, when the sample size is greater than 50, SPSS apply Kolmogorov Smirnov test with Lilliefors significance correction automatically (Şencan,2015).

The abbreviation Sig. means that significance probability which is also known p-value in the table. The p-value shows the possible probability of error when we decide there is a statistically significant difference in a comparison. The maximum acceptable level of this error was suggested and accepted by Fisher, a renowned statistician, to be 0.05. A value of p which is less than 0.05 in a test result means that there is a significant difference in the comparison result (Walpole et. al.,1993).

According to Table 4.25 and Table 4.26, p-values are less than 0.05 for both tests and each item. Therefore, the null hypothesis is rejected. Responses for Turkey and Europe are not normally distributed.

Turan et. al. (2015) studied about usage and analysis of Likert scale and Likert-type questions in educational studies. According to their study, researchers express two different opinions about analyzing the Likert scale. According to experts who are supporting the first opinion, ordinal data is always ordinal and cannot be converted to interval data in any way. For this reason, some researchers have described the use of parametric tests in ordinal data analysis as "one of seven deadly sins of statistical analysis". According to the experts who are supporting the second opinion, taking the arithmetic average of the responses for Likert scale questions makes the data to interval data and parametric tests can be applied to this arithmetic mean. In this case, it is claimed that in the analysis of the Likert scale, both parametric and nonparametric tests can be used. Winter and Dodo (2010) compared the T-Test and the Mann-Whitney U Test in the analysis of 5 point-Likert scale data and found that the probability of type-1 error (rejecting

null hypothesis even it is true) was less than 3% in both tests, they are close to each other, so they have concluded that it is not wrong to choose any of them.

Therefore, both parametric and nonparametric tests are conducted in this study to check if there is a significant difference between responses of Turkish and European Companies' selection criteria.

4.5.2. Independent-Samples T Test

The Independent-Samples T-Test is a parametric test, which compare means for two groups of cases (IBM Corp, 2012). In order to compare the means of responses for importance degree of selection criteria between Turkish and European Companies, which are two different samples, independent samples t-test is performed in SPSS with 95% confidence interval.

The Independent Samples T-Test's results may differ whether equal variances are assumed, or unequal variances are assumed. Levene's test is used to check the equality of variances. According to Levene's test, if variances are equal across two groups pooled variances are used for t-test and if the variances are not equal un-pooled variances and corrected degrees of freedom values are used for t-test. (Kent State University, n.d.)

Independent samples t-test are performed for each of the 3PL service provider selection criteria for comparing Turkish and European Companies.

Independent Samples T Test for price offering;

$\sigma_1^2=$ The variance of responses from Turkey for price offering

$\sigma_2^2=$ The variance of responses from Europe for price offering

$H_0=$ $\sigma_1^2 - \sigma_2^2 = 0$ H_0: At the 0.05 level of significance, the variances of responses from Turkey and Europe are equal for price offering.

$H_1=$ $\sigma_1^2 - \sigma_2^2 \neq 0$ H_1: At the 0.05 level of significance, the variances of responses from Turkey and Europe are not equal for price offering.

$\mu_1=$ mean of responses from Turkey for price offering

$\mu_2=$ mean of responses from Europe for price offering

$H_0 = \mu_1 - \mu_2 = 0$ H_0: At the 0.05 level of significance, there is no difference between the means of the responses from Turkey and Europe for price offering.

$H_1 = \mu_1 - \mu_2 \neq 0$ H_1: At the 0.05 level of significance, there is difference between the means of the responses from Turkey and Europe for price offering.

A one-tail test determines whether a mean is greater or less than another mean, but not both. A direction must be selected before the test. A single-tailed test shows changing in one direction not the other. A two-tailed test provides to determine whether the two means are different from each other. Direction should not be specified before the test. A two-tailed test will consider the likelihood of both positive and negative effects (Vallee, 2015). According to these explanations, two tail tests should be used for comparing means of the responses. Sig. (2-tailed) means that two tailed p-value in the SPSS outputs.

Results of the independent samples T test are given in the Table 4.27 and Table 4.28.

Table 4.27. Summary Statistics of The Responses for Price Offering

Origin		N	Mean	Std. Deviation	Std. Error Mean
TPLPS1	Turkey	103	4.0680	.86616	.08535
	Europe	36	4.0000	.92582	.15430

Table 4.28. Independent samples T-Test for Price Offering

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
TPLPS1	Equal variances assumed	.108	**.743**	.398	137	**.691**	.06796	.17073	-.26964	.40556
	Equal variances not assumed			.385	57.833	.701	.06796	.17633	-.28503	.42095

According to Levene's test for equality of variances, p-value is greater than 0.05 which is 0.743 so the null hypothesis is not rejected. Therefore, equal variances are assumed, and the first row is taken into consideration. According to the t-test for equality of means, p-value is greater than 0.05 which is 0.691 so null hypothesis is not rejected. There is no significant difference between the means of the responses from Turkey and Europe for price offering.

Independent Samples T Test for dependability;

σ_1^2= The variance of responses from Turkey for dependability

σ_2^2= The variance of responses from Europe for dependability

H_0= σ_1^2-σ_2^2 =0 H_0: At the 0.05 level of significance, the variances of responses from Turkey and Europe are equal for dependability.

H_1= σ_1^2- $\sigma_2^2 \neq 0$ H_1: At the 0.05 level of significance, the variances of responses from Turkey and Europe are not equal for dependability.

μ_1= mean of responses from Turkey for dependability

μ_2= mean of responses from Europe for dependability

H_0= μ_1- μ_2=0 H_0: At the 0.05 level of significance, there is no difference between the means of the responses from Turkey and Europe for dependability.

H_1= μ_1- $\mu_2 \neq 0$ H_1: At the 0.05 level of significance, there is difference between the means of the responses from Turkey and Europe for dependability.

Results of the independent samples T test are given in the Table 4.29 and Table 4.30.

Table 4.29. Summary of The Responses for Dependability

Origin		N	Mean	Std. Deviation	Std. Error Mean
TPLPS2	Turkey	103	4.5437	.71093	.07005
	Europe	36	4.5833	.76997	.12833

Table 4.30. Independent samples-T Test for Dependability

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
TPLPS2	Equal variances assumed	.017	**.896**	-.282	137	**.778**	-.03964	.14066	-.31778	.23849
	Equal variances not assumed			-.271	57.222	.787	-.03964	.14620	-.33239	.25310

According to Levene's test for equality of variances, p-value is greater than 0.05 which is 0.896 so the null hypothesis is not rejected. Therefore, equal variances are assumed, and the first row is taken into consideration. According to the t-test for equality of means, p-value is greater than 0.05 which is 0.778 so null hypothesis is not rejected. There is no significant difference between the means of the responses from Turkey and Europe for dependability.

Independent Samples T Test for service quality;

σ_1^2= The variance of responses from Turkey for service quality

σ_2^2= The variance of responses from Europe for service quality

H_0= σ_1^2-σ_2^2 =0 H_0: At the 0.05 level of significance, the variances of responses from Turkey and Europe are equal for service quality.

H_1= σ_1^2- $\sigma_2^2 \neq 0$ H_1: At the 0.05 level of significance, the variances of responses from Turkey and Europe are not equal for service quality.

μ_1= mean of responses from Turkey for service quality

μ_2= mean of responses from Europe for service quality

H_0= μ_1- μ_2=0 H_0: At the 0.05 level of significance, there is no difference between the means of the responses from Turkey and Europe for service quality.

H_1= μ_1- $\mu_2 \neq 0$ H_1: At the 0.05 level of significance, there is difference between the means of the responses from Turkey and Europe for service quality.

Results of the independent samples T test are given in the Table 4.31 and Table 4.32.

Table 4.31. Summary of The Responses for Service Quality

Origin		N	Mean	Std. Deviation	Std. Error Mean
TPLPS3	Turkey	103	4.4660	.68335	.06733
	Europe	36	4.4444	.90851	.15142

Table 4.32. Independent samples-T Test for Service Quality

		Levene's Test for Equality of Variances		t-test for Equality of Means						95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference		Lower	Upper
TPLPS3	Equal variances assumed	1.635	**.203**	.149	137	**.882**	.02157	.14470		-.26456	.30771
	Equal variances not assumed			.130	49.546	.897	.02157	.16571		-.31135	.35450

According to Levene's test for equality of variances, p-value is greater than 0.05 which is 0.203 so the null hypothesis is not rejected. Therefore, equal variances are assumed, and the first row is taken into consideration. According to the t-test for equality of means, p-value is greater than 0.05 which is 0.882 so null hypothesis is not rejected. There is no significant difference between the means of the responses from Turkey and Europe for service quality.

Independent Samples T Test for system capabilities;

$\sigma_1^2 =$ The variance of responses from Turkey for system capabilities

$\sigma_2^2 =$ The variance of responses from Europe for system capabilities

$H_0 = \sigma_1^2 - \sigma_2^2 = 0$ H_0: At the 0.05 level of significance, the variances of responses from Turkey and Europe are equal for system capabilities.

$H_1 = \sigma_1^2 - \sigma_2^2 \neq 0$ H_1: At the 0.05 level of significance, the variances of responses from Turkey and Europe are not equal for system capabilities.

$\mu_1 =$ mean of responses from Turkey for system capabilities

μ_2= mean of responses from Europe for system capabilities

H_0= μ_1- μ_2=0 H_0: At the 0.05 level of significance, there is no difference between the means of the responses from Turkey and Europe for system capabilities.

H_1= μ_1- μ_2 ≠ 0 H_1: At the 0.05 level of significance, there is difference between the means of the responses from Turkey and Europe for system capabilities.

Results of the independent samples T test are given in the Table 4.33 and Table 4.34.

Table 4.33. Summary of The Responses for System Capabilities

Origin		N	Mean	Std. Deviation	Std. Error Mean
TPLPS4	Turkey	103	4.2136	.63633	.06270
	Europe	36	3.8056	.92023	.15337

Table 4.34. Independent samples-T Test for System Capabilities

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
TPLPS4	Equal variances assumed	2.489	**.117**	2.929	137	**.004**	.40804	.13932	.13254	.68354
	Equal variances not assumed			2.463	47.223	.017	.40804	.16569	.07475	.74133

According to Levene's Test for equality of variances, p-value is greater than 0.05 which is 0.117 so null hypothesis is not rejected. Therefore, equal variances are assumed, and the first row is taken into consideration. According to the t-test for equality of means, p-value is less than 0.05 which is 0.004 so null hypothesis is rejected. There is a significant difference between the means of the responses from Turkey and Europe for system capabilities.

Independent Samples T Test for flexibility;

σ_1^2= The variance of responses from Turkey for flexibility

$\sigma_2{}^2=$ The variance of responses from Europe for flexibility

$H_0=$ $\sigma_1{}^2-\sigma_2{}^2=0$ H_0: At the 0.05 level of significance, the variances of responses from Turkey and Europe are equal for flexibility.

$H_1=$ $\sigma_1{}^2-\sigma_2{}^2 \neq 0$ H_1: At the 0.05 level of significance, the variances of responses from Turkey and Europe are not equal for flexibility.

$\mu_1=$ mean of responses from Turkey for flexibility

$\mu_2=$ mean of responses from Europe for flexibility

$H_0=$ $\mu_1-\mu_2=0$ H_0: At the 0.05 level of significance, there is no difference between the means of the responses from Turkey and Europe for flexibility.

$H_1=$ $\mu_1-\mu_2 \neq 0$ H_1: At the 0.05 level of significance, there is difference between the means of the responses from Turkey and Europe for flexibility.

Results of the independent samples T test are given in the Table 4.35 and Table 4.36.

Table 4.35. Summary of The Responses for Flexibility

Origin		N	Mean	Std. Deviation	Std. Error Mean
TPLPS5	Turkey	103	4.2621	.74044	.07296
	Europe	36	4.3611	.79831	.13305

Table 4.36. Independent samples-T Test for Flexibility

		Levene's Test for Equality of Variances		t-test for Equality of Means							
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference		
									Lower	Upper	
TPLPS5	Equal variances assumed	.107	**.744**	-.677	137	**.500**	-.09898	.14630	-.38828	.19033	
	Equal variances not assumed			-.652	57.430	.517	-.09898	.15174	-.40278	.20483	

According to Levene's Test for equality of variances, p-value is greater than 0.05 which is 0.744 so null hypothesis is not rejected. Therefore, equal variances are assumed, and the first row is taken into consideration. According to the t-test for equality of means, p-value is greater than 0.05 which is 0.500 so null hypothesis is not rejected. There is no significant difference between the means of the responses from Turkey and Europe for flexibility.

Independent Samples T Test for good communication skills;

$\sigma_1^2 =$ The variance of responses from Turkey for good communication skills

$\sigma_2^2 =$ The variance of responses from Europe for good communication skills

$H_0 = \sigma_1^2 - \sigma_2^2 = 0$ H_0: At the 0.05 level of significance, the variances of responses from Turkey and Europe are equal for good communication skills.

$H_1 = \sigma_1^2 - \sigma_2^2 \neq 0$ H_1: At the 0.05 level of significance, the variances of responses from Turkey and Europe are not equal for good communication skills.

$\mu_1 =$ mean of responses from Turkey for good communication skills

$\mu_2 =$ mean of responses from Europe for good communication skills

$H_0 = \mu_1 - \mu_2 = 0$ H_0: At the 0.05 level of significance, there is no difference between the means of the responses from Turkey and Europe for good communication skills.

$H_1 = \mu_1 - \mu_2 \neq 0$ H_1: At the 0.05 level of significance, there is difference between the means of the responses from Turkey and Europe for good communication skills.

Results of the independent samples T test are given in the Table 4.37 and Table 4.38.

Table 4.37. Summary of The Responses for Good Communication Skills

Origin		N	Mean	Std. Deviation	Std. Error Mean
TPLPS6	Turkey	103	4.4951	.65490	.06453
	Europe	36	4.3611	.79831	.13305

Table 4.38. Independent samples-T Test for Good Communication Skills

		Levene's Test for Equality of Variances		t-test for Equality of Means							
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference		
									Lower	Upper	
TPLPS6	Equal variances assumed	.226	**.636**	.997	137	**.321**	.13403	.13444	-.13181	.39988	
	Equal variances not assumed			.906	52.407	.369	.13403	.14787	-.16264	.43071	

According to Levene's test for equality of variances, p-value is greater than 0.05 which is 0.636 so null hypothesis is not rejected. Therefore, equal variances are assumed, and the first row is taken into consideration. According to the t-test for equality of means, p-value is greater than 0.05 which is 0.321 so null hypothesis is not rejected. There is no significant difference between the means of the responses from Turkey and Europe for good communication skills.

Independent Samples T Test for Cultural Fit;

σ_1^2= The variance of responses from Turkey for cultural fit

σ_2^2= The variance of responses from Europe for cultural fit

H_0= σ_1^2-σ_2^2 =0 H_0: At the 0.05 level of significance, the variances of responses from Turkey and Europe are equal for cultural fit.

H_1= σ_1^2- $\sigma_2^2 \neq 0$ H_1: At the 0.05 level of significance, the variances of responses from Turkey and Europe are not equal for cultural fit.

$\mu_1 =$ mean of responses from Turkey for cultural fit

$\mu_2 =$ mean of responses from Europe for cultural fit

$H_0 = \mu_1 - \mu_2 = 0$ H_0: At the 0.05 level of significance, there is no difference between the means of the responses from Turkey and Europe for cultural fit.

$H_1 = \mu_1 - \mu_2 \neq 0$ H_1: At the 0.05 level of significance, there is difference between the means of the responses from Turkey and Europe for cultural fit.

Results of the independent samples T test are given in the Table 4.39 and Table 4.40.

Table 4.39. Summary of The Responses for Cultural Fit

Origin		N	Mean	Std. Deviation	Std. Error Mean
TPLPS7	Turkey	103	3.8447	.88292	.08700
	Europe	36	3.6389	.93052	.15509

Table 4.40. Independent samples-T Test for Cultural Fit

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
TPLPS7	Equal variances assumed	.140	**.709**	1.187	137	**.237**	.20577	.17335	-.13701	.54855
	Equal variances not assumed			1.157	58.505	.252	.20577	.17782	-.15011	.56165

According to Levene's test for equality of variances, p-value is greater than 0.05 which is 0.709 so null hypothesis is not rejected. Therefore, equal variances are assumed, and the first row is taken into consideration. According to the t-test for equality of means, p-value is greater than 0.05 which is 0.237 so null hypothesis is not rejected. There is no significant difference between the means of the responses from Turkey and Europe for cultural fit.

Independent Samples T Test for location;

σ_1^2 = The variance of responses from Turkey for location

σ_2^2 = The variance of responses from Europe for location

H_0 = σ_1^2-σ_2^2 =0 H_0: At the 0.05 level of significance, the variances of responses from Turkey and Europe are equal for location.

H_1 = σ_1^2- $\sigma_2^2 \neq 0$ H_1: At the 0.05 level of significance, the variances of responses from Turkey and Europe are not equal for location.

μ_1 = mean of responses from Turkey for location

μ_2 = mean of responses from Europe for location

H_0 = μ_1- μ_2=0 H_0: At the 0.05 level of significance, there is no difference between the means of the responses from Turkey and Europe for location.

H_1 = μ_1- $\mu_2 \neq 0$ H_1: At the 0.05 level of significance, there is difference between the means of the responses from Turkey and Europe for location.

Results of the independent samples T test are given in the Table 4.41 and Table 4.42.

Table 4.41. Summary of The Responses for Location

Origin		N	Mean	Std. Deviation	Std. Error Mean
TPLPS8	Turkey	103	3.7476	.98736	.09729
	Europe	36	3.1111	1.06309	.17718

Table 4.42. Independent samples-T Test for Location

		Levene's Test for Equality of Variances		t-test for Equality of Means							
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference		
									Lower	Upper	
TPLPS8	Equal variances assumed	.424	**.516**	3.264	137	**.001**	.63646	.19502	.25083	1.02209	
	Equal variances not assumed			3.149	57.492	.003	.63646	.20213	.23177	1.04115	

According to Levene's test for equality of variances, p-value is greater than 0.05 which is 0.516 so null hypothesis is not rejected. Therefore, equal variances are assumed, and the first row is taken into consideration. According to the t-test for equality of means, p-value is less than 0.05 which is 0.001 so null hypothesis is rejected. There is a significant difference between the means of the responses from Turkey and Europe for location.

Independent Samples T Test for reputation;

$\sigma_1^2=$ The variance of responses from Turkey for reputation

$\sigma_2^2=$ The variance of responses from Europe for reputation

$H_0=$ $\sigma_1^2 - \sigma_2^2 = 0$ H_0: At the 0.05 level of significance, the variances of responses from Turkey and Europe are equal for reputation.

$H_1=$ $\sigma_1^2 - \sigma_2^2 \neq 0$ H_1: At the 0.05 level of significance, the variances of responses from Turkey and Europe are not equal for reputation.

$\mu_1=$ mean of responses from Turkey for reputation

$\mu_2=$ mean of responses from Europe for reputation

$H_0=$ $\mu_1 - \mu_2 = 0$ H_0: At the 0.05 level of significance, there is no difference between the means of the responses from Turkey and Europe for reputation.

$H_1=$ $\mu_1 - \mu_2 \neq 0$ H_1: At the 0.05 level of significance, there is difference between the means of the responses from Turkey and Europe for reputation.

Results of the independent samples T test are given in the Table 4.43 and Table 4.44.

Table 4.43. Summary of The Responses for Reputation

Origin		N	Mean	Std. Deviation	Std. Error Mean
TPLPS9	Turkey	103	3.6602	.90265	.08894
	Europe	36	3.7778	.89797	.14966

Table 4.44. Independent samples-T Test for Reputation

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
TPLPS9	Equal variances assumed	.310	**.579**	-.674	137	**.502**	-.11758	.17453	-.46271	.22755
	Equal variances not assumed			-.675	61.457	.502	-.11758	.17409	-.46566	.23049

According to Levene's Test for equality of variances, p-value is greater than 0.05 which is 0.579 so null hypothesis is not rejected. Therefore, equal variances are assumed, and the first row is taken into consideration. According to the t-test for equality of means, p-value is greater than 0.05 which is 0.502 so null hypothesis is not rejected. There is no significant difference between the means of the responses from Turkey and Europe for reputation.

Independent Samples T Test for trained logistics personnel;

σ_1^2= The variance of responses from Turkey for trained logistics personnel

σ_2^2= The variance of responses from Europe for trained logistics personnel

H_0= σ_1^2-σ_2^2 =0 H_0: At the 0.05 level of significance, the variances of responses from Turkey and Europe are equal for trained logistics personnel.

H_1= σ_1^2- σ_2^2 ≠ 0 H_1: At the 0.05 level of significance, the variances of responses from Turkey and Europe are not equal for trained logistics personnel.

$\mu_1=$ mean of responses from Turkey for trained logistics personnel

$\mu_2=$ mean of responses from Europe for trained logistics personnel

$H_0=$ $\mu_1-\mu_2=0$ H_0: At the 0.05 level of significance, there is no difference between the means of the responses from Turkey and Europe for trained logistics personnel.

$H_1=$ $\mu_1-\mu_2 \neq 0$ H_1: At the 0.05 level of significance, there is difference between the means of the responses from Turkey and Europe for trained logistics personnel.

Results of the independent samples T test are given in the Table 4.45 and Table 4.46.

Table 4.45. Summary of The Responses for Trained Logistics Personnel

Origin		N	Mean	Std. Deviation	Std. Error Mean
TPLPS10	Turkey	103	4.1942	.72839	.07177
	Europe	36	4.0000	.67612	.11269

Table 4.46. Independent samples-T Test for Trained Logistics Personnel

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
TPLPS10	Equal variances assumed	4.378	**.038**	1.402	137	.163	.19417	.13851	-.07972	.46807
	Equal variances not assumed			1.453	65.458	**.151**	.19417	.13360	-.07261	.46096

According to Levene's test for equality of variances, p-value is less than 0.05 which is 0.038 so null hypothesis is rejected. Therefore, equal variances are not assumed, and the second row is taken into consideration. According to the t-test for equality of means, p-value is greater than 0.05 which is 0.151 so null hypothesis is not rejected. There is no significant difference between the means of the responses from Turkey and Europe for trained logistics personnel.

Independent Samples T Test for value added services;

$\sigma_1^2 =$ The variance of responses from Turkey for value added services

$\sigma_2^2 =$ The variance of responses from Europe for value added services

$H_0 = \sigma_1^2 - \sigma_2^2 = 0$ H_0: At the 0.05 level of significance, the variances of responses from Turkey and Europe are equal for value added services.

$H_1 = \sigma_1^2 - \sigma_2^2 \neq 0$ H_1: At the 0.05 level of significance, the variances of responses from Turkey and Europe are not equal for value added services.

$\mu_1 =$ mean of responses from Turkey for value added services

$\mu_2 =$ mean of responses from Europe for value added services

$H_0 = \mu_1 - \mu_2 = 0$ H_0: At the 0.05 level of significance, there is no difference between the means of the responses from Turkey and Europe for value added services.

$H_1 = \mu_1 - \mu_2 \neq 0$ H_1: At the 0.05 level of significance, there is difference between the means of the responses from Turkey and Europe for value added services.

Results of the independent samples T test are given in the Table 4.47 and Table 4.48.

Table 4.47. Summary of The Responses for Value Added Services

Origin		N	Mean	Std. Deviation	Std. Error Mean
TPLPS11	Turkey	103	3.9515	.87871	.08658
	Europe	36	3.6389	.93052	.15509

Table 4.48. Independent samples-T Test for Value-Added Services

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
TPLPS11	Equal variances assumed	2.675	**.104**	1.809	137	**.073**	.31257	.17275	-.02903	.65417
	Equal variances not assumed			1.760	58.275	.084	.31257	.17762	-.04294	.66807

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According to Levene's test for equality of variances, p-value is greater than 0.05 which is 0.104 so null hypothesis is not rejected. Therefore, equal variances are assumed, and the first row is taken into consideration. According to the t-test for equality of means, p-value is greater than 0.05 which is 0.073 so null hypothesis is not rejected. There is no significant difference between the means of the responses from Turkey and Europe for value added services.

Independent Samples T Test for financial stability;

σ_1^2= The variance of responses from Turkey for financial stability

σ_2^2= The variance of responses from Europe for financial stability

H_0= σ_1^2-σ_2^2 =0 H_0: At the 0.05 level of significance, the variances of responses from Turkey and Europe are equal for financial stability.

H_1= σ_1^2- $\sigma_2^2 \neq 0$ H_1: At the 0.05 level of significance, the variances of responses from Turkey and Europe are not equal for financial stability.

μ_1= mean of responses from Turkey for financial stability

μ_2= mean of responses from Europe for financial stability

H_0= μ_1- μ_2=0 H_0: At the 0.05 level of significance, there is no difference between the means of the responses from Turkey and Europe for financial stability.

H_1= μ_1- $\mu_2 \neq 0$ H_1: At the 0.05 level of significance, there is difference between the means of the responses from Turkey and Europe for financial stability.

Results of the independent samples T test are given in the Table 4.49 and Table 4.50.

Table 4.49. Summary of The Responses for Financial Stability

Origin		N	Mean	Std. Deviation	Std. Error Mean
TPLPS12	Turkey	103	3.9320	.93160	.09179
	Europe	36	3.8333	1.05560	.17593

Table 4.50. Independent samples-T Test for Financial Stability

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
TPLPS12	Equal variances assumed	1.545	**.216**	.528	137	**.598**	.09871	.18680	-.27068	.46809
	Equal variances not assumed			.497	55.245	.621	.09871	.19844	-.29894	.49635

According to Levene's test for equality of variances, p-value is greater than 0.05 which is 0.216 so null hypothesis is not rejected. Therefore, equal variances are assumed, and the first row is taken into consideration. According to the t-test for equality of means, p-value is greater than 0.05 which is 0.598 so null hypothesis is not rejected. There is no significant difference between the means of the responses from Turkey and Europe for financial stability.

Independent Samples T Test for management quality;

σ_1^2= The variance of responses from Turkey for management quality

σ_2^2= The variance of responses from Europe for management quality

H_0= σ_1^2-σ_2^2 =0 H_0: At the 0.05 level of significance, the variances of responses from Turkey and Europe are equal for management quality.

H_1= σ_1^2- $\sigma_2^2 \neq 0$ H_1: At the 0.05 level of significance, the variances of responses from Turkey and Europe are not equal for management quality.

μ_1= mean of responses from Turkey for management quality

μ_2= mean of responses from Europe for management quality

H_0= μ_1- μ_2=0 H_0: At the 0.05 level of significance, there is no difference between the means of the responses from Turkey and Europe for management quality.

H_1= μ_1- $\mu_2 \neq 0$ H_1: At the 0.05 level of significance, there is difference between the means of the responses from Turkey and Europe for management quality.

Results of the independent samples T test are given in the Table 4.51 and Table 4.52.

Table 4.51. Summary of The Responses for Management Quality

Origin		N	Mean	Std. Deviation	Std. Error Mean
TPLPS13	Turkey	103	4.4369	.58862	.05800
	Europe	36	3.8611	.83333	.13889

Table 4.52. Independent samples-T Test for Management Quality

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
TPLPS13	Equal variances assumed	.582	**.447**	4.507	137	**.000**	.57578	.12775	.32316	.82840
	Equal variances not assumed			3.825	47.772	.000	.57578	.15051	.27312	.87844

According to Levene's Test for equality of variances, p-value is greater than 0.05 which is 0.447 so null hypothesis is not rejected. Therefore, equal variances are assumed, and the first row is taken into consideration. According to the t-test for equality of means, p-value is less than 0.05 which is 0.000 so null hypothesis is rejected. There is a significant difference between the means of the responses from Turkey and Europe for management quality.

4.5.3. Mann Whitney U Test

The Mann-Whitney U test is a nonparametric test which corresponds to independent-samples t test. The test is also equipollent to the Wilcoxon rank sum test and the Kruskal-Wallis test for two groups. The observations from the two samples are combined and ranked, with the average rank assigned in the case of ties. Sum of ranks (S value) is also known as Wilcoxon W statistics. When the SPSS is preparing the test statistic, it considers the smaller S value between two groups (IBM Corp,2012).

The Kolmogorov-Smirnov Z test is the test that reveals differences in both the locations and shapes of the distributions. Maximum absolute difference between the observed cumulative distributions for both samples is based on in the Kolmogorov-Smirnov test. If the difference is significantly large, the two distributions are conceived differently (IBM Corp,2012).

Asymp. Sig. (2-tailed) abbreviation means that asymptotic p value which is based upon the standard normal distribution.

Mann Whitney U Test for Price Offering;

Median: The middle number; found by ordering all data points and picking out the one in the middle (Khan Academy, n.d.).

H_0: At the 0.05 level of significance, there is no difference between the median of the responses from Turkey and Europe for price offering.

H_1: At the 0.05 level of significance, there is a difference between the median of the responses from Turkey and Europe for price offering.

Results of the Mann Whitney U test are given in the Table 4.53 and Table 4.54.

Table 4.53. Ranks for Price Offering

	Origin	N	Mean Rank	Sum of Ranks
TPLPS1	Turkey	103	70.61	7273.00
	Europe	36	68.25	2457.00
	Total	139		

Table 4.54. Mann Whitney U Test for Price Offering

	TPLPS1
Mann-Whitney U	1791.000
Wilcoxon W	2457.000
Z	-.332
Asymp. Sig. (2-tailed)	**.740**

Asymptotic p-value is greater than 0.05 which is 0.740 so null hypothesis is not rejected. There is no significant difference between the medians of the responses from Turkey and Europe for price offering.

Mann Whitney U Test for dependability;

H_0: At the 0.05 level of significance, there is no statistically difference between the median of the responses from Turkey and Europe for dependability.

H_1: At the 0.05 level of significance, there is a statistically difference between the median of the responses from Turkey and Europe for dependability. Results of the Mann Whitney U test are given in the Table 4.55 and Table 4.56.

Table 4.55. Ranks for Dependability

	Origin	N	Mean Rank	Sum of Ranks
TPLPS2	Turkey	103	69.16	7123.00
	Europe	36	72.42	2607.00
	Total	139		

Table 4.56. Mann Whitney U Test for Dependability

	TPLPS2
Mann-Whitney U	1767.000
Wilcoxon W	7123.000
Z	-.496
Asymp. Sig. (2-tailed)	**.620**

Asymptotic p-value is greater than 0.05 which is 0.620 so null hypothesis is not rejected. There is no significant difference between the medians of the responses from Turkey and Europe for dependability. Mann Whitney U Test for service quality;

H_0: At the 0.05 level of significance, there is no statistically difference between the median of the responses from Turkey and Europe for service quality.

H_1: At the 0.05 level of significance, there is a statistically difference between the median of the responses from Turkey and Europe for service quality.

Results of the Mann Whitney U test are given in the Table 4.57 and Table 4.58.

Table 4.57. Ranks for Service Quality

	Origin	N	Mean Rank	Sum of Ranks
TPLPS3	Turkey	103	69.05	7112.00
	Europe	36	72.72	2618.00
	Total	139		

Table 4.58. Mann Whitney U Test for Service Quality

	TPLPS3
Mann-Whitney U	1756.000
Wilcoxon W	7112.000
Z	-.538
Asymp. Sig. (2-tailed)	**.591**

Asymptotic p-value is greater than 0.05 which is 0.519 so null hypothesis is not rejected. There is no significant difference between the medians of the responses from Turkey and Europe for service quality.

Mann Whitney U Test for system capabilities;

H_0: At the 0.05 level of significance, there is no statistically difference between the median of the responses from Turkey and Europe for system capabilities.

H_1: At the 0.05 level of significance, there is a statistically difference between the median of the responses from Turkey and Europe for system capabilities.

Results of the Mann Whitney U test are given in the Table 4.59 and Table 4.60.

Table 4.59. Ranks for System Capabilities

	Origin	N	Mean Rank	Sum of Ranks
TPLPS4	Turkey	103	74.27	7650.00
	Europe	36	57.78	2080.00
	Total	139		

Table 4.60. Mann Whitney U Test for System Capabilities

	TPLPS4
Mann-Whitney U	1414.000
Wilcoxon W	2080.000
Z	-2.442
Asymp. Sig. (2-tailed)	**.015**

Asymptotic p-value is less than 0.05 which is 0.015 so null hypothesis is rejected. There is a significant difference between the medians of the responses from Turkey and Europe for system capabilities.

Mann Whitney U Test for flexibility;

H$_0$: At the 0.05 level of significance, there is no statistically difference between the median of the responses from Turkey and Europe for flexibility.

H$_1$: At the 0.05 level of significance, there is a statistically difference between the median of the responses from Turkey and Europe for flexibility.

Results of the Mann Whitney U test are given in the Table 4.61 and Table 4.62.

Table 4.61. Ranks for Flexibility

	Origin	N	Mean Rank	Sum of Ranks
TPLPS5	Turkey	103	68.30	7034.50
	Europe	36	74.88	2695.50
	Total	139		

Table 4.62. Mann Whitney U Test for Flexibility

	TPLPS5
Mann-Whitney U	1678.500
Wilcoxon W	7034.500
Z	-.945
Asymp. Sig. (2-tailed)	**.345**

Asymptotic p-value is greater than 0.05 which is 0.345 so null hypothesis is not rejected. There is no significant difference between the medians of the responses from Turkey and Europe for system flexibility.

Mann Whitney U Test for good communication skills;

H$_0$: At the 0.05 level of significance, there is no statistically difference between the median of the responses from Turkey and Europe for good communication skills.

H$_1$: At the 0.05 level of significance, there is a statistically difference between the median of the responses from Turkey and Europe for good communication skills.

Results of the Mann Whitney U test are given in the Table 4.63 and 4.64.

Table 4.63. Ranks for Good Communication Skills

	Origin	N	Mean Rank	Sum of Ranks
TPLPS6	Turkey	103	71.63	7377.50
	Europe	36	65.35	2352.50
	Total	139		

Table 4.64. Mann Whitney U Test for Good Communication Skills

	TPLPS6
Mann-Whitney U	1686.500
Wilcoxon W	2352.500
Z	-.915
Asymp. Sig. (2-tailed)	**.360**

Asymptotic p-value is greater than 0.05 which is 0.360 so null hypothesis is not rejected. There is no significant difference between the medians of the responses from Turkey and Europe for good communication skills.

Mann Whitney U Test for cultural fit;

H_0: At the 0.05 level of significance, there is no statistically difference between the median of the responses from Turkey and Europe for cultural fit.

H_1: At the 0.05 level of significance There is a statistically difference between the median of the responses from Turkey and Europe for cultural fit.

Results of the Mann Whitney U test are given in the Table 4.65 and Table 4.66

Table 4.65. Ranks for Cultural Fit

	Origin	N	Mean Rank	Sum of Ranks
TPLPS7	Turkey	103	71.91	7407.00
	Europe	36	64.53	2323.00
	Total	139		

Table 4.66. Mann Whitney U Test for Cultural Fit

	TPLPS7
Mann-Whitney U	1657.000
Wilcoxon W	2323.000
Z	-1.021
Asymp. Sig. (2-tailed)	**.307**

Asymptotic p-value is greater than 0.05 which is 0.307 so null hypothesis is not rejected. There is no significant difference between the medians of the responses from Turkey and Europe for cultural fit.

Mann Whitney U Test for location;

H_0: At the 0.05 level of significance, there is no statistically difference between the median of the responses from Turkey and Europe for location.

H_1: At the 0.05 level of significance, there is a statistically difference between the median of the responses from Turkey and Europe for location.

Results of the Mann Whitney U test are given in the Table 4.67 and 4.68.

Table 4.67. Ranks for Location

	Origin	N	Mean Rank	Sum of Ranks
TPLPS8	Turkey	103	76.09	7837.00
	Europe	36	52.58	1893.00
	Total	139		

Table 4.68. Mann Whitney U Test for Location

	TPLPS8
Mann-Whitney U	1227.000
Wilcoxon W	1893.000
Z	-3.156
Asymp. Sig. (2-tailed)	**.002**

Asymptotic p-value is less than 0.05 which is 0.002 so null hypothesis is rejected. There is a significant difference between the medians of the responses from Turkey and Europe for location.

Mann Whitney U Test for reputation;

H_0: At the 0.05 level of significance, there is no statistically difference between the median of the responses from Turkey and Europe for reputation.

H_1: At the 0.05 level of significance, there is a statistically difference between the median of the responses from Turkey and Europe for reputation.

Results of the Mann Whitney U test are given in the Table 4.69 and 4.70.

Table 4.69. Ranks for Reputation

	Origin	N	Mean Rank	Sum of Ranks
TPLPS9	Turkey	103	68.64	7069.50
	Europe	36	73.90	2660.50
	Total	139		

Table 4.70. Mann Whitney U Test for Reputation

	TPLPS9
Mann-Whitney U	1713.500
Wilcoxon W	7069.500
Z	-.721
Asymp. Sig. (2-tailed)	**.471**

Asymptotic p-value is greater than 0.05 which is 0.471 so null hypothesis is not rejected. There is no significant difference between the medians of the responses from Turkey and Europe for reputation.

Mann Whitney U Test for trained logistics personnel;

H_0: At the 0.05 level of significance, there is no statistical difference between the median of the responses from Turkey and Europe for trained logistics personnel.

H_1: At the 0.05 level of significance, there is a statistical difference between the median of the responses from Turkey and Europe for trained logistics personnel.

Results of the Mann Whitney U test are given in the Table 4.71 and 4.72.

Table 4.71. Ranks for Trained Logistics Personnel

	Origin	N	Mean Rank	Sum of Ranks
TPLPS10	Turkey	103	72.79	7497.50
	Europe	36	62.01	2232.50
	Total	139		

Table 4.72. Mann Whitney U Test for Trained Logistics Personnel

	TPLPS10
Mann-Whitney U	1566.500
Wilcoxon W	2232.500
Z	-1.531
Asymp. Sig. (2-tailed)	**.126**

Asymptotic p-value is greater than 0.05 which is 0.126 so null hypothesis is not rejected. There is no significant difference between the medians of the responses from Turkey and Europe for trained logistics personnel.

Mann Whitney U Test for value added services;

H_0: At the 0.05 level of significance, there is no statistically difference between the median of the responses from Turkey and Europe for value added services.

H_1: At the 0.05 level of significance, there is a statistically difference between the median of the responses from Turkey and Europe for value added services.

Results of the Mann Whitney U test are given in the Table 4.73 and Table 4.74.

Table 4.73. Ranks for Value Added Services

	Origin	N	Mean Rank	Sum of Ranks
TPLPS11	Turkey	103	73.69	7590.00
	Europe	36	59.44	2140.00
	Total	139		

Table 4.74. Mann Whitney U Test for Value Added Services

	TPLPS11
Mann-Whitney U	1474.000
Wilcoxon W	2140.000
Z	-1.958
Asymp. Sig. (2-tailed)	**.050**

Asymptotic p-value is equal to 0.05 so null hypothesis is not rejected. There is no significant difference between the medians of the responses from Turkey and Europe for value added services.

Mann Whitney U Test for financial stability;

H_0: At the 0.05 level of significance, there is no statistically difference between the median of the responses from Turkey and Europe for financial stability.

H_1: At the 0.05 level of significance, there is a statistically difference between the median of the responses from Turkey and Europe for financial stability.

Results of the Mann Whitney U test are given in the Table 4.75 and 4.76.

Table 4.75. Ranks for Financial Stability

	Origin	N	Mean Rank	Sum of Ranks
TPLPS12	Turkey	103	70.72	7284.00
	Europe	36	67.94	2446.00
	Total	139		

Table 4.76. Mann Whitney U Test for Financial Stability

	TPLPS12
Mann-Whitney U	1780.000
Wilcoxon W	2446.000
Z	-.387
Asymp. Sig. (2-tailed)	**.699**

Asymptotic p-value is greater than 0.05 which is 0.699 so null hypothesis is not rejected. There is no significant difference between the medians of the responses from Turkey and Europe for financial stability.

Mann Whitney U Test for management quality;

H_0: At the 0.05 level of significance, there is no statistically difference between the median of the responses from Turkey and Europe for management quality.

H_1: At the 0.05 level of significance, there is a statistically difference between the median of the responses from Turkey and Europe for management quality.

Results of the Mann Whitney U test are given in the Table 4.77 and 4.78.

Table 4.77. Ranks for Management Quality

	Origin	N	Mean Rank	Sum of Ranks
TPLPS13	Turkey	103	76.92	7923.00
	Europe	36	50.19	1807.00
	Total	139		

Table 4.78. Mann Whitney U Test for Management Quality

	TPLPS13
Mann-Whitney U	1141.000
Wilcoxon W	1807.000
Z	-3.801
Asymp. Sig. (2-tailed)	**.000**

Asymptotic p-value is less than 0.05 which is 0.000 so null hypothesis is rejected. There is a significant difference between the medians of the responses from Turkey and Europe for management quality.

According to results of Independent T-Test and Mann Whitney U Test, there is a statistical difference between Turkish and European Companies responses for system capability, location, and management quality criteria. These criteria are much more important for companies who get 3PL services in Turkey when compared to Europe.

4.6. Analysis of the Survey Results for Company Profiles

In addition to the comparison of the responses between Turkish and European Companies, the effects of the company characteristics on the importance of selection criteria are analyzed.

In order to show the effects of the number of employees of the participating companies on the importance degree of selection criteria, a scatter diagram is drawn. The scatter diagram is a useful plot for identifying a potential relationship between two variables (Montgomery,2009). Differences among responses are checked by using the scatter diagram.

There are 5 different options for the number of employees which are less than 100, 100-499, 500-999, 1000-4999, and 5000 or more. Firstly, the averages for options are taken for all selection criteria and put on the graphic. Secondly, the average of the averages of the options for each criterion is taken to make a comparison. The comparison is made visually. In the Figure 4.18, numbers from 1 to 13 show the 3PL provider selection criteria in the x-axis and numbers from 1 to 5 shows that Likert Scale in the y-axis. Outliers are determined by using scatter diagrams.

The average response values of the companies which have 1000-4999 employees are below the averages of all responses for service quality and trained logistics personnel as shown in Figure 4.18. The average response value for companies with 1000-4999 employees is 3 for service quality where the average of all responses is 4.45 and the average response value for companies with 1000-4999 employees is 2 for trained logistics personnel where the average of all responses is 4.18. Also, the average response values of the companies which have 499-999 employees are below the averages of all responses for flexibility and location in Turkey. The average response value for companies with 499-999 employees is 3 for flexibility where the average of all responses is 4.23 and the average response value for companies with 499-999 employees is 2 for location where the average of all responses is 3.75.

Figure 4.18. Effects of Number of Employees on the Selection Criteria for Turkey

The average response values of the companies which have 1000-4999 employees are below the averages of all responses for flexibility and good communication skills as shown in Figure 4.19. The average response value for companies with 1000-4999 employees is 2 for flexibility where the average of all responses is 4.5. The average response value for companies with 1000-4999

employees is 2 for good communication skills where the average of all responses is 4.4.
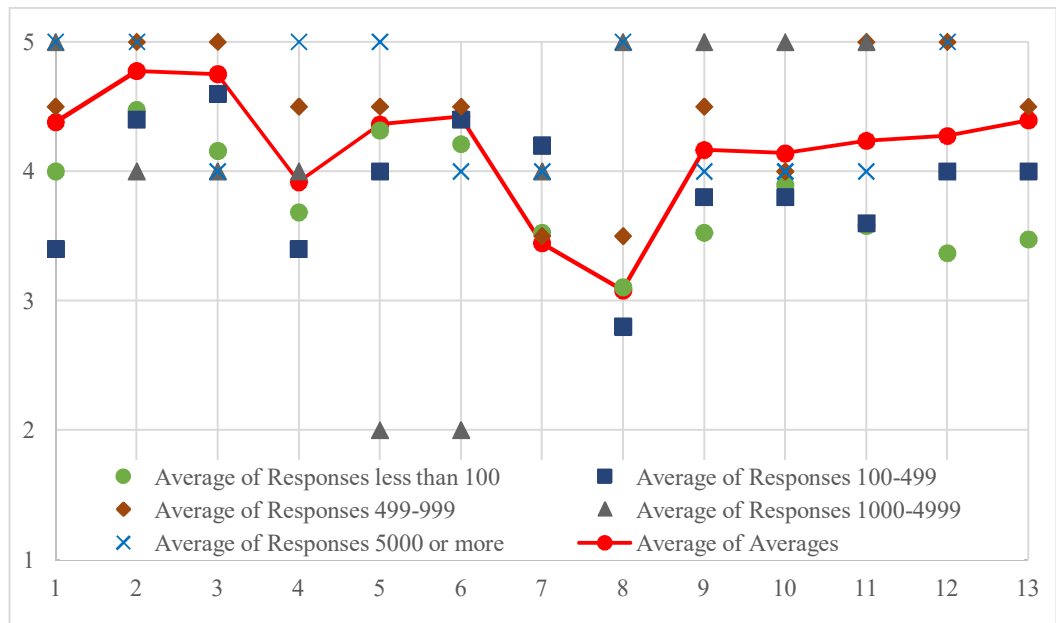
Figure 4.19. Effects of Number of Employees on the Selection Criteria for Europe

In order to show the effects of the foundation year of the participating companies on the importance degree of selection criteria, a scatter diagram is drawn.

There are 5 different options for the foundation years which are before 1980,1981-1990,1991-2000,2001-2010, and 2011 or later Firstly, the averages for options are taken for all selection criteria and put on the graphic. Secondly, the average of the averages of the options for each criterion is taken to make a comparison. In the Figure 4.20, numbers from 1 to 13 show the 3PL provider selection criteria in the x-axis and numbers from 1 to 5 shows that Likert Scale in the y-axis. According to Figure 4.20, no dissociation among the criteria is observed.
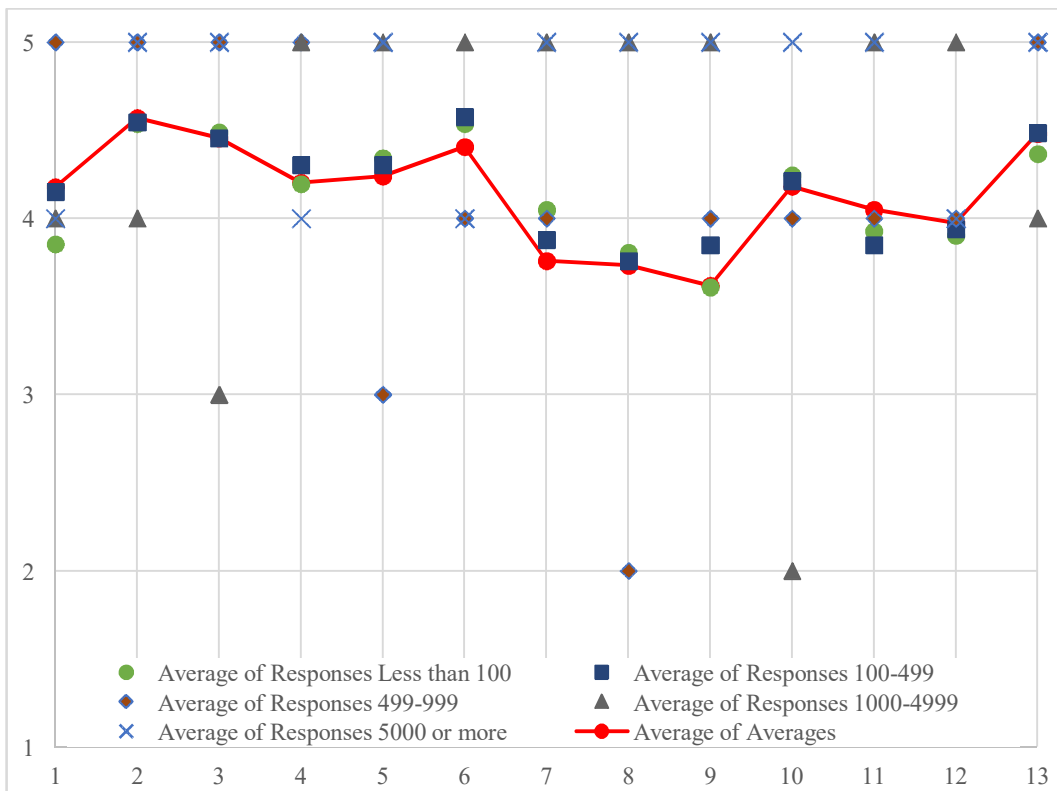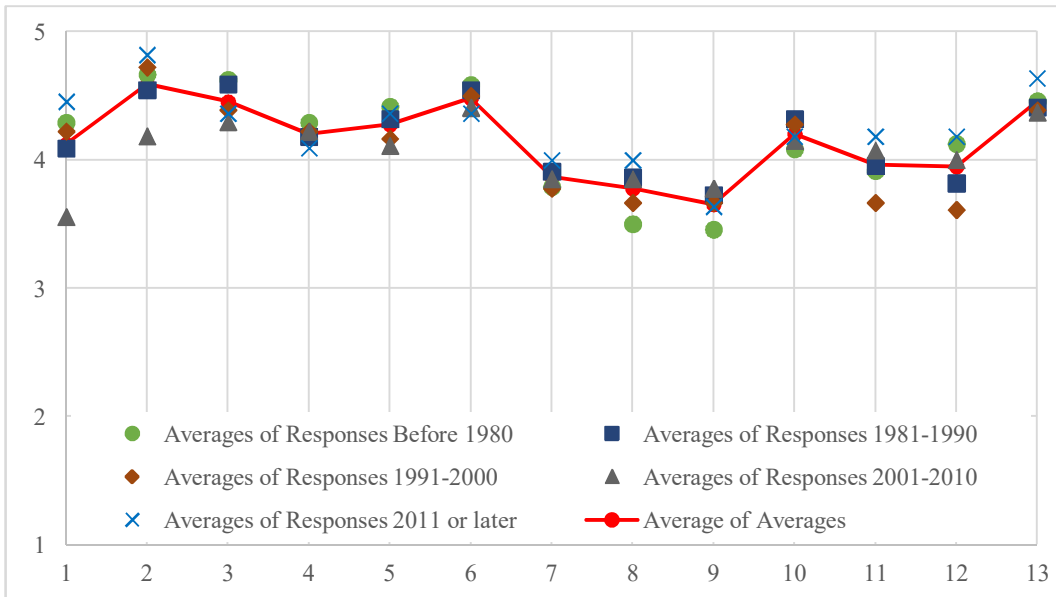
Figure 4.20. Effects of Foundation Year on the Selection Criteria for Turkey

The average response values of the companies which have been founded in 2001-2010 are below the averages of all responses for system capabilities, flexibility, and value-added services as shown in Figure 4.21. The average response value for companies which have been founded 2001-2010 is 2 for system capabilities where the average of all responses is 3.81. The average response value for companies which have been founded 2001-2010 is 1 for flexibility where the average of all responses is 4.37. The average response value for companies which have been founded 2001-2010 is 1 for value added services where the average value of all responses is 3.5. The average response values of the companies which have been founded in 1991-2000 are below the averages of all responses for system capabilities, as shown in Figure 4.21. The average response value for companies which have been founded 1991-2000 is 2 for system capabilities where the average of all responses is 3.81.
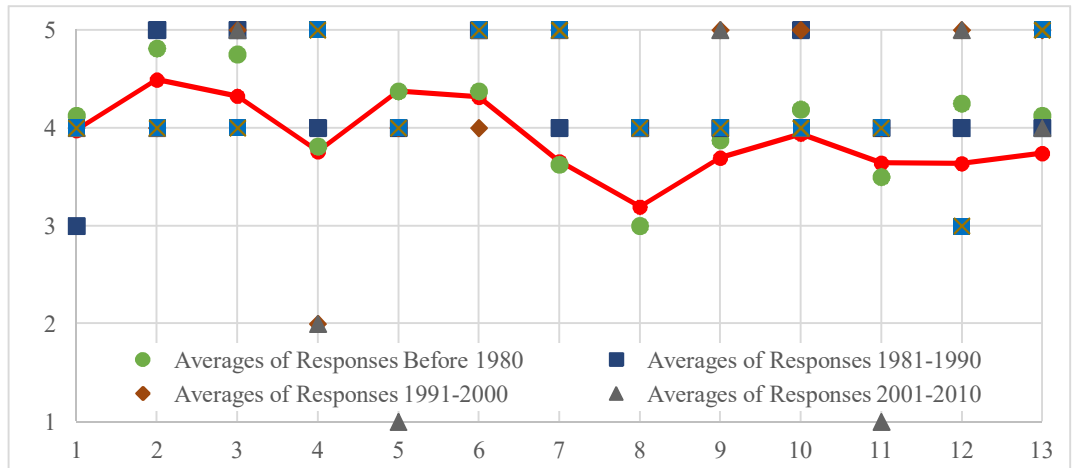
Figure 4.21. Effects of Foundation Year on the Selection Criteria for Europe

In order to show the effects of sectors in which companies operating on selection criteria, scatter diagrams are drawn. There are 8 different options for the sector which are food, textile or later, metallurgy, machinery, chemistry, wood or furniture, cement, glass or ceramics, and electronics. The averages of responses are taken for each criterion based on sectors and put on the graphics for Turkey and Europe for the comparison. In the Figure 4.22, numbers from 1 to 13 show the 3PL provider selection criteria in the x-axis and numbers from 1 to 5 shows that Likert Scale in the y-axis. According to Figure 4.22, the importance degree of dependability, service quality and reputation are the same between Turkey and Europe for the food sector.
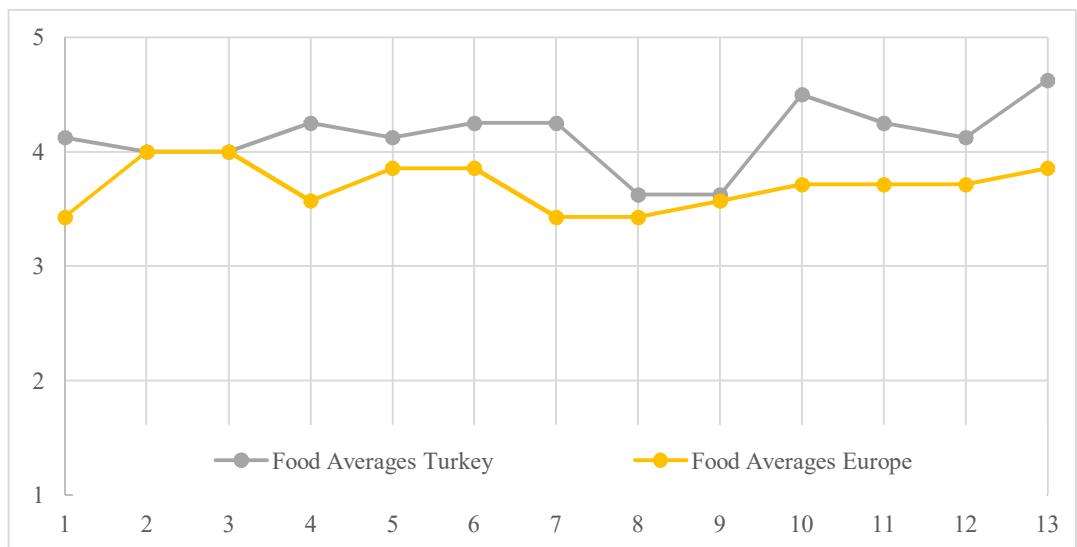
Figure 4.22. Differences Between Food Sector for The Selection Criteria

According to Figure 4.23, the importance degree of location and financial stability are the same for Turkey and Europe for the textile or leather sector.
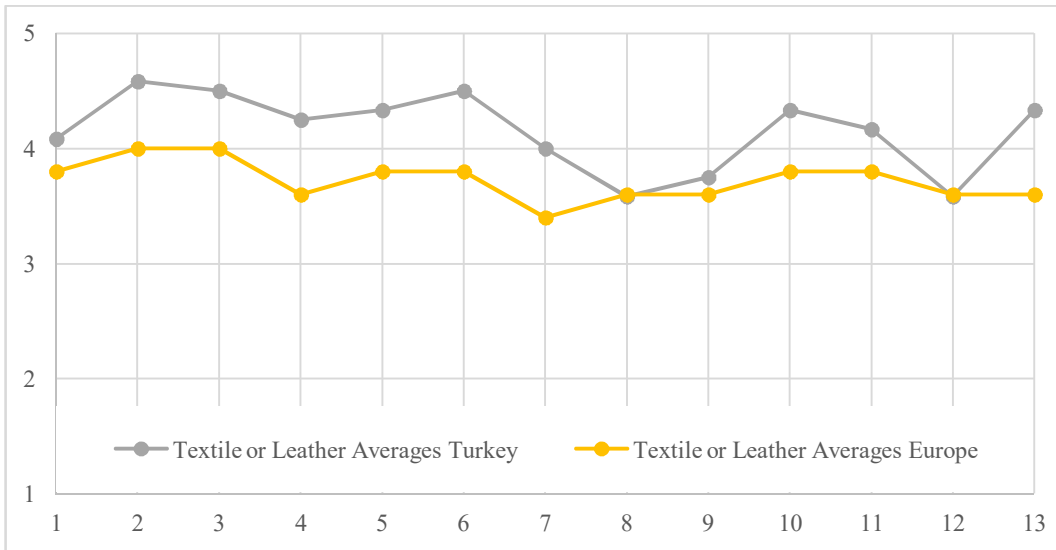
Figure 4.23. Differences Between Textile or Leather Sector for The Selection Criteria

According to Figure 4.24, the importance degree of criteria is very close to each other for Turkey and Europe for the metallurgy sector.
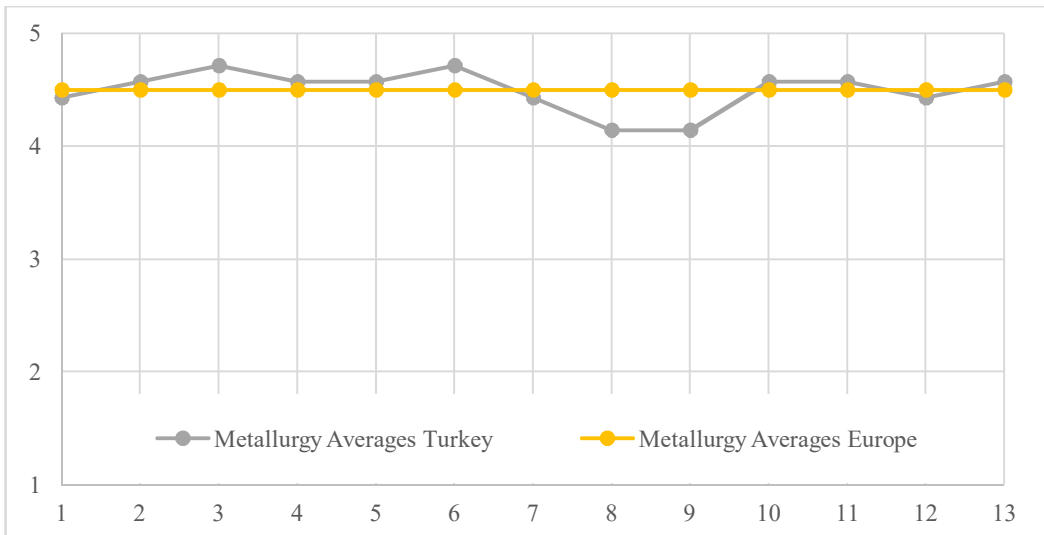
Figure 4.24. Differences Between Metallurgy Sector for The Selection Criteria

According to Figure 4.25, the importance degree of location and trained logistics personnel are very close for Turkey and Europe for the machinery sector.
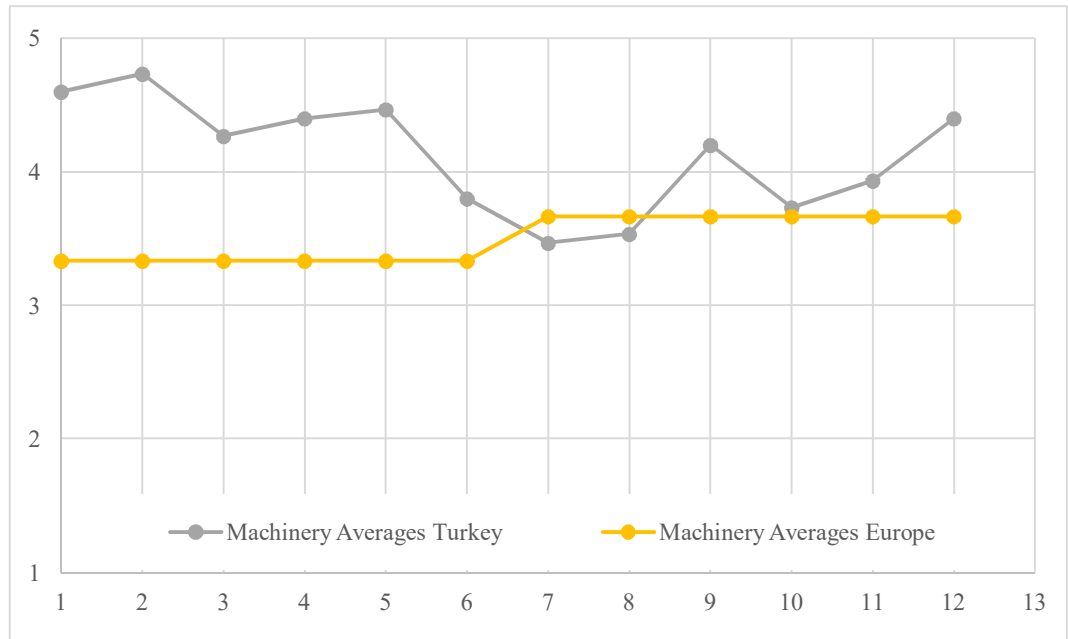
Figure 4.25. Differences Between Machinery Sector for The Selection Criteria

According to Figure 4.26, the importance degree of all criteria is different from each other between Turkey and Europe for the chemistry sector. The selection criteria are much more important for Turkey than Europe in this sector.
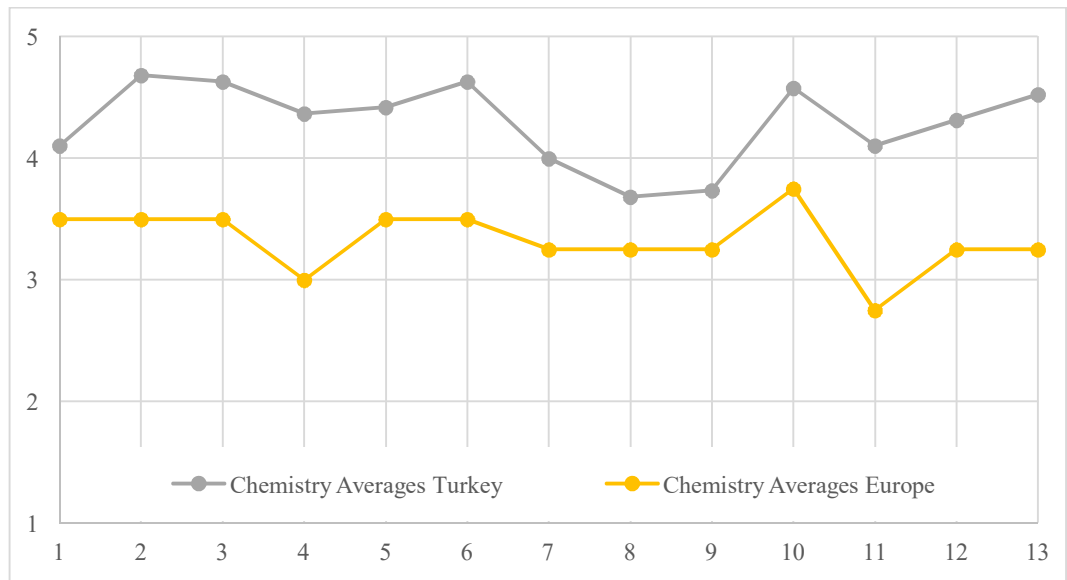
Figure 4.26. Differences Between Chemistry Sector for The Selection Criteria

According to Figure 4.27, the importance degree of all criteria is different from each other between Turkey and Europe for the wood or furniture sector. The selection criteria are much more important for Turkey than Europe in this sector.
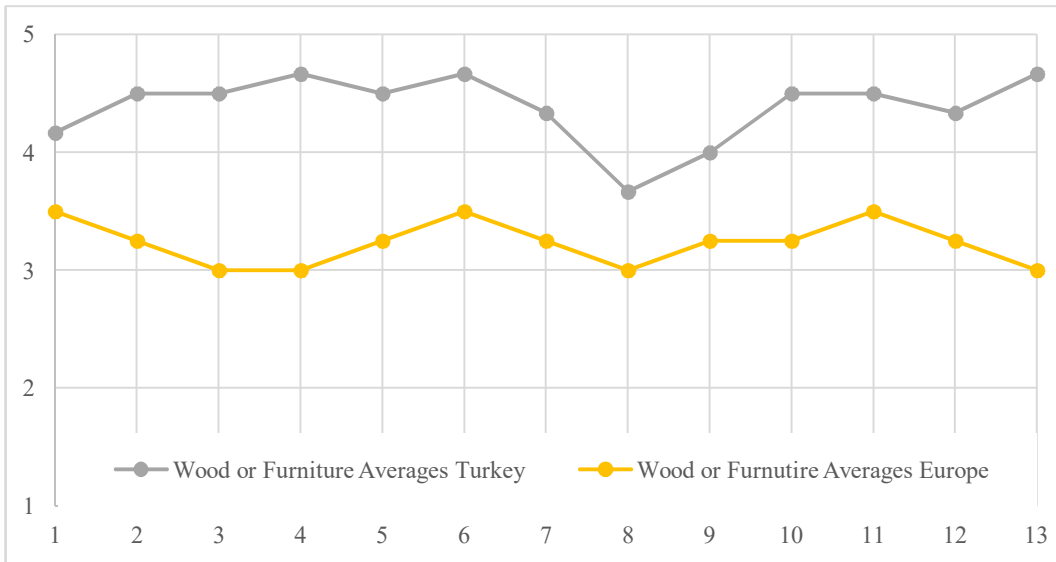
Figure 4.27. Differences Between Wood or Furniture Sector for The Selection Criteria

According to Figure 4.28, the importance degree of all criteria is different from each other between Turkey and Europe for cement, glass or ceramics sectors. The selection criteria are much more important for Turkey than Europe in this sector.
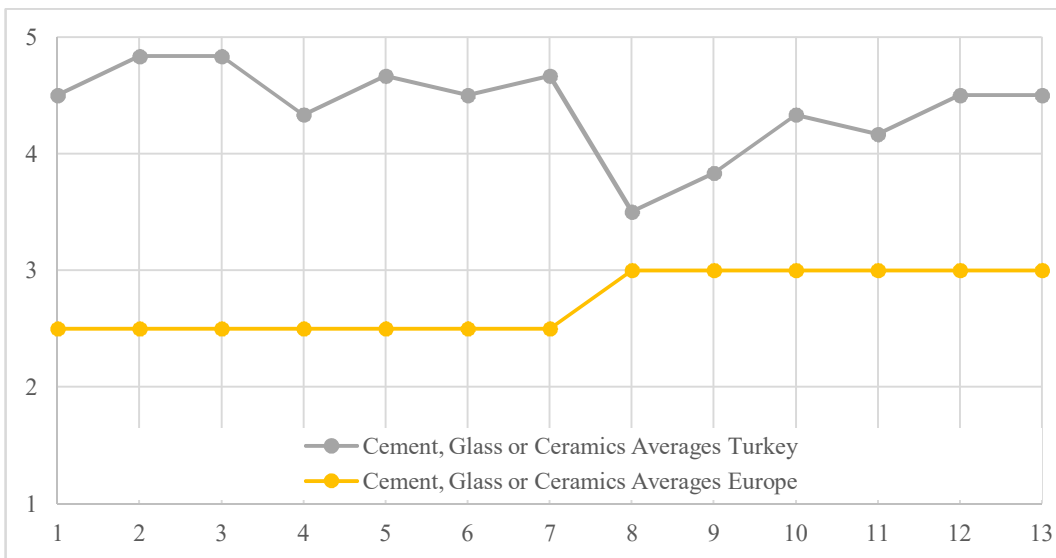
Figure 4.28. Differences Between Cement, Glass or Ceramics Sector for The Selection Criteria

According to Figure 4.29, the importance degree of reputation is the same between Turkey and Europe for electronics sector.
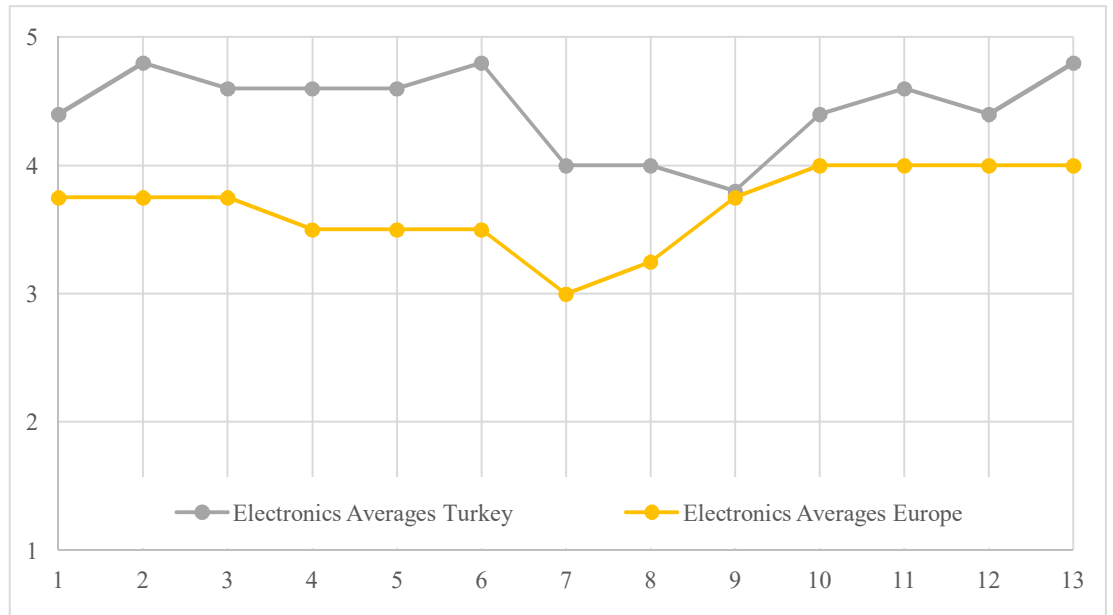
Figure 4.29. Differences Between Electronics Sector for The Selection Criteria

CHAPTER 5
CONCLUSIONS AND FUTURE WORK

In this thesis, 3PL service provider selection criteria between Turkish and European companies are compared to help and improve 3PL service providers' capabilities at the local and global scale. Thirteen most common criteria for the selection of 3PL service provider are determined by examining the literature. An online survey is prepared and sent by email to customers who get 3PL services. The survey is composed of two main categories of questions. In the first part participant companies' characteristics are collected and in the second part five-point Likert Scale is used to measure the importance degree of 3PL service provider selection criteria.

One hundred and three responses from Turkish companies and thirty-six responses from European companies are gathered for the survey. Dependability, service quality and management quality are the most important selection criteria in Turkey with over 95% of total positive responses. Location, reputation, and financial stability are the least important criteria when compared to others with over 10% of total negative responses. Dependability, flexibility and good communication skills are the most important criteria for Europe with over 94% of total positive responses. Location, cultural fit, and financial stability are the least important criteria with over 13% of total negative responses.

These survey results will provide a basis for Turkish and European 3PL service provider companies for improvement opportunities. 3PL service providers should meet customer expectations, design and improve their businesses in order to increase their dependability in the sector for both Turkey and Europe. The personnel should be trained well to prevent incorrect shipments or mistakes in paperwork. 3PL service provider companies should focus on increasing their global capabilities and involve in quality improvement processes to get certified to improve their service quality in Turkey. 3PL companies can improve their problem-solving capability by being customer oriented to increase management

quality in Turkey. The 3PL service provider companies should be prepared for unexpected situations and respond to customer requests immediately in Europe in order to improve their flexibility. 3PL service providers have to be in good relationship with their suppliers for on-time deliveries in Europe to develop their good communication skills.

For the analysis of the responses, both parametric and nonparametric tests are performed, which are respectively independent samples T-test and Mann Whitney U test by using SPSS. According to both test results, criteria that are statistically different between Turkey and Europe are system capabilities, location and financial stability. These criteria are much more important for Turkey when compared to Europe. We can say that Turkish companies are more interested in the 3PL companies' assets, equipment, IT infrastructure, etc. Also, being in the same city with the 3PL service provider is more preferable for companies in Turkey. Moreover, Turkish companies consider problem solving capabilities of 3PL service providers more important than European companies do.

Company's characteristics effects on the selection criteria are examined after making comparison.

We analyzed if the culture and the location of the customers result in differences in the 3PL service provider selection criteria in this thesis.

In the future, a comparison between Turkey and other main geographical areas such as North America or China may be performed. Also, with 4PL service providers becoming more attractive in the direction of industrial development, such a study can be performed for them in the years ahead. Furthermore, a decision support system can be developed in order to match 3PL service providers and customers based on characteristics of companies.

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APPENDIX 1 – Selection Criteria in the Literature

Reference	Service quality	Cost reduction	Cultural fit	Financial stability	Good communication	IT Infrastructure	On-time delivery	Flexibility	Global capabilities	Experience in the similar industry	Dependability	Reputation	Management quality	Equipment	Continuous improvement	Responsiveness	Quality system certifications	Price	Trained Logistics personnel	Asset ownership	Value-added services	Variety of available services	Safety	Market Share	Optimization capabilities	Order cycle time	Client relationship	Shipment error rate	Labour Relations	KPI Measurement and reporting	Technology capabilities	Document Accuracy	Problem solving capability	Profitability	Availability of top management	Customized service	Easy to work with	Customer support services	Accessibility of contact persons in urgency	Effectiveness
Hwang et. al. (2016)	X	X	X	X			X	X	X	X	X	X		X	X	X	X	X		X	X		X				X	X	X	X		X	X	X						X
Bottani and Rizzi (2006)	X		X	X	X		X	X	X	X	X		X	X	X	X	X	X		X	X	X			X							X					X			
Gupta et. al. (2010)	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X			X		X	X					X					X		X	X	
Göl and Çatay (2007)	X	X	X	X	X	X			X	X	X	X	X		X	X	X	X	X	X					X		X			X					X					
Liu and Wang (2009)	X	X	X	X	X	X	X		X	X			X	X	X	X			X					X	X					X										
Aguezzoul (2014)	X	X		X	X	X	X	X	X	X	X	X	X	X	X		X	X	X		X	X		X																
Thakkar et. al. (2005)	X	X	X	X	X	X		X	X	X		X	X				X		X														X		X					
Jharkharia and Shankar (2007)	X	X	X		X	X	X	X	X	X	X	X				X			X	X	X	X				X			X											
Bansal and Kumar (2013)	X	X	X	X	X	X	X	X	X		X	X	X			X												X												
Soh (2009)	X	X	X	X	X	X	X		X	X	X	X				X					X	X	X																	
Kumar and Singh (2012)	X	X	X	X		X	X					X					X	X	X	X	X	X		X	X		X													
Yayla et al. (2015)	X	X	X	X	X	X	X	X		X	X		X	X	X	X															X									
Toksoy (2016)	X	X					X	X	X		X	X	X	X	X		X	X	X								X						X							
Lehmusvaara et. al. (1999)	X	X	X	X	X	X		X					X	X										X		X														
Işıklar et. al. (2007)	X	X	X				X			X	X				X																									
Efendigil et. al (2008)	X	X				X		X	X		X			X	X		X		X				X	X		X														
Falsini et. al. (2012)	X	X	X			X	X	X	X		X			X									X					X												
Daim et. al. (2013)	X								X	X			X						X																X					
Kucukaltan et. al. (2016)												X																						X						
Percin and Min (2013)	X	X	X	X	X		X	X				X																												
Gürcan et. al. (2016)					X																																			
Total	16	15	14	14	13	13	12	12	12	11	10	10	9	9	8	7	7	6	6	5	5	4	4	4	4	3	3	3	3	3	2	2	2	2	2	1	1	1	1	1

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APPENDIX 2 – Comparison Survey of Third Party Logistics Provider Selection Criteria (In Turkish)

Değerli katılımcılar,

Bu anket, Türk ve Avrupa şirketleri için üçüncü parti lojistik sağlayıcısı seçim kriterlerini karşılaştırmak üzere hazırlanmıştır. Anket iki ana bölümden oluşmaktadır. İlk bölüm şirket hakkındaki genel bilgiler, ikinci bölüm ise verilen kriterlerin önem derecesi ile ilgilidir. Anketin tamamlanması yaklaşık 10 dakika almaktadır. Kişisel bilgiler istenmemektedir. Bu çalışmaya katılmak herhangi bir risk veya rahatsızlık içermemektedir.

Bu araştırma Yaşar Üniversitesi Mühendislik Bölümü yüksek lisans öğrencisi Gizem Sağım tarafından gerçekleştirilmektedir. Sorularınız için e-mail (gizemsagim@hotmail.com) veya telefon ile (05367860192) Gizem Sağım'a ulaşabilirsiniz.

Araştırmamıza katıldığınız için teşekkür ederiz!

1) Şirketinizde kaç kişi çalışmaktadır?
   a)100'den az
   b)100-499
   c)499-999
   d)1000-4999
   e)5000 veya daha fazla

2) Şirketiniz ne zaman kurulmuştur?
   a)1980'den önce
   b)1981-1990
   c)1991-2000
   d)2001-2010
   e)2011 veya sonrası

3) Firmanız hangi sanayi sektöründe hizmet vermektedir?
   a) Gıda

b) Tekstil veya Deri

c) Metalürji

d) Makine

e) Kimya

f) Ahşap veya Mobilya

g) Çimento, Cam veya Seramik

h) Elektronik

i) Diğer

4) Aşağıdakilerden hangisi firmanızın mülkiyet türünü tanımlar?

a) Özel

b) Kamu

c) Karma (özel ve kamu ortaklı)

d) Yabancı ortaklı

e) Diğer

5) Şirketinizdeki iş pozisyonunuz nedir?

Cevap:

6) Şirketiniz hangi şehirdedir?

Şehir:

Lütfen 3pl sağlayıcı seçmek için aşağıdaki ifadelere hangi derecede katıldığınızı işaretleyiniz. (1-kesinlikle katılmıyorum, 5-kesinlikle katılıyorum)

7) **Fiyat teklifi** (*işçi, tesis, ekipman gibi maliyetleri azaltmak, vb.*) üçüncü parti lojistik sağlayıcısının seçiminde önemli bir kriterdir.

a) Kesinlikle Katılmıyorum

b) Katılmıyorum

c) Kararsızım

d) Katılıyorum

e) Kesinlikle Katılıyorum

8) **Güvenilirlik** (*düşük sevkiyat hata oranı, zamanında teslimat, belge doğruluğu, vb.*) üçüncü parti lojistik sağlayıcısının seçiminde önemli bir kriterdir.

a) Kesinlikle Katılmıyorum

b) Katılmıyorum

c) Kararsızım

d) Katılıyorum

e) Kesinlikle Katılıyorum

9) **Hizmet kalitesi** (*güvenlik, küresel iş yapma becerileri, kalite sistemi sertifikaları, verimlilik, vb.*) üçüncü parti lojistik sağlayıcısının seçiminde önemli bir kriterdir.

a) Kesinlikle Katılmıyorum

b) Katılmıyorum

c) Kararsızım

d) Katılıyorum

e) Kesinlikle Katılıyorum

10) **Sistem kaynaklarının yeterliliği** (*şirket varlıkları, ekipmanı, bilgi teknolojileri altyapısı, teknolojik yeterlilik, vb.*) üçüncü parti lojistik sağlayıcısının seçiminde önemli bir kriterdir.

a) Kesinlikle Katılmıyorum

b) Katılmıyorum

c) Kararsızım

d) Katılıyorum

e) Kesinlikle Katılıyorum

11) **Müşteri odaklı hizmetlerin çeşitliliği** üçüncü parti lojistik sağlayıcısının seçiminde önemli bir kriterdir.

a) Kesinlikle Katılmıyorum

b) Katılmıyorum

c) Kararsızım

d) Katılıyorum

e) Kesinlikle Katılıyorum

12) **İyi iletişim becerileri** (*müşteri destek hizmetleri, acil durumlarda kontak kişiye ulaşabilme, kişisel ilişkiler, müşteri ilişkileri, vb.*) üçüncü parti lojistik sağlayıcısının seçiminde önemli bir kriterdir.

a) Kesinlikle Katılmıyorum

b) Katılmıyorum

c) Kararsızım

d) Katılıyorum

e) Kesinlikle Katılıyorum

13) **Kültürel uygunluk** (*birlikte çalışma kolaylığı*) üçüncü parti lojistik sağlayıcısının seçiminde önemli bir kriterdir.

a) Kesinlikle Katılmıyorum

b) Katılmıyorum

c) Kararsızım

d) Katılıyorum

e) Kesinlikle Katılıyorum

14) **Lokasyon** üçüncü parti lojistik sağlayıcısının seçiminde önemli bir kriterdir.

a) Kesinlikle Katılmıyorum

b) Katılmıyorum

c) Kararsızım

d) Katılıyorum

e) Kesinlikle Katılıyorum

15) **Sektörel tanınırlık** üçüncü parti lojistik sağlayıcısının seçiminde önemli bir kriterdir.

a) Kesinlikle Katılmıyorum

b) Katılmıyorum

c) Kararsızım

d) Katılıyorum

e) Kesinlikle Katılıyorum

16) **Eğitimli lojistik personeli** üçüncü parti lojistik sağlayıcısının seçiminde önemli bir kriterdir.

a) Kesinlikle Katılmıyorum

b) Katılmıyorum

c) Kararsızım

d) Katılıyorum

e) Kesinlikle Katılıyorum

17) **Katma değerli hizmetler** (*kit haline getirme ve montajlama, paketleme ve yeniden paketleme, etiketleme, kalite kontrol, vb.*) üçüncü parti lojistik sağlayıcısının seçiminde önemli bir kriterdir.

   a) Kesinlikle Katılmıyorum

   b) Katılmıyorum

   c) Kararsızım

   d) Katılıyorum

   e) Kesinlikle Katılıyorum

18) **Mali istikrar** (*karlılık, şirketin pazar payı, vb.*) üçüncü parti lojistik sağlayıcısının seçiminde önemli bir kriterdir.

   a) Kesinlikle Katılmıyorum

   b) Katılmıyorum

   c) Kararsızım

   d) Katılıyorum

   e) Kesinlikle Katılıyorum

19) **Yönetim kalitesi** (*problem çözme yeteneği, sürekli iyileştirme, anahtar performans göstergesi ölçme ve raporlama, vb.*) üçüncü parti lojistik sağlayıcısının seçiminde önemli bir kriterdir.

   a) Kesinlikle Katılmıyorum

   b) Katılmıyorum

   c) Kararsızım

   d) Katılıyorum

   e) Kesinlikle Katılıyorum

20) Anket ile ilgili herhangi bir yorumunuz ya da belirtmek istediğiniz başka bir kriter var ise lütfen yazınız.

   Yorumlar:

APPENDIX 3 – Comparison Survey of Third Party Logistics Provider Selection Criteria (in English)

Dear participants,

This survey is created to compare third party logistics provider selection criteria for Turkish and European companies. It consists of two main parts. The first part is about general information of the company and the second part is about the importance degree of criteria which are given. The survey should take approximately 10 minutes to complete. You will not be asked for personally identifying information. No risks or discomforts are anticipated by participating in this study.

This research is being conducted by Gizem Sağım, a master's student of the engineering department at Yaşar University. If you have questions, you may contact her by email at gizemsagim@hotmail.com or by phone at 05367860192.

Thank you! We appreciate your participation and help with this research!

1) How many employees work in your company?

   a) Less than 100

   b) 100-499

   c) 499-999

   d) 1000-4999

   e) 5000 or more

2) When was your company established?

   a) Before 1980

   b) 1981-1990

   c) 1991-2000

   d) 2001-2010

   e) 2011 or later

3) In which industry does your company operate?

   a) Food

   b) Textile or Leather

c) Metallurgy

d) Machinery

e) Chemistry

f) Wood or Furniture

g) Cement, Glass or Ceramic

h) Electronics

i) Others

4) Which one of the following describes the ownership of your company?

a) Private

b) Public

c) Mixed (private and public)

d) Foreign-owned company

e) Other

5) What is your job title in your company?

Answer:

6) Where is your company located?

City:

Please choose the degree of agreement for each of the statements given below for selecting 3pl provider. (1-strongly disagree, 5-strongly agree)

7) **Price offering** (*reducing costs such as labor, facilities, equipment, etc.)* is an important criterion for choosing third party logistics provider.

a) Strongly Disagree

b) Disagree

c) Undecided

d) Agree

e) Strongly Agree

8) **Dependability** (*low shipment error rate, on-time delivery, document accuracy, etc.*) is an important criterion for choosing third party logistics provider.

a) Strongly Disagree

b) Disagree

c) Undecided

d) Agree

e) Strongly Agree

9) **Service quality** (*safety, global capabilities, having quality system certifications, effectiveness, etc.*) is an important criterion for choosing third party logistics provider.

a) Strongly Disagree

b) Disagree

c) Undecided

d) Agree

e) Strongly Agree

10) **System capabilities** (*company's assets, equipment, IT infrastructure, technological capabilities, etc.*) are important criterion for choosing third party logistics provider.

a) Strongly Disagree

b) Disagree

c) Undecided

d) Agree

e) Strongly Agree

11) **Flexibility** (*responsiveness, customized service, variety of services, etc.*) is an important criterion for choosing third party logistics provider.

a) Strongly Disagree

b) Disagree

c) Undecided

d) Agree

e) Strongly Agree

12) **Good communication skills** (*customer support services, accessibility of contact persons in urgency, personal relationships, client relationship etc.*) are an important criterion for choosing third party logistics provider.

a) Strongly Disagree

b) Disagree

c) Undecided

d) Agree

e) Strongly Agree

13) **Cultural fit** (*easy to work with*) is an important criterion for choosing third party logistics provider.

a) Strongly Disagree

b) Disagree

c) Undecided

d) Agree

e) Strongly Agree

14) **Location** is an important criterion for choosing third party logistics provider.

a) Strongly Disagree

b) Disagree

c) Undecided

d) Agree

e) Strongly Agree

15) **Reputation** *(experience of the company in the similar industry)* is an important criterion for choosing third party logistics provider.

a) Strongly Disagree

b) Disagree

c) Undecided

d) Agree

e) Strongly Agree

16) **Trained logistics personnel** are an important criterion for choosing third party logistics provider.

a) Strongly Disagree

b) Disagree

c) Undecided

d) Agree

e) Strongly Agree

17) **Value-added services** *(kitting and assembling, packaging and repackaging, labeling, quality inspection, etc.)* that are offered by the company is an important criterion for choosing third party logistics provider.

a) Strongly Disagree

b) Disagree

c) Undecided

d) Agree

e) Strongly Agree

18) **Financial stability** *(profitability, market share of the company, etc.)* is an important criterion for choosing third party logistics provider.

a) Strongly Disagree

b) Disagree

c) Undecided

d) Agree

e) Strongly Agree

19) **Management quality** *(problem solving capability, continuous improvement, key process indicators measurement and reporting, etc.)* is an important criterion for choosing third party logistics provider.

a) Strongly Disagree

b) Disagree

c) Undecided

d) Agree

e) Strongly Agree

20) Please write any additional comments about the survey and criteria you use for selecting third party logistics provider.

Comments:

APPENDIX 4 – Comments and Recommendations from Turkey

- Teşekkürler.

- Tüm bunların yanında büyük çaplı ihracatlarda en büyük öncelik fiyat haline geliyor, çünkü aşağı yukarı birçok firma öz mal kaynak kullanmadığından, hatta ortak tedarikçiye yöneldiğinden eşit hizmet veriyor.

- İlgi ve alakanıza teşekkür eder, çalışmalarınızda başarılar dilerim.

- Kolay gelsin.

- Teşekkürler.

- Çoğu firmanın üçüncü parti lojistik sağlayıcı seçerken maliyete önem verdiğini düşünüyorum ancak acil durumlarda hızlı ve pratik çözümler sunabilen bir sağlayıcının maliyeti ne olursa olsun her zaman daha ön planda olması gerektiğini düşünüyorum.

- Çalışmanızda başarılar diliyorum. 1nci soru 10'dan az ile başlamalı 100 çok iddialı bir rakam. Ölçeklemeniz 0-10 / 11-30/ 31-50 / 51-100 / 101 ve üzeri olmalı.

- İyi çalışmalar.

- Başarılar.

- Başarılar diliyorum!

- Teziniz için Lojistik sektörü ile ilgili yardımcı olabileceğimiz başka konular varsa her zaman danışabilirsiniz. Başarılar diliyorum!

- BAŞARILAR.

- Başarılar.

- Her şirket kendi uzmanı olduğu işi daha kaliteli ve verimli nasıl yaparım sorusuna cevap aramalı, lojistik faaliyetlerini de konusunda uzman şirketlere outsource etmeli. Kolaylıklar diliyorum.

- Sorular gayet yerinde. Ancak biraz daha çeşitlendirilebilir. Genel bakıldığında müşteri memnuniyeti odaklı çalışmada sorular çok doğru seçilmiş.

- Başarılı bir çalışma olmuş, başarılarınızın devamını dileriz.

APPENDIX 5 – Comments and Recommendations from Europe

• For us as one of the biggest transport companies in Europe it is very important to know our partner well. to find out what their strengths are and to use them.

• No problem.

• Not all of the above are equally important. Aspects such as service, dependability are definitely one of the most important aspects.

• Clear communication, finding creative solutions, sharing risks-profit-sometimes losses is some important criteria for us in selecting a third-party logistics provider.

• Honesty and integrity.

• Recommendation and reference.