Daniel Sahebi

Improving competitive advantage in 3PL companies in Iran

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Reviewers

Professor Emel Aktas
Cranfield University, School of management, Department of Logistics and supply chain management
College Rd, Cranfield, Wharley End
BEDFORD
MK43 0AL
UNITED KINGDOM

Professor Kongkiti Phusavat
Kasetsart University, Department of Industrial Engineering
50 Ngamwongwan Rd, Khwaeng Lat Yao, Khet Chatuchak, Krung Thep Maha Nakhon
10900
THAILAND

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Julkaisun nimike
Kilpailuedun parantaminen 3PL-yrityksissä Iranissa

Tiivistelmä

Toimitusketjujen hallinnan tärkeys on huomattu viime vuosien aikana teollisuusyritysten välisen kilpailun kasvaessa, ja tilanteeseen on myös tartuttu. Yksi yleisimmistä strategioista toimitusketjujen hallinnassa on ulkoistaminen. Täydellisesti ja yrityksen edun mukaisesti toimivan logistiikkakumppanin valintaan liittyy monia eri tekijöitä. Asiakkaan näkökulmasta päätöksentekoon vaikuttaa moni asia. Osa näistä ei liity suoraan varastointiin tai kuljetukseen.

Tässä väitöstutkimuksessa pyydettiin Teheranissa sijaitsevia iranilaisia vähittäiskaupan yrityksiä osallistumaan kyselytutkimukseen, jossa selvitettiin tärkeimpiä kriteerejä liittyen kolmannen osapuolen logistiikkapalveluja tarjoavien eli 3PL (3rd party logistics) -yrityksien valintaan. Perinteisten, kuljetukseen ja logistiikkaan liittyvien seikkojen, kuten etäisyyden tai kokemuksen lisäksi vähittäiskaupan yritykset huomioivat etenkin yhteiskuntavastuuseen, asiantuntijaresursseihin ja innovaatioihin liittyvät tekijät. Tämän tutkimuksen tarkoituksena on selvittää, mitkä tekijät vaikuttavat Teheranin 3PL-yritysten palvelujen laatuun Teheranissa, ja siten parantaa niiden kilpailuetua.

Yksi tämän tutkimuksen tärkeimmistä tuloksista on ollut vähittäiskaupan logististen tarpeiden tunnistaminen sekä vähittäiskaupan yritysten kohtaamien kannustimien ja esteiden tunnistaminen niiden valitessa sopivaa 3PL-palveluntarjoajaa. Väitöstutkimus on toteutettu hyödyntämällä sekä kvalitatiivisia että kvantitatiivisia tutkimusmenetelmiä. Aineisto koostuu logistiikkapalveluja tarjoavista Teheranin 3PL-yritysten johtajista ja asiantuntijoista sekä näiden yritysten asiakkaista.

Asiasanat
Toimitusketjun hallinta, kolmannen osapuolen logistiikka, Iran, strateginen kumppanuus, jälleenmyyjät

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Abstract
In recent years with the significant growth of competition in industry, the importance of supply chain management has been noted and acted upon. One of the most common strategies in this process is outsourcing, and with a large market there are many factors involved in companies choosing the right third-party to handle their logistical activities perfectly and work for the benefit of the company. From the client's point of view there are many factors which affect their decision, with some of these not directly related to warehousing or transportation specifically.

This research has asked Iranian retail companies situated in Tehran to participate in a survey in order to determine their most important criteria in selecting their 3PL partners. Accordingly, along with classic transportation and logistics issues such as distance or work experience, retailers pay great attention to social responsibility as well as expert human resources and innovation. The motivation behind this research is an attempt to investigate factors affecting the quality of the service of 3PL provider companies in Tehran with the aim of improving their competitive advantage.

One of the main findings of the research has also been to identify current logistics needs in the retail sector and to identify incentives and barriers the retailers encounter when outsourcing 3PL activities. In terms of method, this study is considered mixed research (qualitative-quantitative). The statistical population of this section consists of executives and experts from 3PL companies in Tehran which handle the logistics activities of other companies in Tehran, as well as all the clients of these 3PL companies.

Keywords
Supply chain management, third party logistics, Iran, strategic partnership, retailers

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First and foremost, I would like to express my gratitude to my supervisor, Prof. Petri Helo, for his invaluable advice, constant support, and his patience during my PhD study. Alongside his immense knowledge and genius, his vast experience has encouraged me throughout my academic research life. I would also like to thank Prof. Jussi Kantola for his support during my studies and making my dreams come true by hiring me in the university. I would also like to thank all members of the Department of Technology and Innovation at the University of Vaasa. It is their kind help and unlimited support that has helped make my studying time a wonderful period of my life.

I would also like to express my special gratitude to my best friend and fiancée, Katarina, for being with me through thick and thin and believing in me during times when I would almost lose faith in myself and my future. Thank you for all the emotional and mental support, and thank you for being by my side in good times and in bad. Also, a very special thanks go to my baby brother, Emmanuel. Since the day he was born he has always been my biggest source of motivation for self-improvement, so I could be an example to him to be strong and never give up, regardless of circumstances.

And last but not least, I would like to reflect on all those long days at work and all those sleepless nights studying and researching and having no days off. I never gave up, and had faith when everything seemed impossible, and always believed that continuous improvement is the key to success.

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Abbreviations and symbols

LPI	Logistics performance indicators
MCDM challenge	Multifaceted decision-making challenges

TCE	Transaction cost economics
RBT	Resource based theory
NIT	Neo-Institutional theory
MNCs	Multinational corporations
MCDM	Multicriteria decision-making
IRN	Interval rough number
BWM	Best Worst Method
WASPAS	Weighted Aggregated Sum Product Assessment
NPV	Net present value
AHP	Analytic hierarchy method
ICT	Information and Communication Technology

1 INTRODUCTION

Logistics is known as one of the most important parts of every business, and, according to world-class statistics, logistics costs account for about 12% of global GDP. Globalization and heavy competitive pressure have led many manufacturing plants to outsource their logistics activities. One of the main advantages of outsourcing logistics activities is the concentration of these plants on their key capabilities, thereby increasing their productive performance. On the other hand, with the formation of industrial clusters, the role of outsourcing has become more dominant. Industrial cluster strategy has been introduced in some countries as a successful model for industrial empowerment as an effective strategy in shaping industrial development, depending on the internal conditions of economies. Empowerment in industrial development has a mutual relationship with national production capability; hence, the patterns of industrial development that can help industrial capabilities will also contribute to the national production capacity (Azad and Atiyekar, 2016).

Outsourcing logistic activities is one of the policies of manufacturing companies in the industrialized countries. Assigning logistics functions to 3PLs has improved the cost, delivery time and quality of their logistics services and their ability to meet other goals of the company. Even though 3PL is a rather rapidly growing concept, one can always claim that the rate of competition and the needs of the customers are growing at an even faster speed. Hence, the providers of 3PL services are constantly under pressure to expand and facilitate their services on a regular basis. This is mainly because customers are demanding a much wider service offering.

There are various sets of strategies for 3PL companies to increase their level of competitiveness. Creating bonds with other 3PL companies as well as transportation industries is a rather common method to increase competitive advantage (Lieb, 2005). However, many companies also use a rather new approach, which is about reducing the number of suppliers and mainly concentrating on full-service provider companies. This strategy is known as “everything for everyone”. In this strategy a wide variety of services are offered to a wide variety of customers. However, this school of thought is not a very popular one since it may lead the company to lose focus and competence, with the competitive advantage of the company suffering greatly as a result (Lieb, 2005).

Yet another method, which is used by a large number of companies, is to mainly focus on one main industry. This is accompanied by producing and offering a rather more customized service. The main service providers in the field of 3PL can

and are in fact following this more customer selective approach (Lieb, 2005). This enables the service providers to concentrate on a longer-term commitment to providing the services, and moreover, to consider request for quotation (RFQ) much less. However, this method of approach only functions when the firm in question is a rather large service provider. This approach can and will leave small to medium size providers with a lot narrower range of customers.

SCM in Iran is in many sectors largely dependent on international markets. For example, the Iranian flower industry needs to purchase most of the raw materials from global producers, and it also sells most of its production to global customers. Experts believe that if the main barriers to global supply chain management in the Iranian flower industry could be identified and solved, it could become a rather big player in international markets (Riasi, 2015).

Various 3PL companies specialize in services such as labeling and packaging, and many of these firms invest a vast amount of money on their services. The return on investment in these areas is believed to be rather low and not worth the trouble. Hertz and Alfredsson (2003) suggest that when the direction of the operation of 3PL companies moves to more advanced levels, the cooperation between these firms and fourth party logistic companies increases. There is a school of thought believing that the more costs that 3PL companies agree on taking on behalf of the client, the more the providers of the 3PL services will earn (Hertz & Alfredsson, 2003). So how should 3PL firms increase their competitiveness, and what is the right way to expand their markets? Does increasing the quality of services relate to more demand for the 3PL sector? These are questions which constitute the main motivation for conducting this research. Throughout this study all these factors, and more, will be closely considered and evaluated.

1.1 Importance of the study

In order to advance their businesses, organizations pay attention to reducing the cost of providing services, so the benefit of a strong logistics system as a competitive advantage is crucial. Fulfilment of the customers' needs is achieved through efficient and responsive logistics, so that organizations are challenging to maintain their competitive position by balancing cost temporal and spatial desirability for customers (Agentis et al., 2014).

In the current competitive world, cost reductions have been maximized, and the use of resources and consumption have reached an optimum. Reducing the cost of raw materials may reduce the product quality. Lowering wages brings staff dissatisfaction and legal barriers. The cost of machinery is hardly reducible and

will only be offset by more production. Fixed assets can be used to yield more efficiency, or can be converted into variable costs and reduce overall organization costs. The two main factors which can be effective in reducing costs are the elimination of 'waste' and 'moda'. One of the most effective ways of cost reduction for firms is improving logistical activities as well as the flow of materials and information.

The utilization of various transportation methods, modification of the process of planning and managing orders, continuous monitoring of inventory levels and proper management of the warehouse, reducing waiting times, reviewing the size of the categories, creating a process attitude and outsourcing some logistical activities, are all effective ways of reducing logistical costs. On the other hand, the competitive pressure on organizations makes them return to their own core competencies to conduct tasks better. These organizations outsource all logistics or part of their processes to companies with sufficient expertise. Outsourcing of logistics operations is a common approach to overcoming the challenges (Fu et al., 2017).

In addition to highlighting waste in the forwarders' routine operations, this research aims at shedding light on the customers' requirements as well as their satisfaction level. In other words, the aim of the research is to form a bridge between the quality issues identified by customers, and the inefficiencies causing these issues in the provider's operations. The case study in this research mainly aims to identify insufficiencies at the core of the operational level. The research consists of evaluating the requirements needed to increase the satisfaction level of customers as well as eliminating waste from the operation of 3PL service providers. The researcher hopes that this work can shed light on internal inefficiencies.

1.2 History of developments and key challenges in Iran

Before the Islamic revolution, and according to the increase of revenue obtained from oil sales in the global market, a large part of the oil revenues was assigned to create industrial units and to form economic businesses. Of course, it is worth noting that the former king of Iran managed these units. Moreover, modern technology was easily accessible for these units due to the close relationships of the Pahlavi dynasty with foreign industrial countries. In addition, some of the production and industrial units were established by shared investment with the aim of exports. It is worth noting that, according to the law on attracting and protecting foreign capital in Iran (1955), the way was cleared for foreign companies

to enter the economy of Iran, and according to article number 7 of the statute of the Industrial Development & Renovation Organization of Iran (IDRO Group), this organization could cooperate with foreign governments and also organizations or foreign companies in terms of industrial investments (Azad and Atiekar, 2016).

After the 1978 revolution, a different development was expected of the Iranian economy, and the core of industrial units underwent major changes, with most big and medium units and even small units becoming government owned. The first step was the establishment of conservation and development activities in Iran by the Revolutionary Council. According to this law, large industries, mines, factories and institutions that had debts to the bank were to come into government ownership. After the establishment and execution of this enactment of the Revolutionary Council hundreds of fig production units owed by private parties gradually came into government possession. In the late ’70s, the private party collapsed and the basis for absolute sovereignty of the government and the economy became imperative (Esmaeilnejad and Sahafi, 2015).

The initial instability of the revolution and the subsequent attack by Iraq destroyed the conditions for long-term and mid-term planning for the country. Nevertheless, with the end of the war and need for the rapid reconstruction of the country, the Macroeconomic Bureau proposed the first five-year development plan in five stages to the Ministry of Planning and Budget. The first development plan was approved by the parliament in late 1989. The same year was announced as being the first year of the plan`s execution. The general goals of this program included the reconstruction and re-equipping of defense, the reconstruction and renovation of production and infrastructure capacities and damaged population centers caused by the war, the quantitative development and qualitative improvement of public culture, the creation of economic growth, supplying the basic needs of the people, determining and correcting of consumption patterns, the correction of organization and execution and law management of the country, amongst other issues (Ghasemi and Adosi, 2015).

After the end of the first five-year plan in 1994, efforts began to establish the second five-year plan. This second plan was designed for the years 2016 to 2020 and had no major differences with the first plan, with this second plan being based on economic release and privatization. The big qualitative targets of this plan included issues like efforts to achieve social justice, the growth of wisdom based on Islamic ethics, guiding the youth and teenagers in religious areas, promoting internal culture and creativity, increasing performance, training the needed human resources, efforts to decrease the country's economic dependence on oil revenues, and more than ever the development of non-oil exports, the creation of

balance in various economic parts (cooperation, private, governmental), projecting the dignity and philosophy of the country in foreign policy, reinforcing the defense forces.

The third plan was written in considering the faults in the first and second plans, and aimed for sustainable development as the main objective. According to this, the third plan was established with the strategy of economic modification based on "developing a competitive economy" by moving towards economic liberation accompanied by the formation of a comprehensive social security system and legal and institutional modifications and the cancelling of monopolies to prepare the basis for the cooperation of private parties and decreasing the number of governments run enterprises. Therefore, the third plan was named the "Structural Reform Program" as this aspect was considered the central point of the third plan (Azad and Atiekar, 2016).

It should be said about the fourth plan that the planners believed that a long-term framework had been established for the economy of the country and the long-term needs are among the specifications of this plan. According to its objectives, a large part of the economic growth had to be obtained from improving the efficiency of all production factors during this period. It could be deduced that the plans wanted to affect all the economic factors and increase efficiency.

As mentioned earlier, one of the main challenges of Iran's economic vision was globalization, accompanied by a competitive economy. It seems that one of the important and basic actions of the country in reaching its objectives is improving the business space and making it competitive. On the other hand, there is a high unemployment rate in the country and reducing it needs a strengthening of the economy, which due to cumbersome rules, difficulties in the authorization and creation of business in Iran, and raising capital and establishing facilities to support the production, has resulted in an increase in general price levels. The importance of capital in developing countries is more than in developed ones.

This is because developing countries suffer from lack of capital to improve the business space and create jobs, which is the stimulus to economic growth. Business space is one of the determinative indices in the economy of every country by which we can analyze the economic condition. As the business space becomes clearer and more competitive, it results in improvement in the economic health of the country and in adopting policies that are more desirable, consequently resulting in improvement of the economic indices. Therefore, studying the business indices and describing the existing challenges can be effective in the creation and development of business space in the country. Nevertheless, after years of announcing the global statistics on business spaces for ranking various countries,

different viewpoints have been mentioned about the position of Iran. These conditions have resulted that improving the business space due to the confronting challenges for the economy of the country to become an irrefutable necessity.

However, it seems that the proper basis for creating secure investment and business space is not totally provided in Iran and in order to reach the full potential of Iran's economy in the world in terms of the business indices, providing some of the needed infrastructure is essential. The thing that is certain is that modifying the business space and improving the mentioned indices in the global area is not only a positive and fundamental step through the empowering of private party contributions in the economy and improving the employment and production level, but also it is considered among the most important factors for entering the host country and a necessary condition for improving and facilitating the entrance of technology into the country (Esmaeilnejad and Sahafi, 2015).

The World Bank's 2017-2018 survey questions how we can speak of information sharing and data transparency while being challenged with problems such as lack of professional morality, together with insufficient efficiency and low-quality judicial proceedings. "Trust" in business is increasingly being affected by these challenges, and, in turn, the formation of friendly relationships has become either difficult or impossible, though the existence of such an approach is very necessary for business relations and to facilitate interactions. In fact, the mentioned challenges prolong the duration of negotiations conducted to form strategic mutuality. Moreover, despite reaching firm agreements, the implementation of the contents agreed upon faces grave problems in practice (Jafari & Ghanbari, 2018).

To cite one instance, in spite of vast investments in research and development, if a company is implementing a project for the introduction of a new item to the market, it is not clear how it can share the relevant information with other companies in order to collaborate and benefit from their potential to design the products better or to supply and produce them, without having any control over this sharing. In the case of information theft, the affected firm may not be able to rely on the judicial system to handle the adjudication and loss compensation in a timely manner. Meanwhile, in these cases in developed countries, the decision is readily issued and executed. Despite these procedures, companies need to create - partially or entirely - the capacities and components needed for their business within their organizations, which eventually results in decreased efficiency in different aspects. This lack of efficiency increases the final price and decreases competitiveness due to the imposing of extra costs, and it reduces the quality of the final product owing to outsourcing of the chain activities to other companies

which lack the expertise and capacities required to undertake them (Hasani & Sheikhy, 2013).

1.3 Past phases in the economy of Iran and current needs in SCM

In considering the changing facts of commerce in relation to globalization, the topic of supply chain has been added to the priorities of executive managers in Iran. But in most cases, managers in Iran only pay attention to the supply chain when they want to lower costs or solve a problem. It could be argued that the biggest problem in production and service organizations after managing the customer relationship, is the proper management of the supply chain and meeting the production and service needs. The belief that supply chain management can make companies more responsive and there beneficial to customers has forced Iranians to pay closer attention to improvement of the supply chain process. Most organizations and companies in Iran have realized the importance of the role and position of supply chain management in the success of their business. In most cases, company managers in Iran have performed projects and studies to improve their supply chain management, for example in utilizing information technology or employing optimization techniques like stock management and control, use of pure product concept, etc.

At present, companies face severe challenges and pressures from the, competitive market, which include globalization, competition and cooperation, the diversity of customers' needs and the short life cycle of products. As a result, company managers have considered the supply chain as an important principle. In other words, top executives, besides focusing on the internal activities of the company, should pay special attention to proper and on-time communication and interactions with their suppliers and customers. In addition, they try to manage the supply chain of their products effectively. In other words, efforts concerning optimization of organizational processes seems useless without considering suppliers and customers. Therefore, companies that cooperate with each other and move around shared interests perform better (Hassani and Sheikhi, 2013).

The difficulties and principal reasons for underdevelopment in the fields of logistics management and the supply chain in Iran regarding the ecosystem and the dominant atmosphere of the subject matter must be analyzed. Experts in this area are aware of cases such as lack of trust formation, defective information sharing, weak judicial systems, lack of transparency, lack of cooperation and harmony among trustees and legislators, and insufficient education about this

field. It is necessary to reveal the connection between the country's minor system (the supply chain and logistics field) and its major business ecosystem, and to examine the challenges in at least two dimensions - the minor and major - in order to perform an accurate analysis.

The first dimension (the business atmosphere) is very efficient index to analyze the business state is known as the economic freedom index, which is measured and published by the Heritage Institute annually. One of the components of this index is the matter of laws that include property rights, government righteousness, and efficiency of the judicial system. Iran's placements in 2017 in these three components were respectively 163, 15, and 190. The 2017 report of the Freezer Institute regarding a 2015 review of this index ranked Iran in 150th place among 159 countries (Jabaleh et al. 2018).

Another supplementary index, known as the ease of doing business, is published annually by the World Bank. Under the agreement execution index, including the time needed to execute agreements, the costs of suing and trials, and the quality of the judicial proceedings, Iran's place in 2017 was 80th among 190 countries. In the index of global competitiveness, which is annually released by the World Economic Forum, Iran was placed 69th among 138 countries in the 2017-2018 report. Based on the survey conducted in this report, the respondents listed critical elements such as lack of access to financial resources, inefficient government bureaucracy, unstable policies, and weak professional morality in business as the most significant business problems in Iran.

The second dimension (the minor atmosphere of the supply chain): Based on the problems mentioned and weak infrastructures, the economic power of the chain members is not democratic in immature supply chains. This matter seriously impairs the productivity and economy of firms that are members of the chain. Being democratic must be visible and instituted in all upstream and downstream pillars of the supply chain, including the supply, production, and distribution processes in different forms. In other words, it is necessary to provide a win-win spirit and behavior in both parts, and increasing the revenue and benefits should not be based on imposing pressure on the suppliers. Sensible adjustments to the supply, fair prices, proper terms for document settlement, and full (not partial) execution of agreements are, above all, among the critical signs of democratic relations with suppliers in a supply chain.

Moreover, the producing corporations can be directed to democratic practices in the production step, by generating tools such as labor unions, controlling observation devices, quality maintenance, and, most importantly, controlling the impacts of production and the pressure from social organizations concerning the

environment. Further, by establishing a productive distribution system for the distribution stage in all aspects, including precise detection of resources and revenues, and by setting an advanced tax system, so the inequality can be mitigated, and the undertaking of allocated tasks in supply chains ensured. By doing so, the possibility to form equal powers in the field of production and business can be achieved.

Therefore, there will be no single organization dominating the supply chain and dictating its policies to other firms unilaterally. Because of these facilities, firms that are members of the supply chain can observe the activities of one another more. Additionally, there will be collective actions in the chain with a win-win approach and setting of buyer-purchaser-seller relations. Otherwise, interference and decisions from the main company as the economic power of the chain will lead to a violation of independence, existence, and will endanger the other members at times. Thereby, cooperation, coordination, and integration will fade away, and long-term relations present in a lucid, trusting atmosphere will be only limited to ambiguous, short-term ones, which are precisely the opposite of the purpose of supply chains (Olfat et al. 2019).

1.4 How the economy has changed

Basic utilities such as electricity and drinkable water, which were quite common in urban areas before the revolution, were rapidly expanded to other areas of the country, and also villages following the revolution. By the year 2000, these services had become ubiquitous, and domestic conveniences like washing machines and air conditioners had dramatically increased. In the 1970s, standards of living expanded even more quickly to enrich the villages. For instance, when Iran received a lot of cash between 1973 and 1975, accessibility to tapped water in the villages increased from 65% to as high as 80%. Meanwhile access to tapped water in deprived areas in the cities increased by less than 1%, from 7.6% to 8.5%.

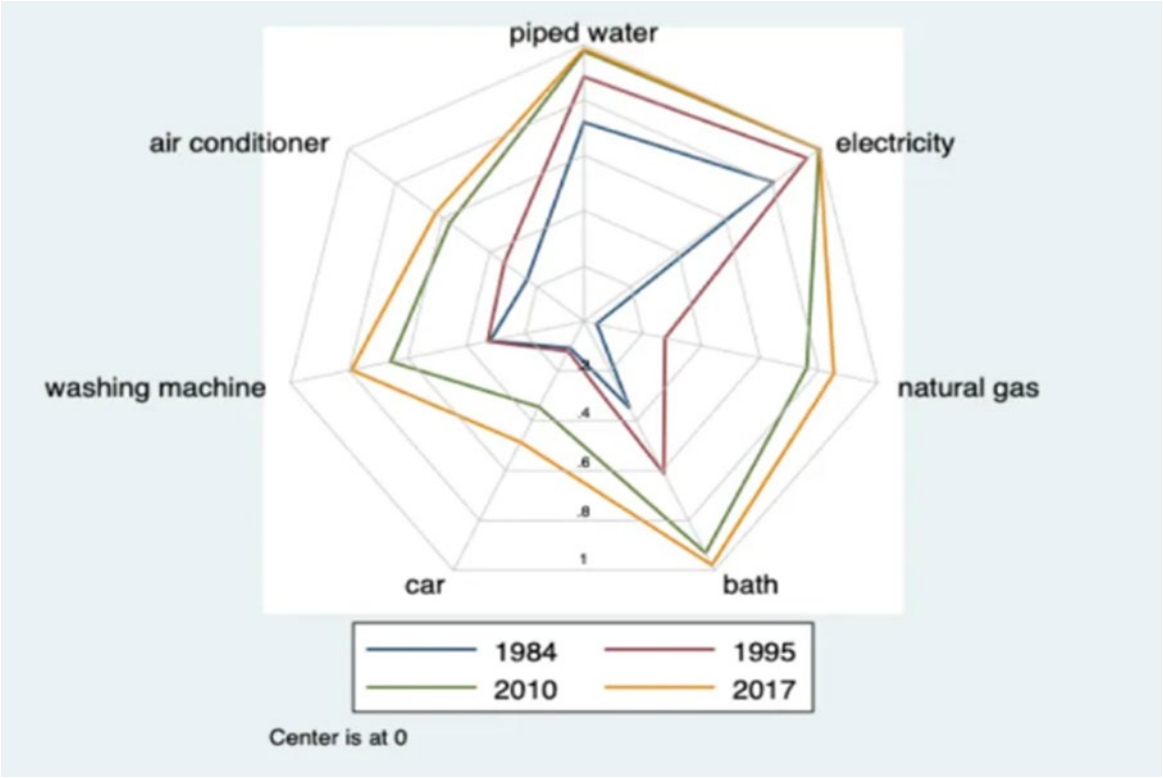

Figure 1. Variation in accessibility to common services and household convenience items (Harvard Kennedy School 2019)

Figure 2 shows the contrast of growth of domestic capital between Iran and Turkey, which is helpful for bringing the economy's general output into context. The distinction further shows Iran's drawback with regard to the capital needed to achieve a set amount of HDI compared to Turkey. Iran was able to compensate for its shortage of funding during this period by focusing its efforts on village areas. The following figure is helpful in demonstrating Iran's economic reliance on oil exports. When oil sales were strong, the economy expanded quickly under both the Pahlavi and the Islamic regime, but suffered greatly after 2011, due to economic sanctions.

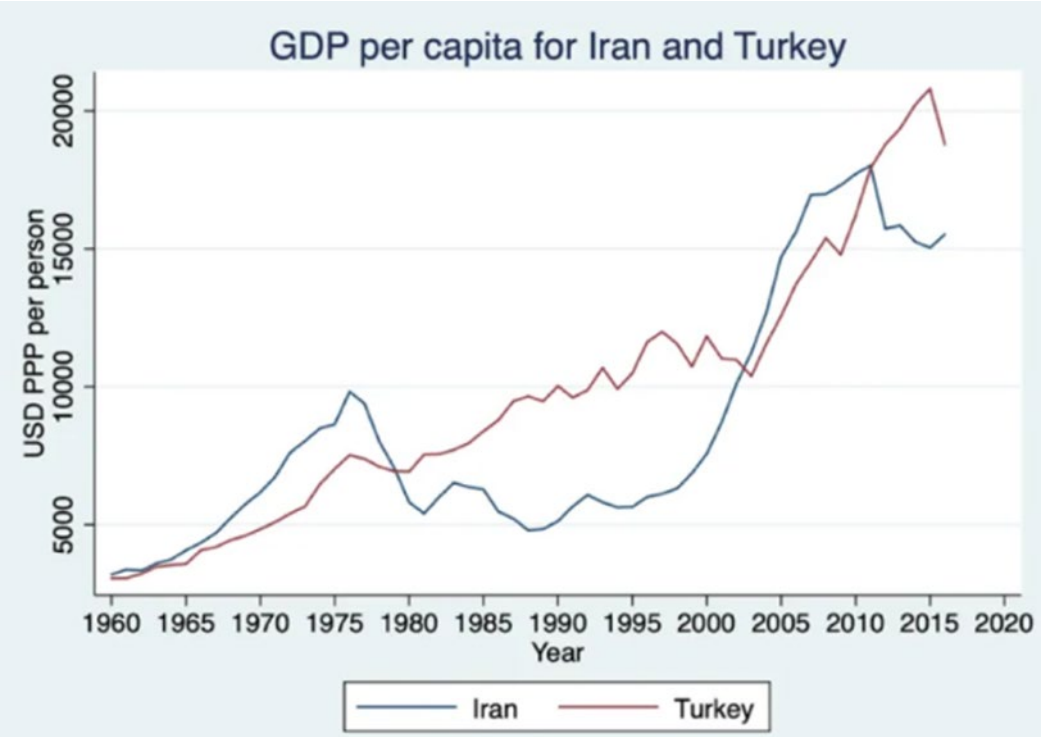

Figure 2. Growth of domestic product of Iran in comparison to Turkey, factoring in purchasing power (Harvard Kennedy School 2019)

Finally, observe the shifting makeup of social groups before and after the revolution to get a sense of how much society has progressed in the last 40 years. Figure 3 depicts the population's distribution across four wealth groups: the poor, below middle class, the middle class, and the wealthy. The information comes from the Statistical Center of Iran's Household Spending and Income Studies, which has collected figures for over half a century and whose micro archives have been freely accessible since 1984. The income level rates are dependent on the spending of households per capita in parity with purchasing power (PPP) in U.S. dollars. The non-wealthy became the biggest group in 1972, including 40-50% of the general population, while those categorized as middle class accounted for less than one fourth of the population. Accompanying the first boom in the oil industry, the amount of non-wealthy population fell to around one fourth of the population and the middle-class amount climbed to more than one third of the population, a slightly higher number than the group categorized as lower middle class. These proportions have remained relatively constant since the transition at the end of the 90s, when they started to shift drastically in favor of the middle-class.

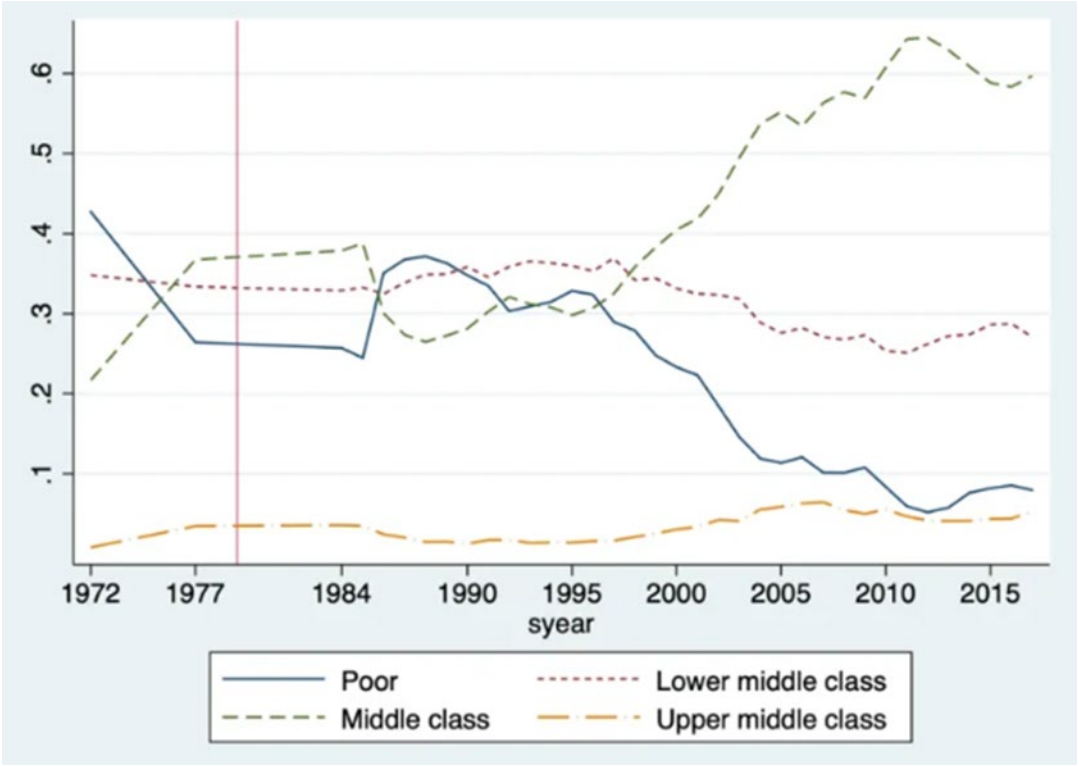

Figure 3. Iran`s income classes between 1972 and 2017 (Harvard Kennedy School 2019)

1.5 Failures in policy after the revolution

Although Iran has been successful in expanding standards for city growth and reducing poverty, it has unfortunately fallen short in a few crucial areas. To begin with, it has struggled to provide employment opportunities for its youth. College-educated youth have an alarmingly high unemployment rate. Based on the 2016 and 2017 numbers, the rate of unemployment for males and females between the ages of 25 and 29 are 34.6% and 45.7% respectively. After a decade of strong prosperity, such dramatic unemployment rates for a trained workforce points to more serious problems with Iran`s economic plan. The suffocation of private entrepreneurs under the collective pressure of a tyrannical government is the most significant barrier to job growth. The state's dominance of the oil and gas industry and banking organizations has hindered the rise of private firms.

In this regard, the boom in the oil industry was rather damaging, particularly in not meeting the expectations of the country with increasing international sanctions and political conflict with the US. The rate of importing goods, the rate of homelessness, and the popularity of capitalism increased during the bubble, which harmed jobs. The Ahmadinejad government was able to keep devaluation of

the currency low and this was thanks to oil exports, which in turn allowed cheaper import rates. However, this affected the rate of domestic production and employment rather negatively.

It is no surprise that young people now flocked to different educational institutions in search of qualifications. Higher education enrolments increased by 80% between 2005 and 2015. As shown in Figure 1.4, this has resulted in an odd condition whereby an increase in the rate of participation in education is accompanied with a higher rate of unemployment. Figure 4 depicts the social isolation of women, which has been an especially unproductive characteristic of Iran's labor market after the revolution.

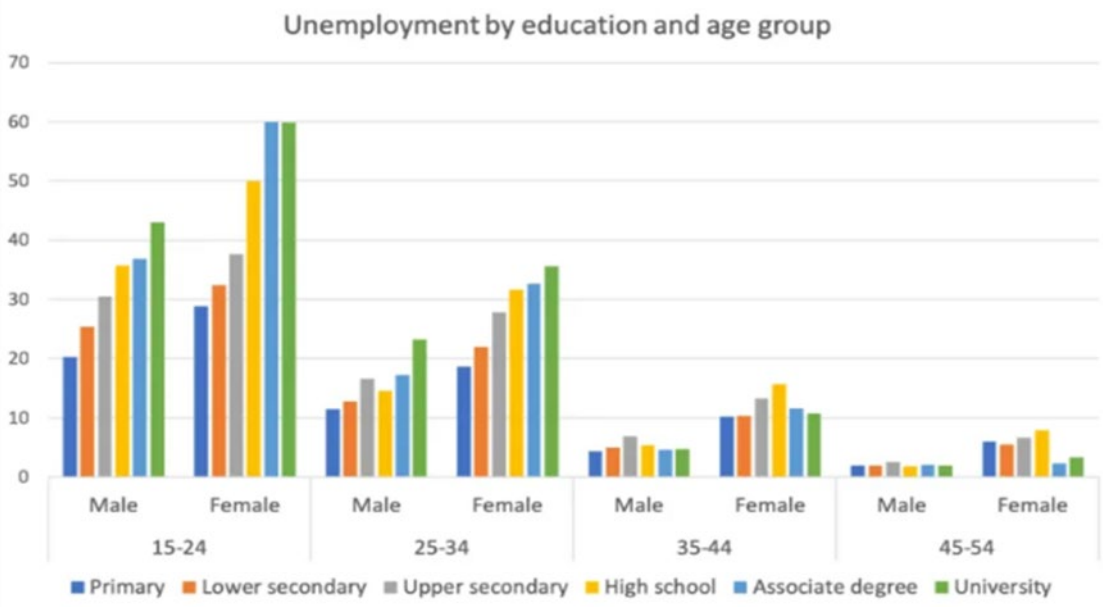

Figure 4. The rate of unemployment in comparison with education (Harvard Kennedy School 2019)

1.6 Key sectors and kind of SCM

In the two decades of the 60's and 70's, Iranian organizations tried to increase their competitive power so they could produce a product with higher quality and lower prices with standardization and improvement of internal processes. At that time, the dominant thought was that powerful design and engineering, and coherent and harmonious production processes were the prerequisites to meeting the market needs and obtaining more market share. Therefore, organizations and companies in Iran focused their effort on increasing efficiency.

In the ’80s, with increasing diversity in the patterns expected by customers in the country, organizations became more and more interested in increasing flexibility in the production lines and developing new products to satisfy the customers’ needs. In the ’90s, accompanied by an improvement of production processes and utilizing reengineering patterns, the managers of most industries in Iran understood that improving only the internal functions and internal flexibility of firms was not enough for maintaining presence in the market. Nevertheless, it was understood that materials producers should produce materials with the highest quality and least cost and product distributors should have close relationships with the producers’ business development policies. Moreover, with the fast development of IT science in recent years and its extensive application in SCM, most of the fundamental activities of SCM are now being performed in an updated fashion in Iran.

The proper flow and correct transfer of information result in processes being more efficient and their management becoming easier. In terms of supply chain management, the importance of harmony in the process is very important. This point is true in data management in the chain, information systems management, and data transfer. The harmonious management of information between associates results in an improvement in speed, precision, quality, and other aspects. The appropriate management of information leads to more harmony in the whole supply chain. Generally, in the supply chain information management is effective in various sections such as:

Logistics management (transfer, movement, process and getting access to logistical information for integration of transportation processes, ordering and construction, changes in the order, production timing, logistical plans and stocking process); data exchange and processing between the partners (such as exchange and processing of technical information, orders); data gathering and processing for analysis of resourcing process, and evaluation, selection and development of suppliers; data gathering and analysis of supply and demand data; prediction of the market trends and future conditions of supply and demand; and creation and improvement of relationships between the partners. It is obvious that information and supply chain information systems management can be effective in most of the internal decisions of various sections of the supply chain.

This shows the importance of this component in supply chain management. In logistics management when analyzing the production systems (such as in the automobile industry), the logistic subject includes the physical part of the supply chain. This section includes all the physical activities from the raw material supply step to the final product such as transportation, inventory, production timing, etc.,

which covers a relatively large portion of the supply chain activities. In fact, the boundary of logistics is not limited to material and goods, but it is the chain supply activities axis that relations and information and backup tools are for improving the activities. In 2018, about 10.7 million tons of goods in the form of cargo were transited in Iran. According to the country's macro-plans, in 2018, a volume equivalent to 16.5 million tons of goods were to be transited by the transportation network. Part of the 35% failure in this area can be attributed to the economic downturn and the decline in production as well as trade (imports) (Hoseini, 2019).

An important aspect of SCM is relationship management in the supply chain due to the production and its form. Relationship management has a great effect on all the supply chain contexts and its function level. Most of the time, the information systems and needed automation for the SCM activities are easily accessible and they can be assigned in a short period of time. Nevertheless, most of the initial failures in the supply chain are caused by weak transfer of expectations and are the result of the behaviors that happen between the actors involved in the chain. Additionally, the most crucial factor for SCM is a confident relationship between partners in the chain, in such a way that they have mutual trust in their capabilities and processes. The results are that in the development of each integrated supply chain, the trust developed between partners and their reliability is among the most critical and important elements to achieve success.

1.7 Purpose, clarity, and objectives of the study

It is believed that the 3PL industry has not yet reached its ultimate operational capacity. During the past decades, quite a high number of 3PL providers have gone out of business. But the revenue for the remaining ones is said to be increasing constantly (Lieb, 2005). Highly competitive markets have forced 3PL service providers to search for much more advanced processes with the aim of differentiation and more competitiveness. This is simply because increasing competitiveness will help companies to remain in the market. One can always claim that the expectation of customers from 3PL service providers range from the reduction of costs and cycle time to reaching new geographical markets.

Despite decades of constant operation and improvement in the 3PL field, customers are still facing various quality issues in receiving services (Liu and lions, 2011). These issues impact the overall level of operation as well as customer satisfaction. There has been much research and literature about the issues in 3PL operation but so far there have been no attempts at linking quality issues with inefficiencies and the concept of waste management in 3PL. Hence, the literature

review in this paper will examine all possible causes of defects as well as shedding a light on the establishment of partnerships with the aim of improving the 3PL operational level.

To examine the quality of services at their operational level, we must first consider the concept of quality. Quality is said to be the degree at which a certain set of characteristics meet, or in other words fulfill the requirements. In this study the researcher endeavors to consider quality issues from the customer point of view. Hence, the previous definition of quality in 3PL is adapted in a new form. This definition is as follows:

"Quality issues in a 3PL process are said to be the inability of the 3PL service provider to fulfill the needs and requirements of the 3PL service customer"

Since the beginning of the 1980s, the lean manufacturing method has been the standard method of practice for manufacturing firms as well as service providing companies. Value adding processes as well as waste reduction operations have been the cornerstone of being competitively advantaged. The main objective of this research is to assist in investigating the best way to increase or reach the ultimate operational capacity of 3PL.

In today`s competitive market, factors such as uncertainty and high competitiveness have impacted global business in ways different from the past. One can always claim that the logistics and supply chain management of each and every company have also been affected by the mentioned factors. Moreover, factors such as industry consolidation, integration, and specification, in addition to industrial alliance networks, have changed the game for 3PL industries. The most crucial changes have been in fields such as IT, size, structure, and type of service, and the global reach or capabilities of the 3PL industry. These are indeed crucial since companies can only survive in a competitive market by increasing their own competitive advantage.

The literature outlines three different methods for creating, increasing, and maintaining competitive advantage. These include cost leadership, differentiation, and focus. Moreover, various aspects of collaboration amongst firms can also be a very effective way of creating competitive advantage.

1.8 The main objectives or goals of this research

It is safe to say that after the Iranian revolution; the Iranian economy did improve in some respects. However, many other crucial aspects of the economy declined,

and are still lagging behind up to the present. Logistics and various operations related to SCM have been suffering due to the crucial role the government has played within the country. Also, factors affecting the quality of services provided by 3PLs companies have not yet been investigated in Iran. Putting aside political reasons, the following six factors are the main goals or objectives with which this research is concerned:

- Investigation of factors affecting the quality of services provided by 3PL companies in Iran.
- Determining the competitive advantages that 3PL companies have in delivering services to their competitors.
- Identifying the current logistics needs in the retail sector.
- Determining the quality of service provided by 3PL companies in Iran.
- Identifying the incentives and barriers that retailers are involved with when outsourcing 3PL activities.
- Determining the criteria for retailers in selecting the 3PLs they will use.

1.9 Research Questions

This section of the thesis consists of the research questions which shape the entirety of the present research. The research questions are as follows:

1) What are the factors affecting the quality of services provided by 3PL companies in Iran?
2) What are the competitive advantages that 3PL companies have in delivering services to their competitors?
3) What is the current logistics needs in the retail sector?
4) How is the quality of service provided by 3PL companies in Iran?
5) What incentives and barriers are retailers involved with when outsourcing 3PL activities?
6) What are the criteria for retailers in selecting the 3PL companies they will use?

Research questions 4, 5 and 6 aim at understanding the issues faced by customers. The researcher believes that a two-way or double case study is sufficient to highlight issues in the 3PL sector. It is worth mentioning that a double case study is meant to study both the service providers and customers simultaneously. The researcher believes that only by constant switching between the providers and the customers do the core issues of 3PL service industry surface.

The importance of the research questions is that the transportation and logistics industry is one of the most important industries in the country and its changes and growth can be a good indication of the progress of different sectors in Iran.

Delimitations are of course rather crucial, due to the wide scope of the research. For the research to be more feasible, the researcher has decided to conduct and limit the research to Tehran province. The research was carried out by surveying retailers. The research has been narrowed down to items ranging from clothing to interior design and decoration. Food retailers have been purposefully left out of the research as they may have completely different requirements. It is worth mentioning that the main goal of this research is to understand and map these processes as they are today in the current market situation. The researcher believes that a proper process should be carried out, mainly with the aim of using the findings for future studies. The main concern of this research is planning, following up and processing the gathered information. However, the ultimate purpose of the research is to highlight the causes of problematic areas in the quality of the services, hence improving the competitive advantage of the 3PL service providers.

1.10 Definition of main terms

This research is mainly concerned with three concepts. These concepts are competitive advantage, logistics and 3PL, and in this section of the thesis, we take a brief look at the definition of these main terms

- **Competitive advantage:** Competitive advantage is essential to achieve value. In fact, competitive advantage makes it possible to create, protect, and operate value for businesses. Undoubtedly, competitive advantage is one of the most widely used keywords in the strategic area (Alinejad et al., 2018: 428).

- **Logistics:** Logistics is a network of activities and services that support the physical movement of goods in country and abroad. According to the definition of the World Bank, logistics is a set of functions such as

transportation processes, storage, trade integration, customs clearance, inland distribution, and payment systems, which are carried out by public and private entities. In fact, logistics is said to be the crucial section of the process of the supply chain in designing, executing, and controlling storage as well as the efficient flow of goods and services, from the starting point to the point of consumption, in order to meet the customers' needs (Nejati et al., 2017: 165).

- **Third party logistics:** Third party logistics is the use of separate companies to carry out logistical tasks that were carried out in the past within the organization. Tasks performed by 3PL companies can include all logistical processes or a set of selected activities. In other words, third-party logistics involves any kind of outsourcing of logistics activities carried out within the organization in the past. For example, if a company already has an exclusive air transport fleet but chooses to use foreign transport services, it can be an example of third-party logistics. This is also the case with a company that has shut down its own warehouses and uses foreign warehouses (Esmaeilnejad abd Sahafi, 2015: 2).

2 LITERATURE REVIEW

Logistical performance is considered to be a rather crucial factor for improving the income of a nation. These improvements come as a result of actions taken by a wide range of companies operating in both the private and public sectors. Systems dealing with transportation and the quality of the regulations of trade both play an undeniably crucial role in improving the efficiency of the logistical system of a nation (Huo et al., 2015). As stated before, despite some improvement in the economy of Iran after the revolution, many of the other aspects of the economy were affected negatively and have remained quite weak up until the present day. Logistics and various operations related to supply chain management have been vastly undermined or not been paid sufficient attention by the government (Azad and Atiyekar, 2017). However, putting aside political reasons, the main concern of this study is to understand the performance of logistics operations in certain geographical regions, namely Iran. Promoting economic developments can only be achieved by paying close attention to LPI score or logistics performance indicators due to the potential role they play in the improvement of the well-being of the whole nation (Daim et al., 2012).

The supply chain involves a series of activities from production to consumption. In the supply chain, the flow of goods is from the production chain to the consumption chain, the flow of money is from the consumption chain to the production chain, and the flow of information is mutual. The competitiveness of a product depends on the performance of these three flows in the supply chain organization. Accordingly, based on Porter's model, the affecting factors of competitiveness are evaluated in four main areas, namely demand conditions, factor conditions, related industries and supply, and the firm's strategy, structure and competition) and two sub-domains - government and chance. On the other hand, while competition in the markets is growing rapidly, that has shifted from the level of individual firms to the supply chain and prevailing business environment throughout industry. Several definitions of the supply chain have been provided. Generally, the supply chain is the set of all firms that directly or indirectly contribute to accomplishing the consumer's demands (Azad and Atiyekar, 2017).

The supply chain includes not only suppliers of raw materials and producers, but also transportation companies, wholesalers, retailers, and even consumers. The supply chain involves communication among members, which can be classified in three categories: the flow of goods, flow of money, and information flow. Therefore, each stage of the supply chain is linked through flows of goods, information, and money. In the past, firms were individual institutions that had a

weak link with other firms, and all companies were rivals. In line with this approach, firms focused their decisions on internal processes and flows, and these processes were optimized independently from other firms (partial optimization strategy: Chu et al., 2018).

Due to the change of environment (increasing competition) and technological advances, the conditions have been provided for firms to consider their internal and external processes when deciding to achieve competitive advantage. Therefore, the supply chain steps and the relationship between its actors in the final product competitiveness of the end consumer are crucial, because each stage is the center of decision making that can affect the decisions of the chain members. Therefore, in some cases, partial optimization strategy (competitiveness of individual firms) may not be beneficial in achieving an optimal total, and the competitive advantage of the final product will be affected by the organization of the supply chain and all its value-adding activities (Daim et al., 2012).

Logistics as a supporter of commercial-productive activities plays a fundamental role in the realization of each country's economic growth, and the importance of efficient logistics in economic growth and trade is undeniable. Logistics is a network of activities and services that support the physical movement of goods in-country and abroad. According to the definition of the World Bank, logistics is a set of activities such as transportation, warehousing, trade integration, customs clearance, inland distribution, and payment systems, which are carried out by public and private entities. In fact, logistics is understood as part of the supply chain process to plan, execute, and control the storage and efficient flow of goods, services, and related information from starting point to consumption point, to meet customer requirements. Supply chain is one of the concepts referred to in the definition of logistics, and includes all activities related to the flow of goods in manufacturing from the stage of supplying raw materials to the stage of delivery of the final product to the consumer. Therefore, suppliers of materials and components, manufacturers, distributors, and final consumers are elements of the supply chain (Ellinger et al., 2015).

Other related issues about logistics can be related to logistics centers. The logistics center includes the place where all activities related to transport, warehousing, distribution, and other logistical services of goods are carried out by several officers at the international and national levels. In other words, logistics centers are series of facilities and infrastructure, located within a defined area, where different officers provide a range of services and logistics activities (Fu et al., 2017).

2.1 The role of logistics in developing trade and economic growth

In the interconnected world, global trade is driven by a network of global logistics activities, and the existence of a competitive network of global logistics services is known as the backbone of international trade. Today, reducing costs and delivery time or improving customer services are of particular importance, and the efficiency of logistics services plays a key role in realizing these two issues. With efficient logistics services and operations, enterprises not only can succeed in expanding their product market nationally, but can also increase their competitive ability and business internationally (Govindan et al., 2018).

Logistics as a supporter of commercial-productive activities plays a vital role in the realization of each country's economic growth, and the importance of efficient logistics in economic growth and commerce is undeniable. Logistics is a network of activities and services that support the physical movement of commodities inside and outside the borders. In fact, logistics refers to that part of the supply chain process that plans, schedules, implements and controls the storage, efficient flow and efficiency of commodities, services and information related to them from the point of origin to the point of consumption to meet customers' needs. Supply chain is one of the concepts referred to in the definition of logistics and includes all activities related to the flow of commodity production from the stage of supplying materials to the stage of delivery of the final commodity to the consumer. Therefore, suppliers of materials and components, manufacturers, distributors, and final consumers are all elements of the supply chain. Other logistics related concepts include logistics centers. The logistics center is a place where all activities related to the transportation, warehousing, distribution, and other logistical servicing of commodities at international and national levels are carried out by several operators. In other words, logistics centers are a set of facilities and infrastructure located in a defined area where different operators provide a range of logistics services and activities (Huo et al., 2015).

The role of logistics in the development of commerce and economic growth in the present interconnected world is directed by a network of global logistics activities, and the existence of a competitive network of global logistics services forms the most important part of international commerce. Nowadays, the issue of reducing costs and increasing the speed of product delivery or customer service is especially important, and the effect of logistics services plays a key role in realizing these two issues. By utilizing efficient logistics activities and services, firms not only can succeed in expanding their products at national level, but also increase commerce and compete at international level. Efficient logistics infrastructure results in

increasing the prosperity of both sides and economic flourishing due to reduced product costs and reduced-price differences between the producer and the consumer (Navicelli and Carlo, 2019).

On the other hand, improving logistics in countries with a suitable geographic location will enable these countries to earn high revenues from the area and increase employment rates. Currently, improving the condition of countries in the field of logistics has become one of the major goals of economic development. Because inappropriate logistics networks increases business costs and reduces the ability of countries, especially developing countries, to join the global supply chain, so politicians are now implementing consistent and sustainable policies for reinforcement and integration of the supply chain, and improvement of the logistics situation is essential not only in countries with the best performance in the field of logistics, but also for emerging countries to act as a motor for growth (Nejati et al., 2017).

An efficient logistics infrastructure, due to reduced product costs and reduced-price differences between producer and consumer, leads to the prosperity of both parties and to economic flourishing. On the other hand, improving logistics in countries with a suitable geographical location enables these countries to earn a lot of income from the area and to increase employment rates. Currently, improvement of the status of countries in the field of logistics has become one of the major goals of economic development. Since inefficient logistics networks increase business costs and reduce the ability of countries, especially developing ones, to join the global supply chain, policymakers consider as essential the implementation of coherent and sustainable policies to strengthen and integrate the supply chain and improve the logistics situation - not only in the best countries in the field of logistics, but also in emerging countries to act as an engine for growth (Pamucar et al., 2018).

2.2 Iran's import and export status

We can certainly say that in the last decades, no country has been able to have substantial economic success or to provide better living standards for its citizens without trading overseas or absorbing investment and technology from other countries. The results of multiple economic studies show that the active presence of countries in the field of international trading plays a critical role in improving their growth rate of gross domestic product.

Foreign trading is particularly essential for developing countries since these face difficulties such as a lack of financial resources, lack of skilled workforce, low level

of education, lack of access to technology, amongst others. A flourishing economy and active presence in global fields, as with China and India following South Korea and Singapore, does not mean the eradication of all the above-mentioned problems, but it does play a significant role in overcoming them. Import composition shows that 70% to 80% of Iran's imports are raw materials, parts, capital, and intermediate goods, the decline of which suggests that production has become defective. In fact, the lack of raw materials and parts implies a deep recession and a decline in production. These are not good signs.

If the most part of imports were end products, it would be fine; but this is not the case. The same thing holds about exports. The largest part of the country's exports depends on oil and petrochemicals. The process is certainly not going well. Although the increase of exports is a positive point for the economy, its composition is more important than its volume. The content of exports must be examined in the context of other industrial determinants such as recession and employment. In fact, exports are a major factor in getting out of recession, increasing employment, raising capital, etc. When non-oil exports are not achieving significant growth, the economy unquestionably is not reaching the desired status (Hoseini, 2019).

Iran had a population of 80.6 million people and a Gross Domestic Product (GDP) of US$447.7 billion over the past few years. The hydrocarbon industry, agriculture, and utility industries, as well as the tangible presence of the state in the production and banking industries, define the economy of Iran. Iran is also known to be the second biggest world player when it comes to the natural gas industry and the fourth biggest player in terms of crude oil. Oil exports also account for a substantial portion of economic growth and government revenues, but they are volatile. Figure 5 shows Iran’s exports and imports respectively.

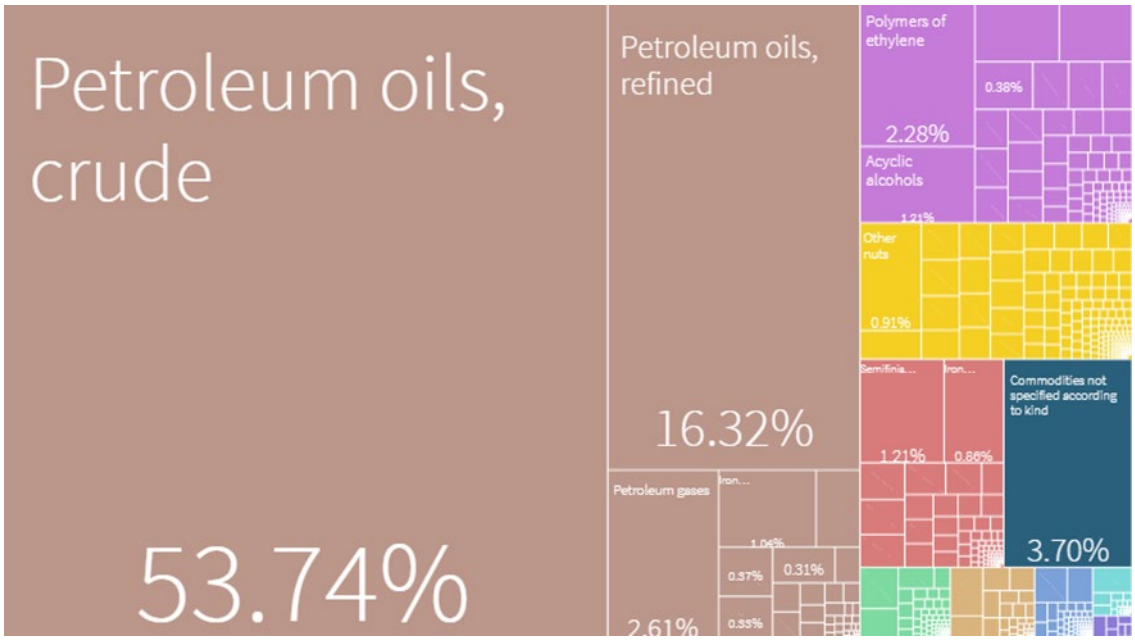

Figure 5. Iran`s main exports (European Council on Foreign Relations, 2018)

Oil exports also account for a substantial portion of economic growth and government revenues, but they are volatile. The growth of a resilient economy, advances in science and technology, and the pursuit of cultural excellence are the three foundations of the sixth five-year development plan. On the economic front, the government's five-year development plan calls for an average growth rate of 8%, as well as reforms of state-owned companies, the financial and banking system, and the distribution and control of oil revenues.

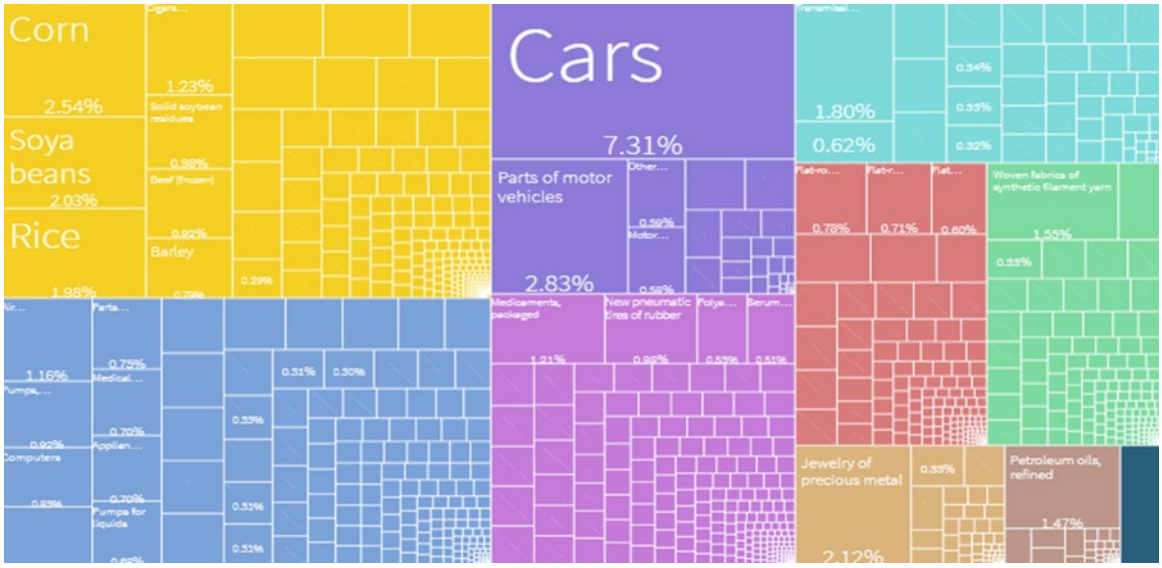

Figure 6. Iran`s main imports (European Council on Foreign Relations, 2018)

Iran's GDP growth slowed to 3.8% in 2019/20 as the impact of a massive increase in oil sales in recent years faded. The non-oil sectors accounted for the vast majority of the rise, with services accounting for more than half, with 4.4% increase. Oil, farming, and utilities are currently operating at higher levels than they were before the 2012/13 sanctions. However, after the slowdown in improvements during the sanctions period and issues related to the banking sector, the main sectors such as commerce and construction, and restaurant and hotel services have not seen a significant rebound in the last two years. The oil and gas sector grew by 0.9%, with the quota from OPEC+ for the negotiated duration limiting output. The unemployment rate remains high, at 12.1% in April-June 2019, despite a slight increase over the same timeframe the previous year (12.6%). In the June quarter of 2019, the labor force participation rate increased to 41.1 percent, the highest amount in more than a decade. In 2017/18, the female labor force participation rate increased to about 19.8%. While significant disparities between male and female labor force metrics persist, the nation ranks among the top countries that have increased female labor force participation. Figure 2-3 depicts which goods are feasible for Iran.

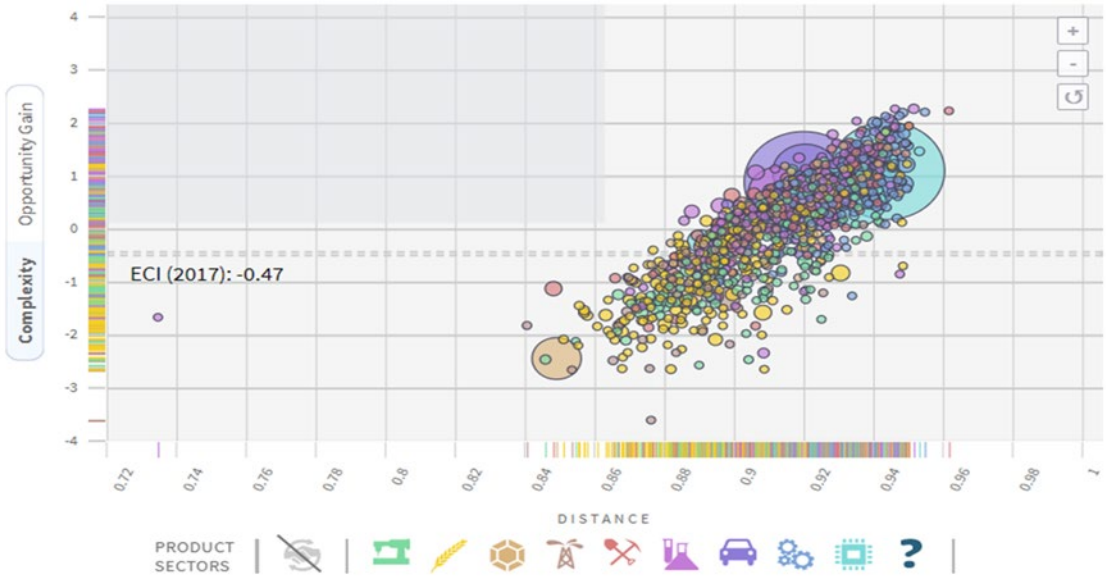

Figure 7. Products feasible for Iran in 2019-2020 (European Council on Foreign Relations, 2018)

Following the gradual reintroduction of US sanctions, the economy is predicted to undergo a downward spiral in the medium term, with oil exports expected to decline to half of their 2017/18 levels. Around 2017/18 and 2020/21, the economy is forecast to decline, on average, by 1.4%, with a drop in the area of exporting as well as the consumption rate on the demand side.

2.3 Logistics infrastructure

When speaking of logistics at the national and international level, an unconscious image of the various forms of transportation of goods is shaped in the mind. While transportation comprises one component of the logistics sector, the scopes of logistics is so wide that its constituent elements comprise all levels of business up to the macro levels of a country. In general, logistics components and infrastructure are classified into two categories, as below:

1. Physical infrastructure: includes all public and private infrastructure used by public and private enterprises for logistics activities. In fact, physical infrastructure refers to all facilities, physical equipment and networks, which are essential for the operation of industry, the transportation of goods, and the trading process.

Table 1. Physical logistics infrastructure set

Subset	Description
Transportation infrastructure	Roads, railways, air lines, waterways road, railways, air and sea fleet
Relocation infrastructure	commercial ports, customs and airports, goods terminals
Distributional infrastructure	chain stores, direct supply fairs, shopping malls and guilds, retail and wholesale units
Storage infrastructure	warehouses, silos and cold storages
Logistic hubs	any logistic hub with a regional, national or international approach (logistics city, logistics centers, dry ports, goods terminals)

2. Non-physical infrastructure: includes all software and supporting infrastructure for the logistics sector. In fact, non-physical infrastructure refers to all factors and institutions that are needed to sustain the economy and trade of a country and to exploit the physical infrastructure of a country appropriately.

Table 2. Non-physical logistics set

Subset	Description
Technological infrastructure	Information technology systems and infrastructures in the field of logistics and other technologies related to logistical activities
Legal Infrastructure	Laws, regulations and standards related to physical and non-physical logistics infrastructure
Financial Infrastructure	Banking and insurance systems supporting logistics activities
Logistics institutions	logistical industry actors (transportation companies, third party logistics companies, distribution companies, warehousing and storage companies, providers of software solutions for logistics and supply chains, consulting firms, inter- institutional logistics companies and logistics organizations)
Logistics systems at the enterprise-level	Logistics systems within enterprises and inter-logistics systems (supply chain systems between different enterprises along the chain)
Human resources in the logistics area	Specialists in the field of logistics in the private and public sectors, universities, and active research institutes in the field of logistics

2.3.1 Various types of logistics service providers

In recent decades, manufacturers have attempted to gain competitive advantage and compete globally by focusing their attention on production reducing costs and improving their level of service by outsourcing their logistics activities. Establishing companies providing logistics services and assigning logistics operations to them is one of the most important solutions that can help industry and enterprise owners. Generally, service and logistics providers are categorized as follows:

1. First Party Logistics Services Providers (1PLs): when a person or firm seeks to carry a product from one point to another and does this by themselves, it is categorized as a first party logistics service provider. In other words, the transportation of goods is not carried out by any third party, and logistical activities are performed by the manufacturer.

2. Second Party Logistics Services Providers (2PL): this type of provider has capital assets (such as a truck, warehouse space, etc.), and all transportation requirements. In fact, transportation and warehousing management is traditionally performed by this type of logistics company. Aerial, Maritime and Land lines are prominent examples of second party logistics service providers.

3. Third Party Logistics Services Providers (3PL): the activities of second-party logistics service providers are limited to transport and storage, but third-party logistics companies provide a broad variety of logistics services such as transportation, storage and order management, packaging, distribution, and so on. 3PLs are companies that provide logistics services in the form of specific contracts for firms and enterprises. In other words, this type of logistics service provider refers to companies that outsource their manufacturing and service organizations and also their logistics.

4. Fourth Party Logistics Services Providers (4PL): these types of logistics service providers are companies that provide specialized logistics consulting services, integrating their resources, capabilities, and technologies with other companies and organizations, to manage the entire supply chain. The activities of these companies are not limited to providing logistics services, but they manage the entire supply chain.

5. Fifth Party Logistics Services Providers (5PLs): these types of logistics service providers are very similar to fourth-party logistics companies; moreover, they perform their services on electronic platforms, and their activities are electronic supply chain management. In fact, the main goal of these companies is to create a collaborative partnership between members of a supply chain and logistics companies to maximize the utilization of existing capacity with the lowest cost and best possible safe solution (figure 8).

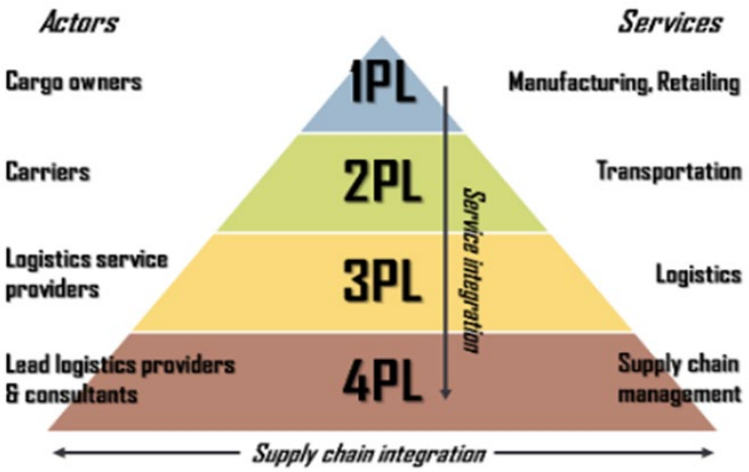

Figure 8. Various types of logistics service providers (Globaltranz, 2013)

Amongst these providers, the utilization of third-party logistics companies has grown considerably in the world, and the creation and development of these companies, especially in successful logistics countries, has had a significant impact on the improvement of logistics and trade development. Other benefits with these companies include service specialization, cost reduction and product cost, the focus of the manufacturing units on the development of their main business, improving the level of service to customers, and promoting the firm's position among its competitors.

2.4 Government`s role in improving and developing logistics infrastructure

Governments are always faced with the question of which infrastructures should be reformed or created to facilitate the trade process and reduce costs and goods delivery time to customers. Leading countries in the field of logistics have a comprehensive approach to reforming the logistics sector, enhancing their logistical performance, and improving all key dimensions of the logistics industry simultaneously. When countries with good performance target a few areas of logistics, these countries achieve cross-sectional results. For countries to be in a good position in the field of logistics, it is imperative that all aspects of logistics are considered, and that infrastructure is created or modified in the areas of software and hardware. The most important steps that governments, especially in developing countries, can do to improve logistics infrastructure are as follows:

A. Necessary measures in the field of legal infrastructure:

1. Providing a comprehensive and efficient roadmap for logistics development
2. Adopting effective business policies and establishing appropriate customs tariffs
3. Establishing a legal framework for the formation of third-party logistics companies
4. Developing quality standards for logistics activities and supply chain management
5. Facilitating private sector participation in investing in and developing logistics infrastructure through efficient legislation
6. Preparing appropriate regulations to facilitate implementing and financing the physical infrastructure, establishing an efficient regulatory framework for logistics services and for companies providing these services

B. Necessary measures in the field of hardware infrastructure:

1. Developing of transportation infrastructure
2. Creating new warehouses and mechanizing current warehouses
3. Reducing customs affairs cycle and the time required to clear goods from customs
4. Developing information and communication technology infrastructure
5. Expanding of multimodal transportation
6. Creating new logistics infrastructures such as logistic hubs and third-party logistics companies, etc.

C. Necessary measures in the field of software infrastructure:

1. Establishing appropriate financial infrastructure, such as infrastructure development banks or development funds to support logistics infrastructure
2. Encouraging insurance companies to support the activities of third-party logistics companies and diversification of insurances

3. Training and upgrading the knowledge of specialists and experts in the field of logistics and supply chain and supporting research in this area.

4. Defining statistical data and new indicators related to logistics costs.

2.5 Logistic status indicators

The most important indicators that can be used to check the effectiveness of logistics activities and the status of infrastructure in different countries are:

1) Logistics Performance Index: a multi-dimensional indicator that has been published every two-years from 2007 by the World Bank. The index is designed to help countries identify challenges and opportunities in the field of logistics and measure the performance of the logistics sector in the six domains that shape the most important dimensions of the current logistics industry. These areas include the efficiency of clearance processes, the quality of logistics infrastructure, the facility of sending international shipments, the suitability and quality of logistics services, and the ability to track basic goods and on-time delivery of goods (Olfat et al., 2019).

2) Global Empowerment Index: this indicator, released every two-years by the World Economic Forum, represents the trading status of countries in various fields. The index considers all trade facilitation measures and shows how far countries have expanded their institutions, policies, and infrastructures, as well as services facilitating the flow of items to the destination.

3) The index of trade empowerment has four sub-indicators of market access, border management, infrastructure, and operational environment, the infrastructure sub-indicator of which is a good indicator for assessing the status of logistics infrastructure in countries. Accessibility and quality of infrastructure related to transportation, accessibility and transportation quality of services, and the availability and utilization of ICT infrastructure are among the components of this sub-indicator.

4) Global Competitiveness Report: this report is published by the World Economic Forum to assess the degree of competitiveness of countries, and has twelve elements. The infrastructure element can be used as a tool to measure the status of the logistics infrastructure in countries. Some of the components of this element are road quality, railroad traffic density, train

service performance, air connectivity index, air transportation services performance, port connectivity index, and port service performance.

Effective factors in the movement of companies toward 3PL in order of importance are:

- A strong push to cut prices
- Striving for improvement in the function of SCM
- Using new information technologies
- A strong push to improve customer service
- Globalization
- Integration and composition

2.6 Supply chain management in Iran

Iranian manufacturing's need to adopt SCM practices is inextricably linked to mounting competition in the country's marketplace, especially following the government's legalization and privatization of most sectors, which began around 20 years ago. As a result, most manufacturing sectors, such as petrochemical and automotive, see SCM as a strategic tool to boost their productivity and raise market share at both the national and international levels (Jafari and Ghanbari, 2018).

SCM in Iran in many sectors is largely dependent on international markets. For example, since it must import most of its raw materials from foreign sources and exports most of its goods to international customers, the Iranian flower industry is heavily reliant on global markets. According to experts, if the key obstacles to foreign supply chain management in the Iranian flower industry are established and overcome, the industry will achieve a significant share of global markets (Riasi, 2015).

In addition to customer service interruption, supply and retailer issues, fragmentation, fulfillment continuity, knowledge flow, quality control system, product management, research and development, worker skill, preparation, organization, and procedures, business strategies, Previous studies have identified manufacturing costs and waste control, fiscal management, currency rate, logistics, demand, and regulations as sources of risk for pharmaceutical firms in Iran (Jabaleh et al., 2018).

On the other hand, there has been an increasing amount of pressure on all corporations to adopt sustainable practices throughout all sections of their SCM to advance sustainable management processes. The current goal regarding working climate is the reduction of environmental effects and moving towards an economy which has a low carbon footprint and this has a significant effect on how businesses handle their supply chain processes (Nejati et al., 2017).

2.6.1 Iran sanctions

Sanctions against Iran are defined as a set of action by global powers to punish Iran's government or to persuade this country to do or not do to a particular action. Most of the sanctions against Iran after the 1999 revolution were formed after the occupation of the U.S embassy in Tehran, and they were intensified with the challenge of Iran's nuclear program. Iran's atomic program has been faced with many sanctions in 2016 after the referral of the case from the atomic agency to the security council. Sanctions against Iran can be divided into two to four general groups based on the countries that impose the sanctions: multilateral sanctions such as sanctions from the security council, sanctions from the European Union, unilateral sanctions from different countries such as the US and sanctions from the US congress. In the current era, the economy is considered an important basis of wealth and power production, and a basis to reach growth and economic development. This has attracted the attention of Iranian policymakers and there have been many economic plans to reach economic development. In this regard, economic sanctions are barriers to reaching this goal. Sanctions have targeted a large section of Iran's economy and have limited access to financial resources and currency, reduced investment, increased inflation and unemployment, and finally reduced economic growth. However, it seems that being less dependent on the oil economy, improving the national production capacity and reducing vulnerability to external factors are among the opportunities of the sanctions.

Iran's economy will face a difficult crisis under the influence of the US sanctions if the European Union does not cooperate with Iran (and it seems the EU is not willing to cooperate). Iran's oil exports will face negative growth. The policy of oil for goods is the government's policy with other nations. Of course, given the government's policy of bringing dollar prices closer their real value, we will witness higher exports to achieve full national production which can somehow cover the negative growth from oil production. Unfortunately, Iran will again face two-digit inflation. The concern here is that the country will again enter a period of stagnation and the only possible solution is to use policies to increase exports.

2.6.2 Iran's transportation sector: characteristics

In the Iranian economy, the transportation sector is extremely important. In 1990, the contribution of this sector to real GDP was less than 4%. With an annual growth rate of 10%, it accounted for 10% of real GDP in 2005, with 90% of this coming from road transportation. In this year's comparison to the previous year, the overall growth rate of real value added in this segment was 9.7%. In 2005, the ground, air, and sea subsectors transported over 454.5 million passengers and 534.7 million tons of cargo. In comparison to the previous year, passenger and freight traffic rose by 2.2 percent and 4.4 percent, respectively. Vehicle ownership is heavily influenced by infrastructure. More vehicle ownership is encouraged by the availability of viable and secure main roads and highways throughout the country. On the other hand, old city systems, traffic jams, road congestion, and noise, among other things, prevent more cars from being added to the active fleet because these causes place socio-economic costs on owners and dissuade them from owning a car. The precise moment when people will no longer accept more cars (the tipping point) is unknown. In certain cases, the number of vehicles is used to drive infrastructure expansion, as seen in Iran. As a result, more trucks will be accommodated in the future. Whatever is extended in the present time is accommodated in the succeeding period by new cars (Azad and Atiekar, 2016).

2.6.3 International logistics in Iran

The Logistic Performance Index (LPI) is focused on a global map of operating firms which provides input on the “friendliness of logistics” in the countries they operate in. They incorporate the ability of the regions in which they operate, comparative evaluations of other countries in which they deal, and global logistics expertise. Quantitative data on the success of crucial factors in the logistics functions in the area they operate in is combined with feedback from operators. As a result, the LPI includes both qualitative and quantitative indicators, and it aids in the creation of logistic friendliness profiles for these countries. It assesses success across a country's logistics supply chain and provides two perspectives: global and domestic.

The LPI total score shows expectations of a region’s logistics, according to the reliability of clearance from customs, the consistency of commerce and transportation facilities, the quality associated with the providers of logistical services, the ability to track and follow distribution, and the pace at which shipments reach the distribution points on time. The index varies from 1 to 5, with a higher score indicating better performance.

The following are the six main dimensions used to evaluate countries:

1) Border control agencies, like customs, are efficient in their clearance processes
2) Infrastructure for commerce and transportation
3) Ease of coordinating low-cost shipments.
4) Logistics facilities' competence and quality.
5) Consignment tracking and tracing capabilities.
6) Shipments arriving at their destination on time or ahead of schedule.

2.7 Large players in Iranian logistics

There are 3 major players when it comes to logistics in Iran. These players are Government and governmental related organizations, which hold 60% of the share; academia holding 25%; and operating companies which hold 15% of the share. Each of the mentioned sections contain several subsections, which are listed below:

Government

- Road Development Ministry
- Organization of transportation and maintenance of roads
- Maritime corporation
- Civil aviation corporation
- Islamic Republic of Iran´s railway

Operations

- Shipping lines of the Islamic Republic of Iran
- Port of Sina
- Middle East´s Tidewater
- TukaRail Co

- International Transportation Co. of Persian Gulf
- Iran`s Tosse Tarabari
- International Transportation of Iranian Chain
- Kaveh Co
- Sepahan Co
- Iran Air Corporation
- Logistics Holding of Khadem
- Aras Asia Seir Co

Academia

- Logistics and Supply Chain Society of Iran
- Imam Hossein University Logistics Study and Research Center
- Trade Studies and Research Institute

Iran is a region that connects the world from east to west, and it has long held a vital position in terms of trade, transportation, and logistics. This research aims to provide a basic overview of Iran's logistics industry. The following are some key figures and statistics about the industry:

- Iran exported 93.5 million tons of non-oil goods in 2015, including gas condensates, for a total of 42.414 million dollars.
- Iran's gross imports in 2015 totaled 35 million tons worth $41.490 million dollars.
- Iran's top three trading partners are China, the United Arab Emirates, and Iraq.
- The Iranian government has ambitious proposals to develop the country's railway and aviation industries.
- Iran's rail system is in desperate need of investment. There are currently only around 13,000 kilometers of road, which is insufficient for both passenger travel and foreign trade.

- Iran's airline industry is plagued by an out-of-date fleet, a lack of cooperation and communication with other modes of transportation, and poor airport profitability.

The logistics industry in Iran is in desperate need of investment and is a lucrative market for foreign investors. A wide market consists of roughly 80 million people who are impacted by the current framework (which is outdated, insecure, and slow) and a regime that is working to upgrade the frameworks, following the lifting of sanctions.

Table 3. Logistic Performance Index in Iran and other sectors of world (The World Bank 2019)

COUNTRY	LPI SCORE	CUSTOMS	INFRASTRUCTURE	INTERNATIONAL SHIPMENTS	LOGISTICS COMPETENCE	TRACKING & TRACING	TIMELINESS
Region: Europe & Central Asia	3.03	3.16	3.14	3.17	3.24	3.62	3.23
Region: East Asia & Pacific	2.98	3.02	3.08	3.07	3.12	3.54	3.14
Region: Middle East & North Africa	2.6	2.78	2.96	2.81	2.86	3.29	2.89
Region: Latin America & Caribbean	2.48	2.46	2.69	2.6	2.67	3.05	2.66
Region: South Asia	2.42	2.45	2.68	2.56	2.56	3.03	2.62
Region: Sub-Saharan Africa	2.36	2.29	2.49	2.42	2.39	2.84	2.47
Iran, Islamic Rep.	2.6	2.33	2.67	2.67	2.67	2.44	2.81

Turkey and Saudi Arabia have equal LPI scores in most aspects in the Middle East, though Iran is still far behind. Many of these flaws have been recognized by the Iranian government, which has set a high priority for potential reforms. Following implementation of the JCPOA, a significant move forward is planned, resulting in an increase in Iran's LPI over the coming years.

2.7.1 Investigating the logistics situation in Iran

Iran has many advantages and potential in the field of logistics, of which the most important are the Middle East and the main five major corridors of transit and international transportation, the use of all modes of transportation, access to high seas, having blue shores and extensive land borders, having numerous ports and an extensive road network. Due to these advantages, Iran has the ability to become one of the major commerce centers in the region, and even the world, but unfortunately, so far, the development of logistics in the country has not been significantly taken into consideration. Iran's position in the indicators related to the field of logistics is a good expression of the country's weakness in this regard and the lack of development of the logistics infrastructure. According to the World Bank's latest report, Iran had a score of 2.85 out of 5 (best status) in the 2018 Logistics Performance indicator, ranking 64th among 160 countries (Chu et al., 2018).

Despite the unique logistical potential and advantages in Iran, so far, for various reasons, the development of logistics and logistical infrastructure has been neglected. The main challenges of Iran's logistics field can be summarized as follows.

- Lack of comprehensive documentation in the field of logistics
- Lack of multimodal transportation in the country
- Lack of formation and development of third-party logistics companies
- Lack of private sector participation in logistics development
- Disturbances and lack of coordination in the supply chain of commodities and related organizations
- Lack of development of logistics centers in Iran and inability to change the country into a commercial hub in the region
- Lack of physical infrastructure development

Iran is ranked 112th in a new World Bank survey that examines logistics conditions and infrastructures in 155 countries. This means that, considering its existing opportunities and logistical infrastructures, Iran has been unable to effectively leverage its logistics infrastructures and economic opportunities to become a Middle East logistics center (Alinejad et al., 2018).

Other neighboring countries, on the other hand, have benefited from the Middle East's peculiar situation in terms of logistics and economic growth in a proper manner, through proper understanding of environmental constraints, infrastructure improvements, and efficient management of their logistics systems. The Emirates, Kuwait, and Turkey are among these nations, which rank ahead of Iran despite having less favorable geographical conditions. Iran's biggest competitors, Turkey and the United Arab Emirates, were ranked 17th and 27th in the World Bank annual survey, respectively (Alinejad et al., 2018).

2.8 Outsourcing in logistics

Naturally, the political atmosphere in Iran affects all businesses, but is not necessarily the only factor. The economic atmosphere of the country, which can be affected by the political atmosphere, has a direct effect on businesses in the logistics and supply chain domain. The existence of a growing trend, stability, and relaxation in the economic atmosphere of the country, are sure to affect the atmosphere of all businesses, including logistics and supply chain. A boom in these businesses clearly boosts employment and income generation at the national level and thereby increases GDP (Pamucar et al., 2019).

Moreover, the development and growth of these businesses by improving and upgrading the level of logistics service delivery and supply chain to corporations and business activities can increase productivity, speed, quality, and flexibility in the product market, reduce the final cost of products, and as a result increase the competitiveness of the country's industries in domestic and foreign markets. Naturally, any improvement in this direction can affect the public space of the country. Though the logistic business space and supply chain has undergone its initial stages and is in the process of growth, it still has not achieved its desired position in comparison with global standards. A significant part of these businesses have not adapted themselves with new methods and approaches to service delivery and traditional work. In addition to some new businesses in this field, which have long been featured and active in the world, there are still no places for them in our country. Although some logistics companies call their business third-party logistics businesses, nevertheless they do not fit perfectly with what these kinds of companies are globally. The role of the legal sector (or the public sector) in modernizing these businesses and orienting towards the growth of this domain of business is undeniable. For example, long-term planning for the development of this domain, the designing and implementing of incentives and supportive policies, developing rules and regulations for a variety of new businesses, determining the relevant trustees, and applying the necessary

amendments in criteria and standards to provide a minimum level of service for these businesses, are some of the steps the government can take in this regard (Rahman et al., 2017).

Without government support, we cannot expect significant improvement in the status of the logistics business and supply chain. The same as with other business spaces, government is the most original reference in setting up rules and regulations related to space improvement in this business. Establishing rules and regulations that can facilitate investment in the logistics industry is one of the main duties of governments. These rules and regulations either in the internal logistics sector (distribution systems, distributing and inventory companies, etc.) or in the international sector (import and export, customs, international trade conventions, etc.) are very important and must be carefully and precisely crafted. On the other hand, the government should have an acceptable performance in investing (usually with private sector participation) in building the logistics infrastructure. We will not see progress in the business space in the domain of logistics and supply chain without creating hardware and software infrastructure (such as transportation and storage infrastructure, ports, terminals, logistics villages, telecommunication infrastructure, communication, finance, etc.). Obviously, the government should take control over both rules and regulations and infrastructure development and try to align the interests of the private sector with national interests to increase the willingness of the private sector to invest in this domain (Real et al., 2014).

Businesses related to the logistics and supply chain domains abroad are growing. The creation of large international companies in the logistics domain and supply chain management shows this rapid progress. On the other hand, official statistics show a significant increase in outsourcing logistics activities to 3PL service provider companies round the world. One of the most important criteria for outsourcing logistics activities is the cost criterion (Shi et al., 2016).

Examining criteria such as logistics cost, inventory cost and fixed equipment cost, shows that if outsourced to 3PL companies, these costs will be reduced. Most of the manufacturing and service organizations which have benefited from these companies reported that the use of 3PLs has increased their year-to-year profits. Despite the success observed, it seems that there is still the opportunity to increase profits for the users of outsourced logistics services. Of course, it should be noted that partnership with 3PL companies is done not only to improve the cost criteria or the level of service provided. In recent years, some criteria such as fuel efficiency and carbon emissions, as well as attention to environmental issues, gradually have

become more important in the decision-making process for selecting 3PLs (Weber et al., 2016).

Nowadays organizations are paying more attention to improving the quality and speed of their services to improve their business, and having a strong logistics system for each organization is included as an important competitive advantage. Accordingly, officials and governments in all countries are trying to boost their logistics performance by increasing the utility of investment in domestic markets as well as the ability to market globally.

In recent years, the outsourcing of logistics activities has been considered by industrialized countries as one of the policies to reduce production costs. Active companies in these countries have improved the speed and quality of their logistics services by transferring logistics activities to third-party companies. Third party logistics means a trilateral relationship between the buyer, the supplier, and the logistics service provider, which is responsible for providing logistical services (transport, packaging, warehouse, etc.) between the first and second parties. In other words, third-party logistics is a collaboration with a foreign organization that takes on all or part of the management activities of its products (Yuan et al., 2018).

Economic firms, with the outsourcing of many of their public services, reduce the need for investment and asset creation in the organization. As an example, an organization outsourcing warehousing to a 3PL provider does not need to invest heavily in warehouses and refrigeration facilities. Meanwhile, the organization can use a 3PL service to direct part of its capital rather than deploying assets to advantaged sectors. As an example, the organization, with the assistance of the transport fleet, no longer needs to invest in the purchase of transportation vehicles. 3PLs prevent the company from sleeping in the capital or sleeping property, which leads to the loss of corporate savings. For example, the warehouse or refrigerator of the firm is not always fully utilized, or the transportation system of the firm has not always come to an end. Therefore, part of these assets will be abandoned and will even result in fixed and current costs (repair, maintenance, obsolescence, depreciation, etc.). However, with the outsourcing of services to 3PLs, the costs of the above mentioned are removed from the responsibilities of the organization (Cao and Zhang, 2011).

Learning can give businesses a long-term competitive edge, particularly in today's volatile and competitive climate. Learning, on the other hand, is not an inherent trait of a company: it is the product of a society that strives to improve it. Learning orientation is a proclivity for promoting skills development, and companies which value it inspire workers to challenge corporate norms. Since the current world is unstable, chaotic, and highly competitive, these habits are critical. Firms which can

recognize business dynamics and are prepared to respond quickly are more likely to succeed (Baker & Sinkula, 1999).

The framework of the Iranian government currently includes a broad chain of companies, organizations, systems, and institutions that are in charge of dividing the country's sovereignty, national economy management, and logistics services rings. Considering the importance of the role of 3PLs in reducing the costs of supplying services in the supply chain, outsourcing a large part of the state-owned logistics service related to the framework of government to 3PLs has cost-effective economies.

SCM businesses are growing. The establishment of large international companies in the fields of SCM illustrates this rapid progress. On the other hand, official statistics indicate a significant increase in the level of outsourcing of logistics activities to third party logistics services companies worldwide (Evangelista, 2011).

2.8.1 Third party logistics (3PL)

Third party logistics is the use of foreign companies to carry out logistical tasks that were carried out in the past within the organization. Tasks performed by 3PL companies can include all logistical processes or a set of selected activities. In other words, third-party logistics involves any kind of outsourcing of logistical activities carried out within the organization in the past. For example, if a company already having an exclusive air transport fleet chooses to use foreign transport services, it be an example of third-party logistics. This is also the case with a company that has shut down its own warehouses and uses foreign ones. These companies are usually specialized in transportation and storage and can match their services with a wide variety of products. The main function of 3PLs is based on the physical distribution of goods and services.

Berglund (2000) defines 3PL as "a logistics service company providing service on behalf of a shipper responsible for the management, transportation, and warehousing of goods. The relations between the employer and the 3PL company may be formal or informal but should be continuous and profitable for both parties. Activities undertaken may include all or part of the logistics activities, but at least they should include the management and execution of transportation and warehousing activities." Cole et al. (2003) argue that "a third-party logistics company is an external supplier performs all or part of the logistics tasks of a company." Of course, they believe that a true 3PL company will provide an integrated set of logistics services and solutions to overcome logistical or supply chain problems (Rahman et al., 2017).

Various definitions of the idea of 3PL and the operators of these services have existed over the past few decades. The following are a few of these meanings. According to Lieb (1992, p.34), "3PL entails the use of foreign companies to execute logistics activities that were previously performed within the company. The third-duties parties may include the whole logistics process or specific tasks within the process." 3PL is defined by Berglund et al. (1999, p.59) as: "Activities performed on behalf of a shipper by a logistics service supplier, including at least the supervision and implementation of shipping and warehousing activities."

Furthermore, for the service provider to be recognized as a 3PL organization, the client and the service provider must have worked together for at least a year. Otherwise, the facility is regarded as 'arm's reach' shipping or warehousing sourcing. 3PL is described by Evangelista and Sweeney (2006, p. 56) as follows:

Activities performed by a logistic service provider on behalf of a shipper and involving at least transportation" are described as "third party logistics." Other activities such as warehousing and inventory management, as well as activities related to value added supply chain and details, can all be included in the definition of service offering in 3PL.

Since the 3PL industry is so big, it deserves to be studied separately. Academic interest in this field have risen in dramatically during the past decade. This is predominantly explained by the increasing need of businesses to outsource more of their non-core operations (Selviaridis & Spring, 2007).

According to Berglund et al. (1999), the key driving force behind the definition of 3PL is the decrease of asset intensity as well as labor costs. This, though, is only from the demand side or viewpoint. On the other hand, from the perspective of the retailer, resource availability and deregulation of the transportation sector seem to be the primary goals. Even so, labor rates are being reduced. According to Jharkharia and Shankar (2007), the following are critical reasons for outsourcing:

- Globalization
- Companies' willingness to focus on their core competencies.
- Cost-cutting
- Consolidation of the business
- Alliance expansion
- More effective processes

- Improved service

Alongside increasing pressures on business costs and the extension of market practices, logistics outsourcing has become a necessary part of every company's operations. As a result, in a sustainable business setting, a globally focused company must be competitive when collaborating closely with its associated stakeholders. Companies also outsource their logistic activities to 3PL service providers so that they can concentrate on the main market (Guarnieri, Sobreiro, Nagano, & Marques Serrano, 2015). In the early 1980s, the word "third-party logistics" (3PL) emerged in journal articles and conferences. Researchers' increasing emphasis on the 3PL supplier selection issue has resulted in a vast amount of literature (Aguezzoul, 2014).

For expense reduction, upgraded corporate alliances and skills, versatility in redesigning logistics, connectivity with emerging technology, and developing virtual businesses focused on firms' core markets, most multinational organizations are advocating and widely depending on 3PL providers (Aguezzoul, 2014;). However, supply chain complexity, global competitiveness, and consumer appetite for timeliness and reliability in item distribution have all changed the position of 3PL in recent years. Since multinational companies want to increase profits, 3PL suppliers reduce clients' (firms') overhead costs and logistics lead times, allowing them to deliver high-quality customer support. However, 3PL suppliers often distribute the financial costs through subcontracting since logistics assets often require an initial investment in overheads. In this case, choosing the right 3PL supplier is a critical strategic choice for businesses which want to focus on their core competencies as competitive assets, while outsourcing their other operations to technical and specialist firms (Marasco, 2008).

2.8.2 Third party logistics development

The desire to globalize, the need for organizations to become agile, the complexity and specialization of tasks, risks, uncertainty in markets, heavy competitive pressure, the development of technology, special customer service development, time pressure, expansion of enterprise integration, increased demand for services with value added in logistics, and the rational use and maximum exploitation of available resources are all clear reasons for the importance of outsourcing logistics activities. Logistics outsourcing is seen as a solution to these complexities and global trends point to outsourcing growth in the future.

In addition, the market pressure to reduce prices, pressure to improve customer service, globalization, and development of new information technology are the

four main factors behind the development of 3PL services in recent years. The importance of the development of the 3PL industry has been heightened especially with the development of outsourcing unimportant activities in large manufacturing and service companies. Other studies point to the fact that 3PL service businesses are growing dramatically around the world, especially in developed countries.

The four main factors affecting the development of 3PL services over recent years are:

- Pressure to reduce prices
- Market pressure to upgrade customer service
- Globalization
- Development of new information technologies I think you just said this above

A review of the trends shows that the importance of these four factors has changed over the past years, but still all four are among the main drivers of 3PL service development. In the past, major logistics activities that were entrusted to 3PL companies were limited to transportation (interior and exterior) and storage; but in recent years the transfer of other logistical matters such as integration of transportation, the creation and management of storage, and supply of orders shows a growing trend.

In the Middle East, the 3PL industry has expanded at a 10% annual pace on average (Nejati et al., 2017). The following are some of the facilities rendered by 3PL companies:

- Order processing
- Sourcing consulting
- Product labeling
- Packaging
- Reverse logistics
- Waste management

The concept of 3PL was first introduced in the United States and Europe to efficiently manage a firm's logistics operations. Logistics outsourcing, according to Berglund, van Laarhoven, Sharman, and Wandel (1999), is characterized as both long-term as well as short-term contractual arrangements between production firms and 3PL providers. Third-party logistics, as described by Lieb (1992), is the outsourcing of previously in-house logistics functions to third-party agencies. As a result, third-party logistics can be described as the management of various logistics systems by external contracting companies rather than a client multinational corporation. Third-party logistics firms are mostly concerned with shipping, warehousing, and other related services, and these 3PL service companies should have specialized expertise in both areas (Chen, 2014). Since logistics outsourcing is becoming more essential, choosing the right 3PL has become a crucial problem for businesses.

Choosing the best 3PL supplier has recently become a major issue for multinational corporations. The process of selecting 3PL providers begins with the creation of decision requirements for identifying and evaluating applicant 3PL providers that have the best chance of fulfilling the firm's service needs. In general, nuanced decisions involving the selection of appropriate logistics suppliers, based on a variety of factors, are based on logic and the personal knowledge of experts. As a result, 3PL provider selection can be classified as an MCDM challenge, as it shares many of the features of multifaceted decision-making challenges. We are often faced with an unpredictable world when evaluating 3PL providers, and feedback information is not always reliable. Many uncertainties accompany the decision-making process, and are represented as interval numbers, rough numbers, blurry numbers, or gray numbers, respectively (Gigovic, Pamucar, Bajic, & Drobnjak, 2017).

These methods are best at showing uncertainties around using linguistic scales to describe qualitative criteria, identifying metrics related to qualitative criteria, and the rate of trust in the evaluation of experts. The basic principle of using the interval method to assist processes related to decision-making is that interval numbers can be used to present attribute values. However, defining the limits of interval numbers is problematic since they are all dependent on the decision-maker's individual interpretation, judgment, and experience (Pamucar, Mihajlovic, Obradovic, & Atanaskovic, 2017).

3PLs are divided into six categories according to type of activities:

1) Logistics outsourcing consultants: consulting, chain management, logistics design

2) Logistics services: transportation, warehousing, layout, suppliers, distributors

3) Communications: network design, communication channels, IT in the supply chain

4) Supply Chain: companies that fully manage and implement the supply chain, such as automotive parts suppliers

5) Technological: technical services and machinery logistics companies

6) Strategic: companies that provide strategic logistics or supply chain levels.

Studies show that the service level of 3PL companies is increasing every year. Also, 3PL users utilize participatory collaboration with third-party logistics service companies to improve performance and enhance their level of collaboration.

Based on the concept of dynamic capability, companies which are operating in active markets must be capable of obtaining, integrating, reconfiguring, and releasing resources with the aim of creating a long-lasting competitive advantage. Organizations evolve routines to generate value and adapt to market forces, but these complex skills come first. The degree to which companies develop efficient and timely routines is affected by their learning orientation. While researchers have investigated the orientation related to the effect of learning on competitive success, there is still further research to be done, as its implications in outsourcing logistics activities are widely unknown. Panayides (2007) provided a paradigm for understanding how organizational teaching leads to effective relationships between 3PL service providers and their clients, but more longitudinal research to test this model is needed (Naviceli and De Carlo, 2019).

2.8.3 Advantages of 3PL companies

Some of the benefits of using 3PLs companies include the following:

- Specialization of services and reduction of costs
- The focus of manufacturing centers on their core business development
- Increase of operational flexibility
- Reduction of inspection and monitoring costs
- Reduction of operational risks

- Improving customer service level
- Promoting the status of the organization among competitors

Studies show that the service level of 3PL companies is increasing every year. And 3PL users also use the co-operation with 3PL companies that serve them to improve their performance and enhance their level of collaboration. The most important activities that a 3PL company may offer its customers include:

1) Managing the flow of materials within the organization (logistics management)
2) Managing inventories
3) Managing the processes of receiving and relocating customer orders
4) General and special packaging
5) Transportation
6) Deliveries on time
7) Warehousing
8) Maintenance of information, software, and hardware.

2.8.4 Reasons for creating 3PL companies in industrial clusters

The benefits of sustainable competition increasingly relate to flows within clusters, like knowledge, relationships and motivation, which rivals outside the cluster cannot access. Although the place of establishment remains a fundamental item for competitiveness, nowadays its role is very different from the previous generation. The influencing factors of manufacturing costs significantly affect the competitiveness. The location and environment of establishment, such as natural harbors, with cheap labor, often lead to a relative and sustainable advantage. The competition in today's economy has become much more dynamic. Companies can reduce manufacturing costs through global marketing and dispense with the old concept of comparative advantage. Competitive advantage relies on more efficient use of entities that require continuous innovation.

Solving the problem of the contradictory concept of place in the global economy reveals major insights into how companies can achieve sustainable competitive advantage. Events occurring inside of companies are important, but clusters

indicate that business environments outside of companies are vital. Despite remarkable evidence that shows success, competitiveness and innovation are concentrated in several contexts at specific geographic locations, the role of places has long been overlooked.

According to Porter's model and analysis of results from different studies, the most important factors influencing the trend of industrial clusters towards 3PLs are:

- Severe pressures to reduce prices
- Efforts to improve supply chain management performance
- Using new information technologies
- Severe pressures to improve service to customers
- Globalization
- Integration and composition
- Stringent government policies
- Need to quickly introduce new products to the market
- New markets
- Security issues
- Transportation capacity / logistics issues
- Increasing transport / logistics affairs

2.8.5 Logistics service innovation

Logistics is one of the complex operations that allows output and consumption to be linked. Logistics, according to the Council of Supply Chain Management Professionals, is a collection of processes that includes the preparation, implementation, and monitoring of the movement of products, supplies, and related data. Logistics is a complicated industry that can be assessed from a variety of angles. One of the goals of logistics is to ensure the effectiveness and feasibility of all operations from point of origin to point of destination, while still satisfying the quality requirements of consumers, such as knowledge accuracy and responsiveness to their needs. Logistics is important not only for businesses in the manufacturing sector, but also for businesses in other industries, such as banks,

supermarkets, government, and institutions. Logistics is critical to an organization's productivity and revenue creation by offering time and location utility (Agnetis et al., 2014).

According to Waters (2003), “Without logistics, no goods pass, no activities can be carried out, no items can be shipped, and no customers can be served.”. Several operations, including transportation, customer support, information technology and communications, banking, warehousing, and outsourcing are needed to put the right goods close to the right buyer (Arroyo et al., 2006). Several actors, including freight forwarders, airlines, third-party logistics providers (3PL), warehouses, distribution firms, suppliers, and retailers are expected to carry out these operations. Aside from the above, there are two other key players in the convoluted logistics system: the first overseas production – the customer – and the second oversees controlling operations – the authority. When the competitive economy becomes more complex, the gap between what an organization needs to do and what it can really do in-house is widening. The trend among businesses in all industries is to outsource their more expensive and time-consuming logistics operations to external companies, such as third-party logistics providers in logistics (3PLs). Transportation, warehousing, storage, and freight aggregation are only a few of the logistics facilities offered by 3PL companies. Outsourcing these functions allows businesses to save costs and concentrate on their core competencies, where they can gain a strategic edge over competitors. Choosing the best alliance, though, can be a difficult task.

As a result of proliferation and free trade, 3PL suppliers are facing increased demand for value-added, robust logistics services, as well as fierce competition. Providers must evolve to succeed in a dynamic environment. 3PL providers innovate in a way that is radically separate from most service sectors and manufacturing: it often occurs as an ad hoc response to customer demands rather than as part of a structured schedule or procedure (Busse, 2010). As a result, industry-specific innovation reports are critical for 3PL providers. However, not been enough research has been done on 3PL service creativity (Busse and Wallenburg, 2011). Even a general definition of what logistics infrastructure creativity entails is lacking (Cui et al., 2012).

Panayides and So (2005), for example, characterized innovation by 3PL providers as “the acceptance of an idea or action, whether relating to a computer, mechanism, process, regulation, program, product, or service that is new to the adopting organization” based on a general concept of innovation. Daugherty et al. (2011) described logistics service creativity as "a modern, beneficial ideal, process, or method in logistics operations that is different from a company's existing

practice" from the viewpoint of the customer. In contrast to this, Flint et al. (2005) describe this as "Any logistics-related service from the simple to the complex that is seen as new and beneficial for a specific audience," Some research has defined innovation in service providing in terms of various measurements or divisions, such as innovation of processes vs innovation of products, and the difference between disruptive and gradual service creativity (Wagner, 2013); other researchers also used an encapsulated term for service innovation's ultimate sense (Hosseini, 2019). can you explain what the encapsulated term is?

Flint et al. (2005) claim that "The field of creativity has been largely overlooked by logistics science. As a result, multiple studies have looked at how important logistics infrastructure creativity is for 3PL providers to achieve a competitive edge, improve customer loyalty, enhance supply chain performance and boost financial performance." Various other research has looked into the factors that affect the development of logistics services. For example, according to Grawe (2009), "both environmental factors (e.g., organization of labor, competition, and capital scarcity), as well as operational capabilities (such as information, infrastructure, relationship networks, and financial and managerial resources), influence logistics sector creativity."

Cui et al. (2012) argued that "Customer demands, business forces, and entrepreneurial orientation, are the driving forces behind logistics service creativity by 3PL providers in China. Furthermore, the corporate structure, shipping knowledge, and learning and absorptive capabilities have been described as antecedents to the development of logistics services. The significance of consumer engagement and external relationships have been identified as key enablers of logistics sector innovation. "

2.8.6 The role of 3PL companies in increasing profits and improving business

Outsourcing is part of the processes of supply, production, and distribution that have been addressed in recent years. In the meantime, logistical activities which are outsourced based on the field and mainly outside the production environment have outsourcing ability more than other supply chain activities. Assigning logistics activities to third-party companies has started with transportation and warehousing, but in recent years, the assignment of other logistical issues has also been increasing and has led to the development of third-party firms. Users of 3PL companies have gained significant benefits from the services of these companies (Daim et al., 2012).

There are many reasons why manufacturing companies or services are coming to third-party companies. However, four main reasons can be considered more important. The first major reason for referring to third party logistics companies is to lower the cost of finished products. Due to their specialized expertise and the high volume of activities (due to providing services to many manufacturers), they can reduce the cost of logistics activities and offer lower costs for providing these services to manufacturing and service units. This will directly reduce the cost of finished products and service units (Olfat et al., 2019).

The second advantage of third-party companies is the increase in quality and quantity of services provided to customers. Due to their specialized expertise, these companies can provide logistic services to customers and individuals who are involved with the logistics process more appropriately. As a result, the use of third-party companies will improve logistics services.

The third reason for using third-party firms is globalization without regional constraints and the market development of products and raw materials. Moving towards globalization is now a requirement, and companies in the competitive market will be able to continue to move beyond regional markets and move towards globalization. In the process of globalization, activities are more specialized, and companies and organizations must specialize in their field of activity. Therefore, logistics activities should be assigned to companies and organizations that are focused on this field and are aware of the requirements.

The last point in this area is that with the advances in science and technology, companies and organizations need to well placed to benefit from these. In the competitive market, organizations that understand the technology of the day and are able to use it in their daily activities will prevail. In the field of logistics activities, the situation is the same. Updated technologies are constantly changing. Coordination of the manufacturing organization and service with logistics technologies should be addressed. But a third-party company, in order to remain competitive in its field, must keep up to date with different technologies. In this way, organizations that use third-party companies will benefit from up-to-date logistics technologies.

There are other reasons for assigning logistics activities to third-party firms, such as organizations being able to focus on their core competitiveness, the ability to create new markets, less investment in logistics, the possibility of introducing new products, and so on. All these reasons reveal the need for the development of 3PL companies in Iran (Jabaleh et al., 2018).

2.8.7 A review of the current situation of the world market for 3PL services

Globalization has radically altered the industrial landscape. Manufacturers and retailers have welcomed third-party logistics (3PL) vendors as core actors in the supply chain in reaction to this current economic reality. These companies encourage their customers to focus on the main competencies they possess by acting as committed logistic specialists and this can lead to having more competitive advantages (Huo, Ye, & Zhao, 2015).

Naturally, outsourcing creates interdependency, and this could cause some friction in the relationship of suppliers and customers. While rivalry is a feature of every free market, Morgan, and Hunt's seminal work (1994) points out that for a competitive exchange to exist, both confidence and loyalty are required. The existence of coordination and the lack of opportunistic actions determine the success (or failure) of these dynamic and interdependent partnerships. According to existing research, confidence will encourage cooperation and knowledge sharing among interdependent partners, resulting in increased operational performance (Fu, Han, & Huo, 2017).

From another point of view, we can say that logistics activities that continue to be outsourced more frequently include those that are more transactional, operational, and repetitive, while those that are outsourced less frequently are more strategic and related to a direct interface with the customer and IT focused. It is possible that in the future customers are most likely to receive strategic services that may be provided by 3PLs.

One of the most important criteria in the outsourcing of logistical activities is the cost criterion. A review of criteria that includes logistic, inventory and fixed equipment costs shows that these costs will be decreased by using 3PLs. Of course, it should be noted that partnership with 3PL companies is not intended only to improve the cost criteria or service level. In recent years, criteria such as fuel efficiency, carbon emissions, and attention to environmental issues have gradually become more important in the decision-making process for selecting 3PLs. Another significant issue in the use of 3PL services is information technology. Information technology remains a key element of the relationship between 3PLs and senders. The most essential information technology capabilities are those related to executive activities and activities such as transportation, inventory, distribution centers management, electronic data exchange, and transparency (visibility). Other capabilities that are less important are more strategic and analytic.

Those companies which do not use 3PL services mention their reasons for not doing so. Among these, the most common reasons are that logistics in their company is a basic function; logistics is more important than outsourcing; reducing costs will not be achieved; and integrating their IT system with the 3PL system is difficult. While there is a particular logic behind each of these reasons for deciding not to outsource, these factors are also the reasons for deciding to outsource special activities of other companies.

Various factors that are related to the success of the relationship between 3PLs and senders are:

- Being open, transparent, having good relationships
- Agility and flexibility for matching the challenges of today and future commercial needs
- Interest in sharing profits between 3PLs and senders
- Interest in cooperating with other companies, even rivals, for improving service and logistics costs.

2.9 Challenges facing third-party companies in Iran

In previous sections, the position of 3PL companies in improving business conditions has been discussed, which highlights the importance of developing these companies also in Iran. But the specific conditions and characteristics of Iran, examples of which are given below, make the issue even more relevant:

- Positioning in a strategic place due to geographical location: these conditions have enabled Iran to become a logistical link between Asia and Europe, on the one hand, and on the other a communications link between the countries of Central Asia and the Free Seas. This special position alone is an advantage, and if properly addressed and effectively used, can be a factor in a dramatic growth of the economy, in that the revenue from this opportunity goes beyond oil revenues.
- Definite need for active participation in international markets: due to the policy of non-reliance on oil revenues, which is one of the main solutions to the country's economic development, it is necessary that domestic products are offered at world-class quality and price. Without proper and optimal logistics infrastructure this is impossible.

- The need to reduce prices: based on recent economic trends in Iran with the rising prices of energy carriers and consequently an increase in raw material prices, the cost of products and services has increased significantly. Undoubtedly, optimizing energy consumption and raw materials, or in other words, increasing resource efficiency can significantly reduce the impact of these factors, and this issue is the priority goal of various industries and organizations.

However, the formation of supply chains and attention to logistics issues in Iran are still at the beginning of the way ahead, and the development of third-party logistics companies is also facing challenges. The most important challenges are in regard to the following:

- Mistrust in 3PL companies to outsource logistics activities
- Unfamiliar with 3PL companies and their specializations
- Unfamiliar with the infrastructure and requirements needed to develop 3PL companies
- Unfamiliar with the required legal mechanisms
- Lack of knowledge of the processes and authorities regarding the issuance of required legal permissions
- Lack of knowledge of the relevant bodies for auditing and monitoring the performance of these companies

2.10 Strategic area and competitive advantage

Undoubtedly, "competitive advantage" is one of the most widely used keywords in the strategic area, and the content of strategic management discussions at the business level mainly focuses on gaining competitive advantage. Competitive advantage is the key to achieve value. In fact, competitive advantage makes it possible to create, protect, and operate value for businesses. Therefore, in each direct reference to competitive advantage, we are facing the value issue indirectly. However, the value issue is not limited to the business level, and it can also be examined at the corporate and functional levels.

In management literature, cooperation, or what is sometimes translated as parent company, refers to a type of economic structure that includes several businesses with independent legal entities. These businesses may be active in an industry, or

may be dispersed in a set of homogeneous or non-homogeneous industries. For example, P&G, General Electric, Pepsi, and Hyundai are among companies that run many businesses in homogeneous and non-homogeneous industries.

In fact, the corporation plays the role of the owner and manager of a business portfolio without being involved in operational activities. Therefore, the types of decisions at the corporate level are different from the types of decisions which are made at the business level. The corporation, which mainly has the nature of headquarters, is involved in decisions about choosing attractive businesses, entering into an industry or exiting from it, and optimizing its business portfolio without being engaged in independent executive details. In contrast, at the business level, the types of decisions are mostly concerned with the quality of competition, management of product or service life cycle, and maximizing the efficiency of activities. Competitive advantage is defined as the ability to face and overcome the competition. Usually, when evaluating the pros and cons of the competitors and examining a way to fill the existing gaps, some solutions for competitive advantage can be created. Companies create a boundary for their competition when they produce better features than their competitors. Nowadays, there are various models and designs for development, being in the market, and company processing, and based on the environmental requirements and market conditions, an interest of combinational method or methods must be changed such that it stabilizes its presence and increases its market share. The increasing improvement and development of information and communications technology has had deep and extensive effects on commercial processes, but many companies do not have the required information and knowledge regarding how to use various marketing methods and their effects on export markets. Competitive advantage means planning a series of unique features to attract the customers of competitors: in other words, making a superior product offering a higher quality service than others which is responsive to the needs of the customers. Today, competitive strategy and its pivotal branches regarding industry analysis, analysis of competitors, and strategic positioning are considered an accepted part of management activities (Ellinger et al., 2015).

Competitive strategy is a competitive style which is used in negotiations to divide a fixed source such as money and facilities. A competitive strategy presents a rich framework to identify the infrastructure factors of competition in industries and helps companies to achieve unique sources. Competitive strategy provides tools for understanding the power and heterogeneity within industries and companies.

At the business level, the goal of competitive strategy is to improve the competitive position in a way in which the market is competitive; and at the product level, their

purpose is to produce tactics which aim to achieve the business objectives and increase competitiveness. Therefore, competition strategies seek to upgrade their competitive position. Business strategies, which are sometimes called competition strategies, can be defined in six dimensions: the market and products in which a business intends to compete, level of investment, the strategies of task areas which are necessary to compete in that market, strategic assets and strategic skills, allocating resources to commercial units, and developing synergetic effects between businesses. The concepts of competitive advantage is accompanied by a range of abilities which enables the firm to perform at a higher level in comparison to the other competing companies. These advantages are rather hard to copy by the competitors, so in order to achieve competitive advantage, the directors of the firm have to pay close attention to both their internal capabilities as well as their external position. In the process of acquiring competitive advantage, two important points need to be considered: firstly, it is an everlasting process which leads to excellence in compatibility, and secondly, due to increasing environmental complexity and intensity of the competition, competitive advantage is easily copied by competitors or soon dies away from the clients' viewpoint and must be replaced with new advantages. Accordingly, the organization must think about finding its own competitive advantages (Fu, Han, & Huo, 2017).

2.10.1 Ways of gaining competitive advantage

In this subsection, we will take a closer look at the main seven strategies for gaining competitive advantage. These seven strategies have been widely taken advantage of by various manufacturing firms and have also been mentioned in the field literature for a number of decades.

- ***Cost leadership strategy:***

Companies can gain competitive advantage by offering attractive prices. "Walmart" and "Amazon" are two companies that were able to grow well with this strategy. Price reduction is rarely considered as a desirable way for companies, though this method can be effective for some companies, nevertheless it can finally threaten the durability of the business.

- ***Diversity strategy:***

A commercial name or brand is the most obvious way to differentiate companies from each other. Brands such as "Nike" or "Rolex" typically create a different position separated from other shoes and watches in the minds of consumers using

branding. Managers who use this method must seek out unique skills and capabilities to increase the customer's awareness of the value of their goods and services with this key factor. In fact, the purpose is that the company brings new and different products and services to the market. Of course, these products can be related or unrelated.

- ***Innovative strategy:***

Companies may perform their activities with new and innovative methods. For instance, innovative technologies in the medical industry have created a way of removing brain tumors and cancer without surgery. It is obvious that this method decreases pain, risk, and recovery time. Hence, it has more competitive advantage than traditional surgery. People can gain competitive advantage by discovering and providing innovative methods to do the work.

- ***Operational effectiveness and strategy intelligence:***

Some companies just do work that they do better than anyone else. When you do your work well and efficiently, you gain competitive advantage over those who do the work longer or faster. "Operational effectiveness" and "strategic effectiveness" are both necessary for achieving a good performance, but their performance is different from each other. A company can overcome its competitors only when it creates a difference and preserves that difference. "Operational effectiveness" means performing activities better than the competitor's activities. But "effectiveness strategy" is performing activities differently from the competitors or performing similar activities in a different way, which is now combined with strategic intelligence and turned it into a new factor called "strategic intelligence".

- ***Competitive strategy based on technology:***

Since Henry Ford developed the automobile industry by starting up assembly lines, companies have been looking for competitive advantage using new technologies. Computer and applications can also create advantage. Employees who learn new technologies and work with them will almost always have more efficiency or competitive advantage than those who resist new methods.

- ***Compatible and consistent competitive advantage:***

As markets, economy, and other factors change in this unpredictable environment, companies that can adapt to the changing conditions gain competitive advantage. These companies are usually smaller and have advanced technologies. Managers can achieve power by accepting changes and adapting to them. It should be noted

that in many cases, adaptation is completely mental and cognitive, and depends on the level of people's perception.

- ***Informational advantage:***

Almost all the mentioned strategies require a high level of information. In fact, competitive advantages are skills that help you to survive in the competition. Most competitive advantages come from knowledge and information. Successful companies are looking for the latest technology, strategies, and data.

2.11 Various theories linked to the research

According to the literature, a single hypothesis is insufficient to adequately justify research inquiries into numerous 3PL problems. To understand 3PL behaviors in supply chains, various researchers propose a number of theories, such as principal agent theory (PAT), transaction cost economics (TCE), network theory (NT), and resource-based theory (RBT). Similarly, to describe the role of 3PLs in logistics value addition networks, Zacharia, Sanders, and Nix (2011) suggest applying TCE, RBT, and NT (Rahman et al., 2017).

- ***Transaction cost economics (TCE)***

According to Cao & Zhang (2011), "The TCE principle notes that a company organizes its inter-organizational operations to reduce manufacturing costs within the firm and transaction costs within the sector, providing a solid basis for analyzing logistics outsourcing decisions. The fundamental theory is that 3PL service providers will be used to outsourcing operations where there is a chance to reduce processing costs. According to studies, outsourcing distribution functions reduces transaction costs such as order consolidation, centralized order management, efficient asset utilization, and overhead consolidation by a third-party. Transaction costs are unavoidable in the relationship between an outsourcing firm and a 3PL service provider; however, cooperation, coordination, and timely information sharing among firms in a supply chain relationship can help to reduce transaction costs."

- ***Resource based theory (RBT)***

The RBT hypothesis is commonly used to describe a firm's internal inventory management mechanism for long-term supply chains (Ghasemi and Adoosi, 2015). Both tangible and intangible properties are referred to as resources. To sustain and enhance its operating efficiency, a company must secure an effective

package and flow of the right type of capital from its environment, according to the traditional view of RBT (Barney, 2001), which could enable the firm to gain competitive advantage (Nejati et al., 2017).

- ***Neo-Institutional theory (NIT)***

Community, social climate, law, custom, and experience, as well as economic incentives, offer a contextual framework from which to define and investigate factors that facilitate the sustainability and credibility of organizational activities (Baumol, Litan, & Schramm, 2007). The three structural foundations proposed by this theory are regulative, substantive, and cultural-cognitive. Regulatory systems, administrative departments, regulations and judges, occupations, advocacy parties, and organized public opinion, are all part of the regulatory pillar. The normative pillar includes principles, traditions, and laws promulgated by trade and technical bodies, while the cultural pillar is an intellectual interpretation of an institution, which emphasizes the central role of 3PL service providers typically working in a business climate where they are increasingly subjected to regulatory pressures (Baumol, Litan, & Schramm, 2007).

- ***Dynamic capability view: learning orientation***

According to Zuniga and Martinea (2016, p. 5), "The diverse skills viewpoint adds to the resource-based view of the firm by describing how companies incorporate, develop, and customize internal and external competencies to react to evolving environments." According to Eisenhardt and Martin (2000, p.7), "The firm's reactions are influenced by the degree of business dynamism it experiences. For example, the formation of dynamic skills in moderately active markets is based on established expertise or practice, while in high-velocity markets, it is based on new knowledge. researchers also point out that learning pathways influence how these complex skills develop. Organizational learning is described as a time-bound process that focuses on information acquisition and performance enhancement. "

Esper, Fugate, & Davis-Sramek (2007, p.4), claim that "Since logistics has been a strategic initiative for gaining competitive advantages by providing consumer satisfaction, it is critical for businesses to improve the skills of ensuring a fair stock level, timely distribution, and product success. Building a learning enterprise has been a top priority in the logistics outsourcing industry. On the one hand, consumer expectations and industry conditions are constantly changing; it is critical to gather input from consumers to improve consistency and agility. "

Supply chains, according to Manuj, Omar, and Pohlen (2014), must follow a learning approach to react to consumer needs and accommodate capital amongst

firms. Firms must, in return, employ modern logistics operations, techniques, and policies to maintain a strategic edge. Logistics service providers can be a valuable source of information, allowing the company to better handle logistics operations (Esper et al., 2007). Logistics management will improve systematic thinking and make good strategies for long-term goals with learning orientation, and staff can gain interpersonal collaboration skills, which will have a positive impact on company success. Furthermore, learning-oriented companies are likely to achieve logistics advancement (Ellinger, Chen, Tian, & Armstrong, 2015).

Learning orientation is a multi-faceted idea that reflects the principles associated with learning. It represents a learning philosophy as top management allows workers to challenge workplace standards. Commitment to learning, mutual vision, and openness to progress are three dimensions that embody these profoundly ingrained values. The degree to which an organization values and encourages learning is referred to as commitment to learning. It cannot happen if an organization does not value learning. In the sense of 3PL outsourcing, a company that is eager to learn will best adapt to changing business conditions. The corporate climate has been volatile in recent years, with much volatility, such as disruption risks. Learning is a great way to cope with market volatility (Yuan et al., 2018).

Externally, learning can help a company better navigate the competition and hear from other companies about how to manage related scenarios. Internally, learning will enhance a company's ability to deal with difficulties and help various operating units work together to solve problems. Employee preparation is prioritized in such an organization, which promotes resource alignment and reconfiguration.

- ***Relational view: trust and commitment***

Based on the rational view, a network of companies will build partnerships which leads to sustainable competitive advantage. As Dyer and Singh (1998) have mentioned, pursuing competitive advantages solely within a company is constrained, since the firm's valuable resources may extend beyond the organizational boundary. Logistics consumers and suppliers are tightly linked in the sense of 3PL outsourcing, and the resulting interdependence may pose a challenge to their relationships (Lai et al., 2012). As a result, this relationship needs to be properly managed. Better efficiency, such as higher production and lower costs of transaction, can be achieved by a stable relationship amongst partners (Dyer & Singh, 1998).

Based on the relational view, there are four main areas from which organizational strategic advantages can be gained:

- Relationship-specific properties
- Information sharing routines
- A mix of complementary resources/capabilities
- Good governance being essential

We used confidence and loyalty as the effective method of governing in our research to boost the outsourcing results. Dyer and Singh (1998) claim that good partnership governance will lower transaction costs and increase value generation. In addition, informal self-enforcement of governance is more powerful than externally enforced democracy or official self-enforcement governing. The concept of trust and loyalty are critical factors in good corporate partnerships, and they can be a weapon that generates long-term competitive advantages. The expectation that the associates would not behave in an opportunistic way can be described as trust. In the literature, the most useful governance framework has been regarded as trust between relationship partners (Weber et al., 2017).

Loyalty, which is described as "a tacit which guarantees relational consistency among trading associates" (e.g., Barney & Clark, 2007), may be a strategic weapon that provides competitive advantages (Dwyer, Schurr, & Oh, 1987: 19). Commitment is shown by the determination to build healthy relationships, a willingness to make short-term compromises, and faith in mutual harmony. Affective and calculative dedication are the two forms of commitment in general.

Both confidence and loyalty are successful in creating competitive advantage by minimizing the costs of transaction as well as optimizing activities with the aim of value creation. First, with confidence and loyalty, exchange partners can minimize investment in relational governance structures and even eliminate opportunistic activities (Barney & Clark, 2007), As a result, contracting and tracking expenses are reduced. Second, under the influence of governance which is self-imposed, trading associates will be praised for initiating actions like sharing information or exchanging money, thus increasing their value-creation initiatives. Third, since trust and loyalty are traditionally based on corporate principles and partnership specifics, they are not perfectly imitable. For instance, Anderson and Weitz (1989) claimed that faith is proportional to the length of a partnership. These unique assets can provide the company with competitive advantage over its competitors (Olfat et al., 2019).

Practitioners will profit from recognizing the connection that occurs between 3PL success and various forms of service provision to devise effective plans for

maximizing their market capacity and managing investment risks. Previous studies have examined the criteria which influence 3PL provider selection and use. However, according to Murphy and Poist (2000), observational surveys of suppliers and consumers have received comparatively little coverage. The term "provider" refers to a business that offers logistical services to its clients, while the term "customer" refers to the person who uses the service. Furthermore, since logistics is often multinational, 3PL vendors with differing business capacities face a variety of opportunities for service provision and customer access. Most empirical research has focused on logistics management in a single area, although multi-region studies have gained less exposure. This factor is rather significant in research comparing Western and non-Western logistics activities. Despite research showing that logistics skills are favorably correlated with success, there is little reason to suggest that outsourcing processes in a Western country has the same impact in a country which is non-Western. To draw more decisive conclusions, studies must perform parallel research, using the same kind of sample template and surveys. Such research would be critical in determining how the context affects outsourcing practices and forms third-party logistics services (Arroyo et al., 2006).

Considering the importance of organizations focusing on their core business and activities in recent years, the importance of outsourcing activities has become more evident and companies and organizations have moved forward. In the same vein, in recent decades outsourcing logistics activities has also been on the agenda of companies and this has led to the formation of third-party logistics companies, or 3PLs. These companies are responsible for the logistics activities of organizations. The important thing is that Iran due to its advantageous geopolitical position can be the center of gravity of the logistics activities of various countries and become a pioneer in this field.

3PLs are professional service providers for customers who do not have enough capacity and facilities to provide their customers with services. 3PL companies manage the physical assets, workforce, and use technology to assist companies in providing professional services. In other words, company’s production or service organizations outsource part or all of their logistics affairs to them are called third-party logistics companies.

2.12 Previous research

Research on 3PL by Giannikas et al. (2019) investigated the implementation of customer orientation. This study looked at some of the problems that come with

deploying customer-oriented logistics solutions and concluded that the so-called model of product intelligence would help with these. The study looked at the consumer orientation of a 3PL supplier using an industrial case study, examining both the implementation of information systems allowing the option of versatile logistics services for end customers and the effect of delivering these options on a firm's performance level. They came up with a list of capabilities that logistics providers' knowledge systems would provide to improve customer orientation in their offerings.

Pamukar et al. (2019) used a multi-criteria decision-making methodology focused on interval rough numbers to determine third-party logistics providers. In the last decade, third-party logistics (3PL) has received a lot of attention from academics and practitioners. Multinational corporations (MNCs) use 3PL to maximize service quality and reliability while lowering costs in today's global competitive environment. However, owing to the presence of a variety of imprecisely based parameters, assessing and selecting 3PL is a very difficult decision. Furthermore, complexity is an inherent aspect of the knowledge in the decision-making steps, and its value in the process of selection is comparatively high, requiring careful consideration. As a result, among other selection factors, insufficient data or insufficient information can occur, resulting in a multicriteria decision-making (MCDM) challenge. The use of interval rough numbers to form this kind of ambiguity in MCDM issues is very versatile. To test 3PL providers, this research proposed a fresh optimized IRN or interval rough number methodology according to the Best Worst Method or BWM, and Weighted Aggregated Sum Product Assessment (WASPAS) methods, as well as MABAC (Multi-Attribute of the Comparison of Border Approximation Field). The priority weights of parameters are computed using a hybrid IRN-BWM algorithm, while the final classification of 3PL providers is determined using IRNWASPAS and IRN-MABAC. To confirm the stability of the proposed methodology, a computational review was conducted to explain the proposed techniques, as well as a sensitivity analysis of the weight coefficient values of various sets of parameters. As a result, a comparison of the collected ranking results with their fuzzy counterparts was performed to ensure that the proposed solution was reliable. The findings show that alternative results are consistently ranked, demonstrating the viability of the suggested solution for dealing with MCDM problems involving IRNs.

3PL as a strategic edge in the management of spare parts of utilities was explored by Navicelii and De Carlo (2018). The upkeep of a vast gas delivery network necessitates regular interventions that are dispersed across the country and have a powerful "non-stationary" aspect. Consequently, spare parts required for repair processes are evenly spread across the region. As a result, to improve the

effectiveness of repair teams, it is important to get replacement parts closer to their destination, reducing the maintenance teams' travel time to the intervention address to a minimum. In this case, it is proposed that a third-party logistics company handles the shipping and storing of replacement parts at transitory storage near each team's primary intervention of the day. The cost of importing spare parts and the requirement for better preparation of in-field activities offset the benefit of improved repair team efficiency. As a result, a simple model was created to allow for a primary evaluation of the project. The validity of the model was then confirmed by applying it to a case study, analyzing the cost differences between the existing model and the proposed logistics management, and reviewing the investment project using standard payback time techniques (PbP) and net present value (NPV). The results of the feasibility study support the profitability of the proposed model, and outcomes of the feasibility study strongly support the implementation of the latest 3PL model for the studied sector, implying that it may be a winning formula for all utility companies. Govindan et al. (2018) investigated the choice of a sustainable third-party reverse logistics supplier, taking advantage of ELECTRE I and SMAA to perform a durability study of an outranking graph kernel. The history of the theory of sustainable triple bottom line is presented in this article, with an emphasis on fiscal, environmental, and social facets of 3PL issues. In research performed in collaboration with an Indian car remanufacturing company, the relevant sustainability requirements were used. The integrated solution makes use of all the relevant metrics of an outranking model that are consistent with the decision maker's incomplete knowledge of preference. It extracts the recently defined kernel acceptability and indices of the membership, which can be viewed as support for either choosing a certain range of choices or a single alternative. The suggested ELECTRE-based framework broadens the range of MCDM analysis methods that can be used to solve the 3PRLP dilemma of choice.

Yuan et al. (2018) looked at the influence of trust, engagement, and learning orientation on the efficacy of logistic services. Organizational habits and cooperative relations can be used strategically to create competitive advantages. Both learning orientation and engagement were positively linked to the rate of efficiency, based on the information collected from 213 3PLs and their associate companies. Commitment was especially important because it moderated the correlation between learning orientation and logistic service effectiveness, as well as mediating the interaction between trust and the effectiveness of logistic operations.

Rahman et al. (2017) looked at the major obstacles faced by an international 3PL service provider in China. The entrance of international 3PL service providers of into China has had a significant effect on the growth of the logistics industry there.

However, when providing facilities, international 3PL firms face several problems that must be identified and addressed to increase service quality. The aim of this analysis was to recognize and prioritize these problems for companies in China. A comprehensive literature analysis of 3PL studies identified fourteen main milestones for these firms, as well as theoretical support for these challenges. To measure the criticality of problems, the analytic hierarchy method (AHP) was used. This study invited five different executives from five different major international 3PLs to participate. Government restrictions, pressure of pricing, and costs of transportation were the most significant obstacles that MN3PLs face, according to the findings.

With regard to production interruption, Giri and Sarker (2017) investigated improvement efficiency by coordinating the process of supply chain with 3PL outsourcing. The aim of the paper was to increase the efficiency of a supply chain that included a monopolistic retailer and a 3PL firm by coordinating their effort. Several independent stores demand at each retailer is unpredictable, but it is vulnerable to price of retail; sudden supply disruptions at the source can occur. The proposed model includes buyback and income share contracts, as well as contract specifications that help to coordinate the integrated supply chain. Decisions made by the participating companies maximize the viability of the whole supply chain. Development disruption and 3PL operation have a major influence on supply chain efficiency, according to numerical analysis, whereas the consequences of buyback and revenue share arrangements are neutral regarding the chance of comparatively high disruption.

Gurcan et al. (2016) used an AHP program to analyze 3PL vendor selection. The decision-making challenge in this analysis was the selection of a 3PL firm for a business based in Istanbul. The problem of selecting a 3PL was analyzed using AHP, which is a popular method taken advantage of in MCDM, which considers both concrete and intangible criteria. Using AHP, the best option for a 3PL provider could be decided.

2.13 Determining the research questions

Arroyo et al. (2006) declared that practitioners will profit from recognizing the connection that occurs between 3PL success and various forms of service provision and devising effective plans for maximizing their market capacity and managing investment risks. Previous studies have examined the criteria which influence 3PL provider selection and use. Organizations, in order to advance their business, pay more attention to reducing the cost of providing services, hence the benefits of a

strong logistics system as a competitive advantage are rather crucial for all organizations. The fulfilment of customers' needs is achieved through efficient and responsive logistics, so organizations are challenging to maintain their competitive position by balancing cost and temporal and spatial desirability for customers (Agentis et al., 2014). Thus, the question is:

1) What are the factors affecting the quality of services provided by 3PL companies in Iran?

Hertz and Alfredsson (2003) believed that when the direction of the operation of 3PL companies moves to more advanced levels, the cooperation between the mentioned firms and fourth party logistics companies increases. There is a school of thought believing that the more costs that 3PL companies agree on taking on, on behalf of the client, the more the provider of the 3PL services will earn (Hertz & Alfredsson, 2003). The utilization of various transportation methods, the modification of the process of planning and managing orders, the continuous monitoring of inventory levels and proper management of the warehouse, reducing waiting times, reviewing the size of the categories, creating a process attitude and outsourcing of some logistical activities, are some of the effective ways of reducing logistics costs. On the other hand, the competitive pressure of organizations makes them return to their own core competencies to conduct tasks better. These organizations outsource all logistics or part of their processes to companies with sufficient expertise. Outsourcing of logistics operations is a common approach to overcoming the challenges (Fu et al., 2017). Thus, the question is:

2) What are the competitive advantages that 3PL companies have in delivering services to their competitors? customers?

Retailers more than likely do not specialize in logistical processes, nor do they want to. However, they require a reliable supply chain in order to compete and meet the expectations of their customers. This is where 3PL companies could assist them. Most retailers turn to 3PL firms for their basic capabilities and capacity to store inventory, to pack the orders, and handle the process of reverse logistics. Partnering up with the right 3PL firm can directly translate into retailers becoming a viable extension of their team and building a process which could handle their unique requirements for shipment and delivery. Therefore, the question is:

3) What are the current logistics needs in the retail sector?

By considering the changing facts of commerce in relation to globalization, the topic of the supply chain has been added to the priorities of executive managers in

Iran. But in most cases, managers in Iran only notice the supply chain when they want to lower a cost or solve a problem. It might be said that the biggest problem in production and service organizations, after managing the customer relationship, is proper management of the supply chain and meeting the production and service needs. The belief that supply chain management can make companies more responsive to customers and as a result, more beneficial for them, has made Iranians to pay closer attention to improvement of the supply chain process. Many firms in Iran have understood the importance of the role and position of supply chain management in the improvement of their processes. In most cases, company managers in Iran have performed projects and studies to improve their supply chain management, whether utilizing information technology, utilizing optimization techniques like stock management and control, or use of pure product concept. Various 3PL companies put emphasis on services such as labeling and packaging, and many invest a vast amount of money on their services. The return on investment in these areas however is believed to be rather low and not worth the trouble. Thus, the question is:

4) How is the quality of service provided by 3PL companies in Iran?

In the present age, companies are facing severe challenges and pressures from competitive markets, including globalization, competition, cooperation, the diversity of customers' needs, and the short life cycle of products. As a result, company managers have considered the supply chain to be an important issue. In other words, top executives, besides focusing on the internal activities of the company, should pay special attention to proper and on-time communications and interactions with their suppliers and customers. In addition, they should try to manage the supply chain of their products effectively. In other words, the efforts to optimize organizational processes seem a useless process without considering suppliers and customers. Therefore, companies that cooperate with each other and move around shared interests have better performance (Hassani and Sheikhi, 2013). The question therefore is:

5) What incentives and barriers are retailers involved with when outsourcing 3PL activities?

By considering the changing facts of commerce in relation to globalization, the topic of supply chain has been added to the priorities of executive managers in Iran. But in most cases, managers in Iran only notice the supply chain when they want to lower cost or solve a problem. It might be that the biggest problem in production and service organizations, after managing the customer relationship, is proper management of the supply chain and meeting the production and service needs. This belief that supply chain management can make companies more

responsive to customers and as a result, has forced Iranian businesses to pay closer attention to improvement of the supply chain process. Most organizations and companies in Iran have realized the importance of the role and position of supply chain management in the success of their business. In most cases, company managers in Iran have carried out projects and studies to improve their supply chain management, whether utilizing information technology or utilizing optimization techniques like stock management and control, the use of pure product concept etc. The question here therefore is:

6) What are the criteria for retailers in selecting 3PLs they will use?

2.14 Chapter summary and conclusion

The growth rate of logistics businesses and supply chains depends on various factors in which weaknesses and shortcomings in each of these in the short or long term prevent them from favorable development. In the first place, logistics businesses and supply chains support economic activities in different economic sectors including industry, mines, agriculture, business, services, etc. Therefore, growth or lack of growth of the activities of these sectors affects logistics service requests and the supply chain directly. Thus, in areas where the activities of various economic sectors do not have the necessary dynamics and growth, logistics businesses and supply chains will also not be able to excel. Furthermore, the prevalence or non-prevalence of outsourcing logistical activities and supply chains in the corporations of a country can also affect the growth and development of these businesses. Another important factor is coherent and integrated planning at the macro level of the country, or indeed the existence of a guiding and supportive view from governments regarding codifying strategies and executive programs to boost these kinds of businesses. The evidence shows that at least in this field there is no strategic or executive plan for this matter and no comprehensive guidance for and support of developing businesses in this field. The government can support the growth and development of these businesses by planning to provide academic and professional education to enhance business knowledge and capabilities in this field and by applying some supportive and encouraging policies (e.g., awarding a prize for good practice in the logistics field).

Nowadays, logistics plays a key role in the realization of economic growth and forms the basis of domestic and international trade. Efficient logistics activities and services significantly reduce the cost and decrease the time of goods delivery to the customer, and consequently the expansion of the market for products by enterprises at the national and international levels. A serious effort to improve the

logistics situation, in addition to increasing the competitiveness of businesses, leads to increased consumer and producer welfare, economic prosperity, and the creation of income sources for countries with a suitable geographic location and increased employment. Currently, the improvement of the status of countries in the field of logistics has become one of the major goals of economic development, and countries have made special efforts to improve logistical performance in the field of competitiveness, the most important of which is the use of multimodal transport and outsourcing of logistic services, particularly to 3PLs.

Manufacturers now know that it is better to concentrate on their core activities to gain competitive advantage in the current economic condition to stay in the competition field and transfer their logistics and support activities to 3PL companies. Whereas before companies used to outsource transportation activities, now the outsourcing of a whole or a significant part of logistics activities has already been considered. Among the activities that are outsourced today by manufacturing and service businesses are the management of the flow of materials within the organization (logistics management), inventory management, managing processes for receiving and disposing of customer orders, packaging, transportation, warehousing, and information technology.

Some of the benefits of using third-party logistics companies can be the provision of specialized services and lower costs, the focus of manufacturing centering on its core business development, increased operational flexibility, reduced inspection and control costs, reduced operational risks and improved customer service levels, and promoting the status of the organization among competitors.

It should be acknowledged that, unfortunately, despite the great need inside the country for more 3PL development, and even with best logistics situation in Iran, the development and launch of such companies, in the true sense, has not yet been taken seriously. The main reasons for the lack of formation and development of these specialized companies in Iran, despite an urgent need for them, are the lack of recognition of third-party logistics companies, and the lack of a trustee and legal authority responsible for the management and control of those companies regarding the issuance of licenses for the required legal framework, as well as the monitoring of the good work they are responsible for.

Because of the diversity of activities of 3PL companies, their range includes a wide range of transportation, warehousing and storage, packaging, and distribution activities, as well as various organizations such as the Ministry of Industry, Mining and Commerce, and the Ministry of Roads, Urban Development and Customs. Nevertheless, the Ministry of Industry, Mining and Commerce is recognized as the pioneer and mainstay of the formation of these companies in terms of the

functional nature of logistics companies and the way in which they operate and are distributed.

It should be noted that due to criticisms of the functioning and operation of third-party logistics companies in Iran, and considering the success of other countries, it seems that to reform the country's distribution system (one of the seven axes of the economic development plan), we must follow the creation and development of third-party logistics companies and convince broadcasting companies to become 3PLs.

Third-party logistics companies have a solid scientific and practical backing in most countries of the world (especially developed countries), and their extent, functions, responsibilities, scope, and effective role in the distribution system of countries is quite clear. Of course, broadcasting companies will be among the top priorities for becoming 3PLs (along with transportation companies) because of the proximity and similarity of their activities.

Table 4. Recent research on 3PL

Authors	Year	Aims	Method and Results
Giannikas et al.	2019	A case study of 3PL was used to research customer orientation	The authors looked at consumer orientation for a 3PL supplier using an industrial case study, looking at both the implementation of information systems that allow the option of versatile logistics choices to end customers and the effect of delivering these options on a company's performance. They came up with a list of functions that logistics providers' information systems would provide to improve customer orientation in their offered options
Pamukar et al.	2019	MCDM methodology based on interval rough numbers was used to evaluate a third-party logistics supplier	Validating the stability of the proposed methodology, a computational review was conducted to explain the proposed techniques, as well as a sensitivity analysis on various sets of parameters weight coefficient values. As a result, a comparison of the collected ranking results with their crisp and fuzzy counterparts is performed to ensure that the proposed solution is reliable. The findings show that alternative results are consistently ranked, demonstrating the viability of the suggested solution for dealing with MCDM problems involving IRNs
Navicelii and De Carlo	2018	Third-party logistics as a strategic edge in the handling of utility spare parts	The feasibility study's findings support the profitability of the theorized model, and the feasibility study's findings strongly support the implementation of the latest 3PL model for the studied sector, implying that it may be a winning formula for all utility companies
Govindan et al.	2018	Selection of a long-term third-party reverse logistics supplier using ELECTRE I and SMAA to perform a robustness study of an outranking graph kernel	The integrated solution makes use of all parameters of an outranking model that are consistent with the decision maker's incomplete preference knowledge. It extracts the recently defined kernel acceptability and membership indices, which can be considered as support for choosing either a certain subset of alternatives or a single choice. The suggested ELECTRE-based framework broadens the range of MCDM analysis methods that can be used to solve the 3PRLP selection dilemma

Authors	Year	Aims	Method and Results
Yuan et al.	2018	The impact of trusting, engagement, and learning orientation on the efficiency of logistical services	Both learning orientation and engagement were linked to efficiency in a positive fashion, according to data gathered from 213 3PLs and their cooperating firms. Commitment was especially important because it moderated the correlation between learning orientation and logistic service effectiveness, as well as mediating the interaction between trust and the effectiveness of logistics
Rahman et al.	2017	International 3PL companies operating in China face significant challenges	A comprehensive literature analysis of 3PL studies identifies fourteen issues for international 3PLs, as well as a theoretical solution for these challenges. To measure the criticality of problems, the analytic hierarchy method (AHP) is used. This study invites five different executives from five different major international 3PLs to participate. Guanxi, government restrictions, price pressure, and transportation costs are the most significant obstacles that the MN3PLs face, according to the findings
Giri and Sarker	2017	Under-production interruption, boosting profitability by coordinating a supply chain with 3PL firm	Development disruption and TPL operation have major impacts on supply chain efficiency, according to the numerical analysis, whereas the consequences of buyback and revenue share arrangements are neutral for comparatively high disruption chance

2.15 Development of hypotheses

This section of the thesis is dedicated to the development of hypotheses based on previous research and literature performed on the various aspects of 3PL and taking advantage of the possibility of outsourcing various logistical activities. The following six hypothesis were formed accordingly.

1- A review of the sources and background of the research (for example, Gianikas et al., 2019 and Pamukar et al., 2019) shows that parameters on the quality of the services offered by 3PL companies are factors related to the equipment, hardware and software infrastructures, the company's history, company size, training and empowerment of the manpower, international standards, economic situation of the business, the customer's work status, the conditions demanded by the customer, governmental policies and support, and the degree of popularity and reputation of the company.

2- The literature (for example, Navicelli and De Carlo, 2018) showed that the competitive advantages of 3PL companies in terms of their services compared to their competitors include meeting high social responsibility, more reputed brand, more work experience, familiarity with the market, more experience of manpower, having higher funding and budget, having a more coherent company structure and better strategy.

3- A review of the sources and background of the research (for example, Yuan et al., 2018) shows that the present procurement needs in the retailing section include transportation, supplying orders, stock management, managing the customers' orders in receipt and displacement, packing and keeping information.

4- With a review of Iranian 3PL companies, it seems that the quality of services offered by 3PL companies in Iran is not good (Alinejan et al., 2018).

5- The literature (for example, Rahman et al., 2019) shows that reduced price, utilization of newer technologies, integration and combination, keeping and securing information, and more product and service diversity are the motivations for retailers in outsourcing activities to 3PL companies, and legal hurdles and high costs are the main barriers for retailers in outsourcing activities to 3PL companies.

6- A review of the sources and background of the research (for example, Pamukar et al., 2019) shows that social responsibility, expert human resources, more innovation, more work experience, better response, reputation and size of the company are the criteria for retailers in selecting the 3PLs they will use.

3 RESEARCH METHODOLOGY

Research is a process through which one can pursue unknowns and acquire a better understanding of them. In this process, the action of gathering evidence and converting them into findings is called methodology. One of the key infrastructures of all research is the methods that are utilized in its design and execution. Choosing the research methods is mostly impacted by the topic and nature of the research, the objectives and questions of the research, the executive facilities, and the variables examined in the research.

Therefore, to decide the research methodology type, the nature of the research subject, its purposes, and magnitude of the range of the research must be specified. In this chapter, the research methodology, the statistical population, and the statistical sample of the research and the sampling procedure are discussed, and the research instruments are introduced. In addition, the validity and reliability of the instruments of the research are examined and verified, and finally, the method of statistical analysis is explained.

3.1 Type of research methodology

The main objectives or goals of this paper are as follows:

1) Investigation of factors affecting the quality of services provided by 3PL companies in Iran.

2) Determining the competitive advantages that 3PL companies have in delivering services to their competitors.

3) Identifying the current logistics needs in the retail sector.

4) Determining the quality of service provided by 3PL companies in Iran.

5) Identifying incentives and barriers the retailers are involved with when outsourcing 3PL activities.

6) Determining the criteria for retailers in selecting the 3PLs they will use.

Hence, the study is considered applied research with regard to the objectives, because besides the informative and scientific aspects, it also has an applied aspect for small businesses and various companies. With respect to the aim and nature, this study in terms of method is considered mixed research (quantitative-qualitative). The strategy applied for the qualitative section was to encode and

analyze the content of the transcripts and to categorize the data gathered from the 3PL companies. Additionally, a questionnaire tool was used for the quantitative section, and the statistical population of the research comprised the clients of 3PL companies.

3.2 Statistical population, sample, and sampling procedure

The population consists of all elements of the society that the research subject applies to. To put it another way, the population is all the actual or assumed members that the author of the research is eager to generalize the findings of the study to. Thus, to acquire an accurate sampling one must define the target population. The sample is a set of elements, which is a subsection of the population. Collection of the data from a part of the population is called sampling. Determining the sample size ought to be done proportionally. If the sample size is overly large, it may lead to wasting time and funds, and if the sample size is very small it might affect the precision of the process and the results of the research.

3.2.1 The qualitative section

The statistical population of this section is comprised of executives and experts of 3PL companies in Tehran. Thus, the unit of analysis (Dyad) includes experts of 3PL companies in Tehran. This part of the statistical population comprised all the companies that performed the logistics of other companies in Iran. The number of such companies in Iran is not large, and a total of only 25 companies were active in this field. In this section, sampling was carried out theoretically. In theoretical sampling, the events and not necessarily the individuals are sampled. Even if individuals are referred to, the main objective is to explore the events. Although there is no specific rule for the sample size in the qualitative strategy, 6 to 8 units are proposed for homogeneous groups, and 12 to 20 units for heterogeneous groups. The interviews continued until theoretical saturation was reached. We reached saturation in this study with 18 directors and experts from 3PL companies.

Table 5. Selected 3PL companies in Iran

3PL Companies in Iran	Number of employees (persons)	Number of samples
Jetgateway Company	140	3
Pscg Company	55	2
Payegan Company	95	3
Aram Negin Banader Company	35	2
Yasaman Company	47	2
Rane Tarabar Company	49	2
Alarah Company	61	2
Namdaran Tarabar Company	57	2

Sampling was carried out in a qualitative and purposeful logic framework. Two sampling procedures, including convenient and snowball sampling methods, were used in this study. Usually, to acquire the most information in qualitative research, objective-based sampling is employed; therefore, the researcher chose subjects who were so-called "rich in information". This means that according to the principle of qualitative research, subjects who presented a strong image of the phenomenon under study were recruited into the study. The participants were selected based on the targeted sampling method among experts of the studied field in the 3PL companies who were willing to be interviewed. The interviews were conducted and recorded in rooms belonging to these executives or experts for their convenience.

3.2.2 The quantitative section

The statistical population of the quantitative section of this study includes all the clients of the 3PL companies in Tehran. Therefore. From within these companies, which were clients of the 3PL companies, executives or experts were recruited to answer the study questionnaire. These clients were from a variety of companies, from clothing to interior design and decoration. The sample size in this section was calculated by the Cochran formula:

$$N = \frac{Nt^2pq}{D^2(n-1)+t^2pq}$$

Where n is the sample size, N is the total number of statistical populations, P is the presence of the trait, q is the absence of the trait, D is the acceptable error of 5% and t is the confidence level at 95% and is equal to (96/1). The number of clients

of 3PL companies in Tehran comprises an unlimited population, and based on the Cochran formula, 384 executives and experts were chosen from these client companies as the statistical sample. This selection was done according to a random cluster model: different districts of the city of Tehran were considered as clusters and client companies were randomly selected from within these districts. The reason for using the random clustering method is that the intergroup variance is high regarding the statistical population, and by using this selection method, we attempted to decrease this variance. Thus, as presented in Table 2.3, buyers were chosen from each district.

Table 6. Number of selected client companies in each district of Tehran

District of Tehran	Number of selected companies
District 2	35
District 3	37
District 4	38
District 5	37
District 6	38
District 7	41
District 10	39
District 11	40
District 12	41
District 13	38

3.3 Instruments for collecting data

There are different instruments and methods for collecting data. These instruments are of various types and describe the data with certain qualitative and quantitative methods. Each of these instruments is suitable for a certain type of data and provides some type of information that can be used in a more effective way. Due to the use of the qualitative method, the data were gathered by the interview method; and in the quantitative section of the study a Likert scale questionnaire was used.

3.4 Steps of interviewing the experts

To answer the first three questions, the study was conducted through interviews with executives and experts from 3PL companies. The interview, whether structured or unstructured, needed a series of steps, and it was conducted according to the Cohen and Manin (1986) steps:

1) Determining the objective: this step started by studying the theoretical basis of the research, determining the general objectives, their practical importance, and the reason for choosing the interview method. Afterward, the general objectives changed into more detailed and specific goals.

2) Design: at this point, the main format of the interview was set, and its guidelines were prepared. This helped turn the research goal into questions that could demonstrate what the researcher wanted to accomplish. Preparing the interviews began by listing the objectives that had to be considered in the analysis. Then, the kinds of questions (open response or closed response) were decided with respect to factors such as whether the researcher would like to deeply test the accounts of the respondents, the level of understanding of the respondents, expectations from the respondents, the level of the interviewer's motivation, the interviewee's level of knowledge of the respondent's position, and the kind of relationship that the researcher could form with the person being interviewed. Moreover, in qualitative research, the researcher can alter the questions in an interview or come up with a new question, though this was less used in this research.

3) Conducting the interview: this step began by choosing the people to be interviewed. At the start of each interview the researcher introduced himself and tried to create a relaxed atmosphere. The researcher always took into consideration that he must refrain from interfering with the interview process and influencing the interviewees with his own biases, opinions and previous knowledge. Also, the respondents were prevented from giving responses unrelated to the asked questions.

4) Writing: the interviewees' responses were recorded during the interview process with a voice recorder and were transcribed afterwards. The responses were recorded in detail, along with descriptions.

5) Analysis: after preparing transcriptions of the interviewees' responses, the process of analyzing the explicit and hidden content of the data acquired from the statements began. The aim of this process was to reveal interconnection of the factors and components of the information in order to understand the true intention of the interviewees, to find the conditions and environment that are associated with the data, and to deliver pragmatic results. In the transcript of the recordings, there were frequent and repeated entries. Therefore, the researcher was able to easily recognize the main points in each of the interview transcriptions by identifying and omitting these parts.

6) Reporting: after analyzing the data obtained from the interviews, the researcher presented the results to others in the form of a report. When the research is carried out according to a quantitative approach, unbiased reporting would be the goal, and it would have a standard structure and would be in accordance with the guidelines of scientific research. Whenever the research is performed based on a qualitative approach, the report of the interview findings is prepared in a professional way, in which accurate methods are used to support the viewpoints. In the current report, the researcher also includes his own viewpoints and mentions them where necessary.

In this research, the researcher sought to include open questions for the interviews with the experts. Thus, the aim of this section is to identify the factors affecting the services provided by the 3PL companies, the quality of the services provided by these companies, and the competitive advantages they achieve in providing services compared to their competitors. Even though during the interviews some of the executives and experts of the 3PL companies emphasized some parameters of the dimensions and indicators more, no prioritization was done by the researcher, and the reason for this is that theoretical prioritization is not a criterion considered by the researcher, although in some cases it might be correct.

3.4.1 Qualitative interview questions

Considering the above-mentioned information and using the guidance of the supervisor and the advisor of the research, an interview in the form of five main questions was prepared. These questions were formed based on the hypotheses of the researcher. One of the main hypotheses of the work was that parameters on the quality of the services presented by the 3PL companies are factors related to the equipment, hardware and software infrastructures, the company's history, the company's size, training and empowerment of the manpower, international standards, the economic situation of the business, the customer's work status, the conditions demanded by the customer, governmental policies and support, and the degree of popularity and reputation of the company. Moreover, based on the literature, the competitive advantages of 3PL companies in offering services compared to their competitors include meeting high social responsibility, having a more reputed brand, more work experience, accommodation with the market, and having higher funds and budget (Navicelli and De Carlo, 2018).

As is quite clear, the quality of an operation or process is directly linked to various factors. To a certain extent, some of these quality issues are always from within the organization. But naturally, there are always some factors which are beyond the

reach of managers, affecting the quality of the process. These factors are mainly divided into two categories: internal and external factors. Questions number one and two were conducted based on this fact and presented separately during the interview, merely with the aim of producing the most accurate answers. Within companies, many factors affect the quality of services, including factors related to staff, equipment, hardware and software, and the size and history of the company. Therefore, the first question asked from 3PL companies was:

1. What factors within the company impact the quality of your work?

Outside of the companies, many factors affect the quality of services, including the economic situation, the working situation of customers, policies, and government support. Therefore, the next question was:

2. What factors outside the company impact the quality of your service?

Various 3PL companies emphasize services such as labeling and packaging. Moreover, many of these firms invest a vast amount of money on their services. The return on investment on these areas is believed to be rather low, however, and not worth the trouble. Thus, the next question was:

3. *What advantages do you have to surpass your competitors in terms of providing your services?*

The activities of second-party logistics service providers are limited to transport and storage, but third-party logistics companies provide a broad variety of logistics services such as transportation, storage and order management, packaging, distribution, and so on. 3PLs are companies that provide logistics services in the form of specific contracts for firms and enterprises. In other words, this type of logistics service provider refers to companies that outsource their manufacturing and service organizations and their logistics. So, the next question was:

4. *What are some of the exclusive competitive advantages that you have in your service offering?*

The difficulties and principal reasons for underdevelopment in the fields of logistics management and the supply chain regarding the ecosystem and the dominant atmosphere of the subject matter must be analyzed. The experts in this area are aware of cases such as lack of trust formation, defective information sharing, weak judicial systems, lack of transparency, lack of cooperation and harmony among trustees and legislators, and insufficient education about this field. It is necessary to reveal the connection between the country's minor system (supply chain and logistics field) and its major business ecosystem; and to examine

the challenges at least in two dimensions: minor and major, to perform an accurate analysis. Thus, the next question was:

5. What are the logistics orders in the retailer sector now?

Many managers stated that one of the main flaws in the quality of their service is employee related factors and lack of educated employees. One of the managers clearly stated that: "The main factor affecting the quality of the services provided, not only in 3PL companies, but also across every industry in Iran, is the lack of educational programs within the company for employees. We demand them to work hard and expect them to produce high quality results in the tasks given to them, but we simply have neither the budget, nor the funds from the government to educate them and keep them up-to-date"

Another crucial factor which was stated by many of the experts throughout the interviews was the out-of-date or not standardized hardware and software infrastructures. They stated that this is also mainly since they do not have the budget and the support of government to update the infrastructure. To quote one of the managers: "Due to the sanctions imposed on Iran, we are not able to buy the license for many of the programs used dealing with logistic tasks. Our IT system is completely out-of-date in comparison to Turkey or other neighboring countries. The IT systems that are used in logistics in Iran are fully domestic and unfortunately full of flaws and misinformation after every update"

3.4.2 Method of analyzing the contents of the interview transcriptions and their interpretation

Through appraising various methods for analyzing the qualitative content in the existing theoretical foundations and considering the function of each of them, the present study used qualitative content analysis with a deductive approach to analyze the content of interviews with the statistical sample of the qualitative section, which includes executives and experts of the 3PL companies. The following are the steps of this process:

- ***Step one: Formulating the main questions of the research***

According to qualitative content analysis, the first step is to formulate the questions of the research to determine the main pathway in devising the primary tool of interviewing or selecting the research samples. By assessing the theoretical foundations regarding the pattern, two major issues were considered, and the main research questions which made the main framework of the research pattern were formulated in the following three areas:

1) Factors affecting the quality of services provided by 3PL companies in Iran.

2) Quality of service provided by 3PL companies in Iran.

3) Competitive advantages that 3PL companies have in delivering services to their competitors.

To attain better and clearer responses, these three areas were formulated in the form of open questions in an interview and these were put to the participants.

- ***Step two: Determining the unit of analysis***

The method that the researcher used was based on the method of qualitative content analysis with an inductive approach, and from inside to outside. After recording, transcribing and registering the viewpoints of the participants in the interviews, the content of the views expressed in response to each question was arranged with regard to the participants. Afterwards, based on the research questions, content analysis was extracted at the level of short phrases and clear sentences and paragraphs. The parts of the interview content that formed an analysis unit were underlined. Additionally, after reviewing the entire paragraphs, the comprehended meaning of each question was written in a rectangular frame. In addition to extracting the analysis units based on the main questions of the research, initial differentiation was also carried out. Each interview question addressed a particular topic; however, given that the respondents spoke openly, in order not to limit their comments they were not interrupted, and also due to the association of several interview questions with each other, some of the questions were answered before they were even asked. Hence, during content analysis, the content of each section was analyzed by considering research questions in the qualitative section.

- ***Step three: Data reduction***

After extracting short phrases, sentences, and paragraphs, a set of units of analysis was extracted, and based on the semantic and content commonalities of the primary classification, they were simplified, refined, compressed, and ultimately coded in order to reduce the data.

- ***Step Four: Data categorization***

In response to the questions of the qualitative section of the research, content analysis was conducted qualitatively according to the mentioned steps, and the researcher performed the categorization based on the existing theoretical

foundations and the views of the experts (interviewees) in this regard using a comparative method.

The transcribed text of the interviews was analyzed using two structural and interpretive methods:

1) **Structural analysis:** in the structural analysis of the transcribed text, the constituents of the structure of the interview text, i.e., the phrases, approaches, and the correlation between them in terms of repetition, the number of words, phrases and metaphors and expressions used in sentences and their frequency was counted and examined to discover patterns in the statements. The supporters of this method of analysis use different ways, such as the method of communication analysis. In this method, the scientist tries to recognize and introduce associations between topics or issues. The main assumption in communication analysis is that the words and phrases that the individuals have stated do not have intrinsic meaning on their own; rather, their meanings originate from the analysis of relationships, i.e., discovering the connections and relationships between the approaches, words, or phrases in the text. Consequently, statements should not be considered as separate units or semantic packages, but rather should be applied as signs that conclude meaning in relation to other signs and symbols within the text. In the following, the texts were encoded and categorized. Deciding the type of analysis will establish what words or concepts ought to be encoded and categorized.

2) **Interpretative analysis:** in this method, the messages hidden in the text of the interviews were revealed to the greatest extent possible. According to Gilham's recommendation, to accomplish this goal, the interview text should be written in its entirety and with detailed descriptions (Gilham 2000). The main asked questions, the reminders, the interviewer's inquiries, and the additional questions all should be stated in the text so that a full comprehension of what the interviewee has answered can be attained.

In the first approach, the researcher obtains some ideas about what subjects and concepts ought to be chosen for encoding by reviewing the literature on the research subject, and already has a theory in mind. Based upon this, he defines the codes and then draws out new concepts that are related to them from the interview data. In the second approach, the aim of the researcher is to produce a background theory. To put it another way, he looks for a theory that exists in the interview texts, not a pre-determined theory. Hence, determining the codes, recognizing the concepts, and devising theory are parts of the interconnected process of analysis,

and they are extracted from the data without using the literature and via open or selective encoding.

Both approaches, according to Robin (2005) and Gilham's (2000) hypothesis, were used for interpretative analysis of the texts in this research, as follows:

a) The transcriptions were reviewed individually.

b) The main parts of each transcription were highlighted, underlined, or bolded. In addition, repeated remarks, sentences, unrelated remarks, and other irrelevant data were disregarded.

c) Some similar remarks that seemed to propose something new were determined.

d) When all the transcriptions were reviewed, the researcher went back to the original texts and reviewed them to be sure that he had not failed to highlight some of the main remarks. Moreover, he answered the question of whether there had been statements which were not critical among the identified main remarks.

e) Then again, the researcher went back to the primary text and, by reviewing the highlighted main remarks, attempted to extract a collection of categories from the answers given to each question and allocate simple titles to them. It is apparent that a great number of categories were extracted from the primary transcripts, but gradually the number of titles extracted from the subsequent transcripts decreased, because the subjects referred to similar points.

f) At this step, the researcher looked over the list of categories and asked himself whether any categories could be combined with each other. When the list is evaluated, it may become apparent that some of the noted titles are not suitable or essential and must be eliminated.

g) After identifying the final categorization system, the researcher returned to the transcripts, and compared each of the determined essential remarks with the list of categories and demonstrated the position of each of the remarks in the list of categories. A question mark (?) was put in front of remarks that were not readily attributable to any category. Afterwards, some words were altered in the titles of the categories, or new categories were added so they would fit the remarks better and could include remarks that were not part of the primary responses.

h) After that, the categories of each question were put into an analysis table. The titles of the categories were written at the top and the names or codes of the respondents were written beside it. Then, the remarks of the respondents, or some of them, were put into the cells of the table.

- ***Step Five: Presenting the reports and results of qualitative data***

To present the report on qualitative data, narrative or descriptive methods were employed. Finally, the responses to the research questions were provided with respect to the relationship between the categories and their repetition.

3.5 Data Analysis Method (Quantitative Section)

Analyzing as a process of the scientific method is one of the main foundations of each method of research. Overall, analysis is the method by which the entire process of the research from the selection of the problem to reaching a result is guided (Delavare, 2012).

The data after collection were analyzed using SPSS software. First, the data were encoded and put into the software and then analyzed using the two descriptive and inferential statistic methods. In the first and second sections, mean, variance, and frequency distribution tables and percentages were used to describe the opinions of the statistical sample with regard to the questions. The significance level was set at 0.05. In the third section, the research questions were analyzed based on the results of the questions of the quantitative section using inferential statistics, Friedman's rank test, and mean comparison tests.

For questions of 1, 2 and 3, a qualitative method was performed and 3PL companies answered open questions (Annexed to the end of the thesis). By textual encoding of the responses from 3PL companies and then ranking the obtained factors, the researcher answered the first three questions:

1) What are the factors affecting the quality of services provided by 3PL companies in Iran?

2) What are the competitive advantages that 3PL companies have in delivering services to their competitors? customers?

3) What are the current logistics needs in the retail sector?

For questions 4, 5 and 6, a quantitative method was performed and customers of 3PL companies answered a questionnaire (Annexed to the end of the thesis). One-way t-test and Friedman ranking test were used for these questions:

4) How is the quality of service provided by 3PL companies in Iran?

5) What are the incentives and obstacles that retailers face when outsourcing 3PL services?

6) What requirements do retailers use when choosing which 3PLs to use?

4 ANALYSIS OF COLLECTED DATA

This chapter is concerned with the data analysis which was performed after collecting the research data. First, the results of the qualitative part of the interview with the 3PL company experts were shown and converted into a questionnaire and filled out by the same experts, including question numbers 1, 2 and 3. Then, the results of the questions related to the questionnaire for the customers of the 3PL companies were considered, which included question numbers 4, 5 and 6.

Questions in the survey questionnaire were as follows:

1) What are the factors affecting the quality of services provided by 3PL companies in Iran?

2) What are the competitive advantages that 3PL companies have in delivering services to their competitors?

3) What are the new requirements for retail logistics?

4) How is the quality of service provided by 3PL companies in Iran?

5) What are the incentives and obstacles that retailers face when outsourcing 3PL services?

6) What requirements do retailers have when choosing which 3PLs to use?

A quantitative method was performed and customers of 3PL companies answered a questionnaire (Appended to the end of the thesis). One-way t-test and Friedman ranking test were used for these questions.

4.1 Ethical considerations and research cases

- Neutrality of the researcher in collecting and interpreting information

There is a conflict in collecting qualitative data that, on the one hand the researcher must have a background and experience related to the subject and be knowledgeable about the environment, but on the other hand the researcher's closeness and belonging to the research environment can be effective in collecting sources, analysis and interpretations, or make the researcher more inclined to select some sources that are in the direction of his questions. In the present study, the researcher tried to eliminate dependence on and belonging to a particular

trend, so this issue has provided relative and non-biased knowledge of sources and information. In theoretical sources, this index is called acceptance and trust.

- Sharing opinions in data categorization and classification

One of the important indicators in the reliability of research and qualitative data is that if the reports and notes from the interview are given to another researcher, both people will find similar findings. In theoretical sources, this concept is also referred to as the index of determination. In this study, this work was done by using one of the doctoral students.

- Transparency in presenting the content

To create a common understanding of the qualitative analyses and interpretations, the researcher has presented his mental inferences and conclusions in the summary of each section so that the connections between the concepts and the researcher's mental perception of them are more objective. When transmitted to the reader, in this case the criterion of transferability will be more favorable.

- Achieving data saturation

To ensure the completeness of the data and to see the dimensions of the research comprehensively, the interviews continued to be as much as possible about the research until completion and saturation of the data and its duplication.

4.2 Results of the qualitative part

Table 7 shows the expert members who provided responses in the open interview, their position and education. As can be seen in the table, in addition to the use of university professors in the human resources field, senior managers of governmental organizations were also used in this study.

Table 7. Expert members of the open interview and their position

Row	Companies	Position	Educational Degree
1	Jetgateway Company	3PL senior manager	Ph.D.
2	Jetgateway Company	3PL senior expert	Ph.D.
3	Jetgateway Company	3pPL senior expert	M.Sc.
4	Pscg Company	3PL senior expert	Ph.D.
5	Pscg Company	3PL senior expert	M.Sc.
6	Payegan Company	3PL senior manager	Ph.D.
7	Payegan Company	3PL senior manager	M.Sc.
8	Payegan Company	3PL senior expert	Ph.D.
9	Aram Negin Banader Company	3PL senior manager	Ph.D.
10	Aram Negin Banader Company	3PL senior manager	M.Sc.
11	Yasaman Company	3PL senior manager	Ph.D.
12	Yasaman Company	3PL senior manager	Ph.D.
13	Rane Tarabar Company	3PL senior manager	M.Sc.
14	Rane Tarabar Company	3PL senior expert	Ph.D.
15	Alarah Company	3PL senior expert	M.Sc.
16	Alarah Company	3PL senior manager	Ph.D.
17	Namdaran Tarabar Company	3PL senior expert	M.Sc.
18	Namdaran Tarabar Company	3PL senior manager	M.Sc.

4.3 Factors that affect the quality of the services offered by 3PL companies in Iran

The results of the qualitative interview and text encoding showed that the effective parameters in terms of the quality of the services offered by 3PL companies in Iran are divided into two groups: internal company factors, including those related to the employees, equipment and possibilities, hardware and software infrastructures, the management quality of the company, the company's history and size, training and empowerment of the manpower, and certificates and national and international standards. External factors of the company include the economic situation of the business, the customer's work status, the conditions demanded by the customers, the prevalence or non-prevalence of outsourcing by the customers, governmental policies and support, and the degree of popularity and reputation of the company.

Table 8. Factors affecting the quality of the services of 3PL companies in Iran

Question	General Factors	Minor Factors
Factors that affect the quality of the service presented by 3pl companies in Iran	Internal factors of the company	- Factors related to employees - Equipment and possibilities - Hardware and software infrastructures - Management quality of the company - History of the company - Size of the company - Training and empowerment of the manpower - Certificates and national and international standards
	external factors of the company	- Economic situation of the business - Customer's work status - Conditions demanded by the customer - Prevalence or non-prevalence of the outsourcing by the customers - Governmental policies and support - Degree of popularity and reputation of the company

4.3.1 Descriptive results of the questionnaire

According to the data, the table and the figure below show that in studying the indices of the internal factors of the company, the factors index related to the employees has an average of 4.11, the equipment and possibilities index an average of 3.94, the hardware and software infrastructures index 4.06, the management quality of the company index 3.67, the history of the company index 4.06, the size of the company index 3.67, training and empowerment of the manpower index 3.28, and the certificates and national and international standards 3.67, with the index of factors related to employees having the highest average amongst the related indices.

Table 9. Descriptive statistics of the internal variables of the company's sub-indicators

	Numbers	Average	Standard deviation	Minimum	Maximum
Factors related to employees	18	4.11	0.76	2	5
Equipment and possibilities	18	3.94	0.54	3	5
Hardware and software infrastructures	18	4.06	0.64	3	5
Management quality of the company	18	3.67	1.19	1	5
History of the company	18	4.06	1.06	2	5
Size of the company	18	3.67	1.03	1	5
Training and empowerment of the manpower	18	3.28	0.83	2	5
Certificates and national and international standards	18	3.67	0.97	2	5

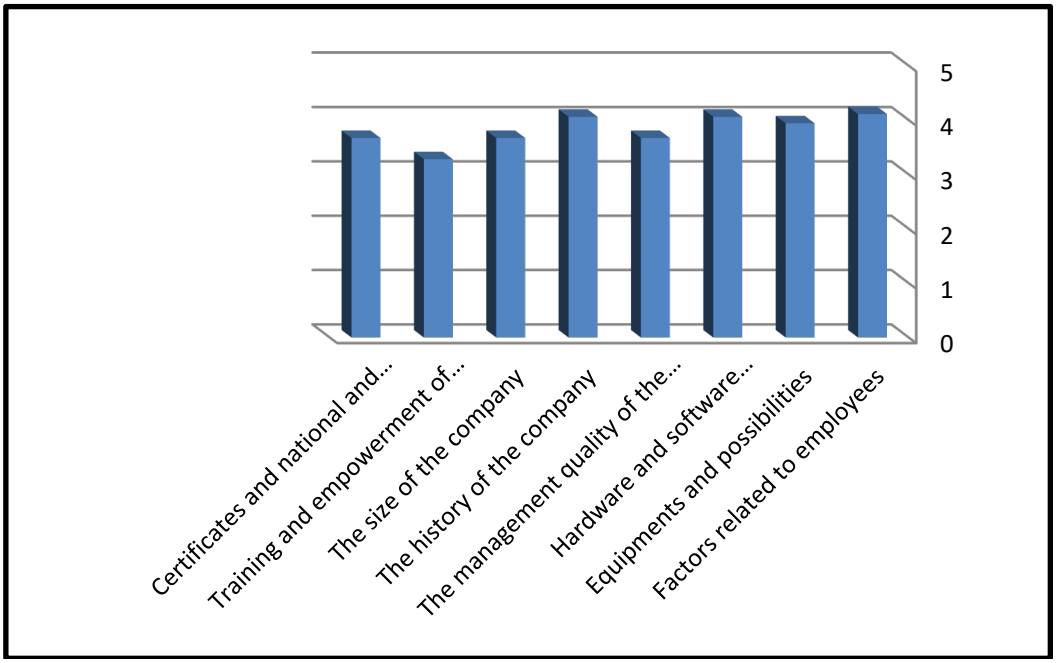

Figure 9. Descriptive statistics of the internal variables of the company's sub-indicators

According to the data, the table and the figure below show that in studying the indices of the external factors of the company, the factors index related to the economic situation of the businesses has an average of 3.06, the customer's work

status index an average of 3.28, the conditions demanded by the customer index 3.11, the prevalence or non-prevalence of the outsourcing by the customers index 3.78, governmental policies and support index 3.61 and the degree of popularity and reputation of the company index 3.83, with the index related to the popularity and reputation of the company having the highest average between the related indices.

Table 10. Descriptive statistics of the external variables of the company's sub-indicators

	Numbers	Average	Standard deviation	Minimum	Maximum
Economic situation of the business	18	3.06	1.06	1	5
Customer's work status	18	3.28	1.23	1	5
Conditions demanded by the customer	18	3.11	1.02	1	5
Prevalence or non-prevalence of outsourcing by the customers	18	3.78	0.73	2	5
Governmental policies and support	18	3.61	1.09	1	5
Degree of popularity and reputation of the company	18	3.83	0.99	1	5

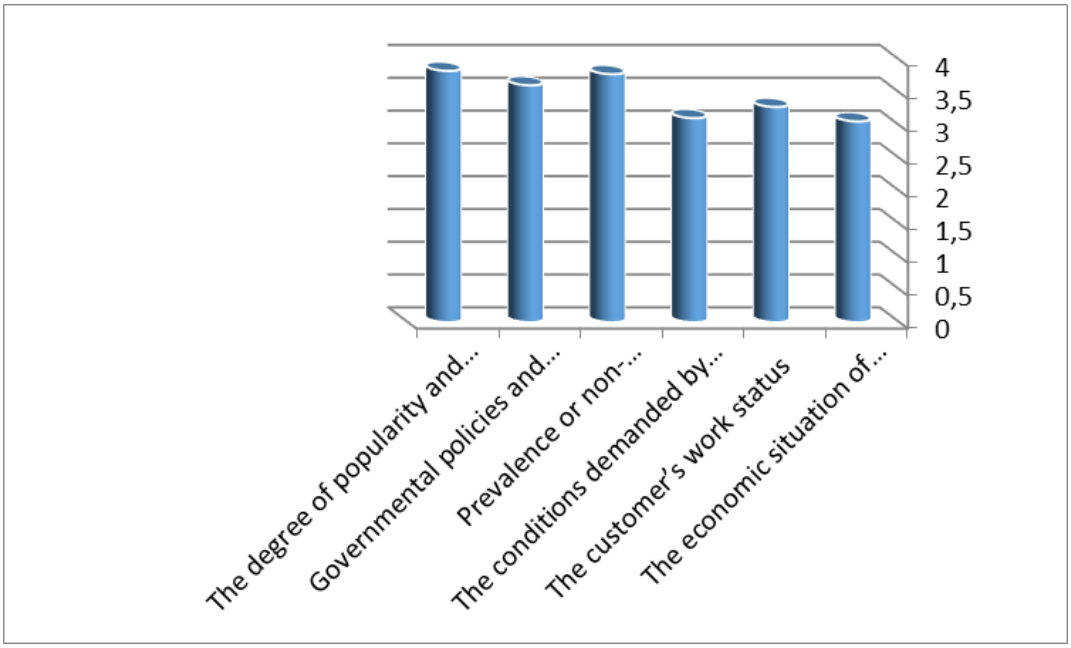

Figure 10. Descriptive statistics of the external variables of the company's sub-indicators

Table 11. Cronbach's Alpha of questionnaire and its components

Indices	Value of Alpha Cronbach
Internal factors	0.73
External factors	0.79

Table 11 shows the Cronbach's alpha coefficient of the questionnaire to confirm the reliability of its internal factors. As can be seen, internal and external factors have a good alpha coefficient, and its reliability is confirmed.

Kolmogorov – Smirnov test:

Table 12. Investigating the normality of variables

Indices	Test statistics	Significance level
Internal factors	.739	.646
External factors	.751	.626

Initially, the Kolmogorov-Smirnov test is used to determine whether the data are normal in order to determine what type of test (parametric or non-parametric) should be performed. Since the significance level of the test in the variables is more than 0.05, the hypothesis of normality of the observations (null assumption) is not rejected. As a result, a one-way T-test is used.

4.3.2 Inferential analysis of the questionnaire

By studying the internal factors of the company, the average of the indices was compared to the society average, which is equal to 3, so that the obtained results in Table 13 show that in the intended model, the statistics of the calculated t, t = 7.21(α=0.001) is significant at the level of 0.05 Comparing the average difference of this factor M = 0.80 by zero (mean difference of the society) shows that the internal factors of the company affect the quality of service offered by 3PL companies in Iran.

In order to study the external factors of the company, the index average was compared to the society average, which is equal to 3, and the results in Table 13 show that in the intended model, the statistics of the calculated t, t = 2.62(α=0.018) are significant at the level of 0.05. Comparing the average difference of this factor M = 0.44 by zero (mean difference of society) shows that the external factors of the company affect the quality of service offered by 3PLcompanies in Iran.

In order to study the external factors of the company, the index average was compared to the society average, which is equal to 3, and the results of Table 4-12 show that in the intended model, the statistics of the calculated t, t = 2.62(α=0.018) are significant at the level of 0.05. Comparing the average difference of this factor M = 0.44 by zero (mean difference of society) shows that the external factors of the company affect the quality of service presented by the 3PL companies in Iran.

Table 13. Results of one-sample T-test to identify the effect of the component

	Society average ≤ 3					
Variable name	Average difference	T-test statistic	df	Significance level	95% confidence interval	
					Lower bound	Upper bound
Internal factors of the company	0.80	7.21	17	0.001	0.569	1.040
External factors of the company	0.44	2.62	17	0.018	0.087	0.801

4.3.3 Ranking the internal factors of the company

As we can observe from Table 14 below, the significance level is lower than 0.05, the priority of the variables is not identical, and ranking is possible.

Table 14. Summary of the test

Number	Chi-squared statistics	Degree of freedom	Significance level
18	17.791	7	0.013

The results in Table 15 show that the factors related to employees are at the highest level, and after that the history of the company, hardware and software infrastructures, equipment and possibilities, management quality of the company, size of the company, certificates, national and international standards, and training and empowerment of the manpower are in next priorities.

Table 15. Ranking priority of internal factors of the company

	Average of the ratings	Priority
Factors related to employees	5.53	First priority
History of the company	5.22	Second priority
Hardware and software infrastructures	5.11	Third priority
Equipment and possibilities	4.72	Fourth priority
Management quality of the company	4.19	Fifth priority
Size of the company	4.11	Sixth priority
Certificates and national and international standards	4.03	Seventh priority
Training and empowerment of the manpower	3.08	Eighth priority

4.3.4 Ranking the external factors of the company

As we can observe from Table 16 below, the significance level is lower than 0.05, the priority of variables is not identical, a ranking is possible.

Table 16. Summary of the test

Number	Chi-squared statistics	Degree of freedom	Significance level
18	12.838	5	0.025

The results in Table 17 below show that the factors related to government policies and support are at the highest level, and after that, prevalence or non-prevalence of the outsourcing by the customers, degree of popularity and reputation of the company, the customer's work status, economic situation of the business and conditions demanded by the customer are the next priorities, respectively.

Table 17. Ranking priority of the external factors of the company

	Average of the ratings	Priority
Government policies and support	4.72	First priority
Prevalence or non-prevalence of outsourcing by the customers	4.14	Second priority
Degree of popularity and reputation of the company	4.13	Third priority
Customer's work status	3.28	Fourth priority
Economic situation of the business	2.86	Fifth priority
Conditions demanded by the customer	2.86	Sixth priority

4.4 Competitive advantages of 3PL companies in offering services compared to their competitors

The results of the qualitative interview and text encoding showed that the competitive advantages of 3PL companies in offering services compared to their competitors include more market share, meeting high social responsibility, more activity diversity, a more reputed brand, more work experience, accommodation with the market, a higher technological level, more experience of manpower, having higher funding and budgets, being knowledge-based, having more access to resources and better and more information about the customers' demands, better response to customers, a more coherent company structure, and better strategy.

Table 18. Competitive advantages of 3PL companies in offering services compared to their competitors

Question	Factors
Competitive advantages of 3PL companies in offering services compared to their competitors	- More market shares - Meeting higher social responsibility - More activity diversity - More reputed brand - More work experiences - More attractive prices - Innovation in processes - Better job performance - Accommodation with the market - Higher technological level - More experience of manpower - Having higher funding and budgets - Being knowledge-based - More access to resources - Having better and more information about customers' requirements - Better response to customers - More coherent company structure - Better strategy

4.4.1 Descriptive results of the questionnaire

According to the data, the figure and the table below show that in studying the indices of competitive advantages, the market share index has an average of 3.72, meeting higher social responsibility index has 3.17, more activity diversity index

3.28, more reputed brand index 3.67, more work experience index3.11, more attractive prices index 2.89, innovation in processes index 3.17, better job performance index 3.28, accommodation with the market index 3.17, higher technological level index 3.44, more experience of manpower index 3.67, having higher funding and budget index 3.61, being knowledge-based index 3.28, more access to resources 3.56, having better and more information about the customers' demands index 3.33, better response to customers index 3.72, more coherent company structure index 3.67, and better strategy index 3.78, which has a higher average than the related indices.

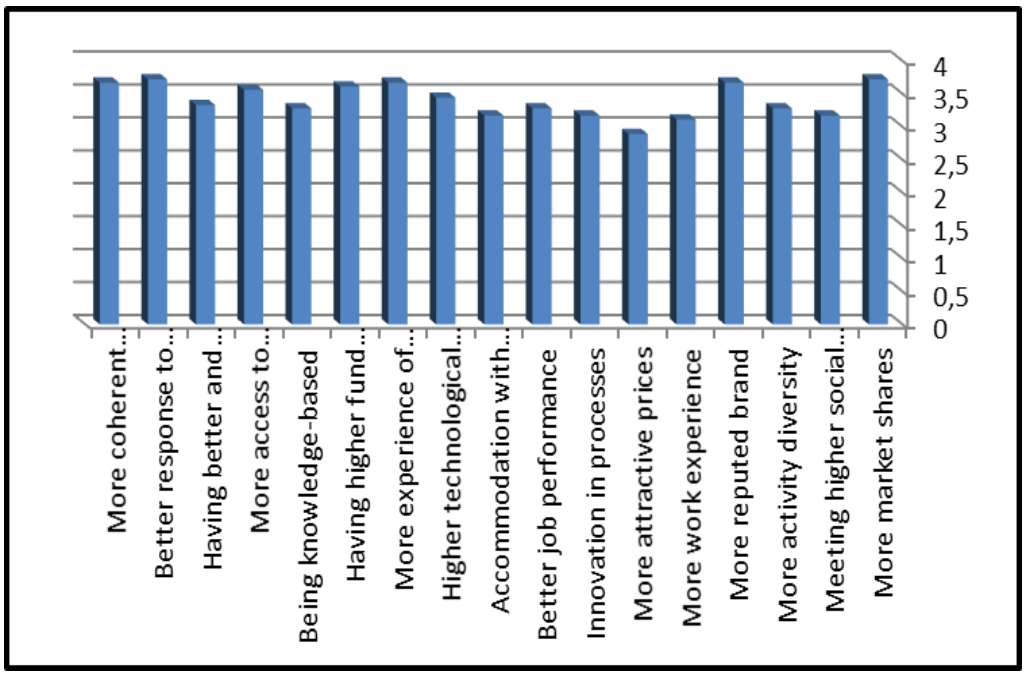

Figure 11. Descriptive statistics of the sub-indicators of competitive advantage variables.

Table 19. Descriptive statistics of the sub-indicators of competitive advantage variables

	Numbers	Average	Standard deviation	Minimum	Maximum
More market share	18	3.72	0.96	2	5
Meeting higher social responsibility	18	3.17	0.79	2	5
More activity diversity	18	3.28	0.89	2	5
More reputed brand	18	3.67	0.84	2	5
More work experience	18	3.11	0.76	2	4
More attractive prices	18	2.89	0.76	2	5
Innovation in processes	18	3.17	0.62	2	4
Better job performance	18	3.28	0.75	2	5
Accommodation with the market	18	3.17	0.86	2	4
Higher technological level	18	3.44	0.78	2	5
More experience of manpower	18	3.67	1.08	2	5
Having higher funding and budget	18	3.61	1.09	2	5
Being knowledge-based	18	3.28	0.96	2	5
More access to resources	18	3.56	0.86	2	5
Having better and more information about the customers' demands	18	3.33	0.77	2	5
Better response to the customers	18	3.72	0.75	2	5
More coherent company structure	18	3.67	1.03	1	5
Better strategy	18	3.78	0.88	2	5

4.4.2 Inferential results of the questionnaire/ranking the competitive advantages

According to the following table, because the significance level is lower than 0.05, the variables priority is not identical, and ranking is possible.

Table 20. Summary of the test

Number	Chi-squared statistics	Degree of freedom	Significance level
18	35.837	17	0.005

Table 21. Ranking priority of 3PL companies in offering services compared to their competitors

	Average of the ratings	Priority
Better strategy	11.86	First priority
Better response to the customers	11.44	Second priority
More market share	11.17	Third priority
More coherent company structure	11.28	Fourth priority
More reputed brand	11.03	Fifth priority
More experience of manpower	10.81	Sixth priority
Having higher funding and budget	10.47	Seventh priority
More access to resources	10.42	Eighth priority
Higher technological level	9.58	Ninth priority
Having better and more information about the customers' requirements	9.11	Tenth priority
Better job performance	8.83	Eleventh priority
Being knowledge-based	8.69	Twelfth priority
More activity diversity	8.61	Thirteenth priority
Accommodation with the market	8.25	Fourteenth priority
Innovation in processes	7.94	Fifteenth priority
Meeting higher social responsibility	7.92	Sixteenth priority
More work experience	7.75	Seventeenth priority
More attractive prices	5.83	Eighteenth priority

The results show that a better strategy has the highest level, and after that, better response to the customers, more market share, more coherent company structure, more reputed brand, more experience of manpower, and having higher funding and budget are the first seven priorities and the competitive advantages of 3PL companies in offering services compared to their competitors.

4.5 Present procurement needs in the retailing sector

The results of the qualitative interview with the 3PL companies and text encoding of the factors showed that the present procurement needs in the retailing section

in Iran include warehousing, transportation, supplying orders, order management, stock management, managing receipt and shipment of customers' orders, packing and managing information (hardware and software).

Table 22. Present procurement needs in the retailing sector

Question	Minor Factors
Present procurement needs in the retailing section	- Warehousing - Transportation - Supplyin orders - Managing procurement - Stock management - Managing receipt and shipment of customers' orders - Packing - Managing information (hardware and software)

4.5.1 Descriptive results of the questionnaire

The table and the figure below show that in studying the indices of the internal factors of the company, the factor index related to the present procurement needs in the retailing section, the warehousing index, has an average of 3.22, the transportation index an average of 3.00, supplying order an average of 3.78 managing of the procurement index 3.00, stock management index 3.72, managing receipt and shipment of customers' orders 3.67, packing index 3.28, and managing information (hardware and software) 4.00, which has the maximum average amongst the related indices.

Table 23. Descriptive statistics of the sub-indicators of present procurement needs in the retailing sector

	Numbers	Average	Standard deviation	Minimum	Maximum
Warehousing	18	3.22	1.06	2	5
Transportation	18	3.00	1.03	2	5
Supplying orders	18	3.78	0.81	2	5
Managing procurement	18	3.00	0.69	2	4
Stock management	18	3.72	0.89	2	5
Managing receipt and shipment of customers' orders	18	3.67	0.97	2	5
Packing	18	3.28	0.83	2	5
Managing information (hardware and software)	18	4.00	0.69	3	5

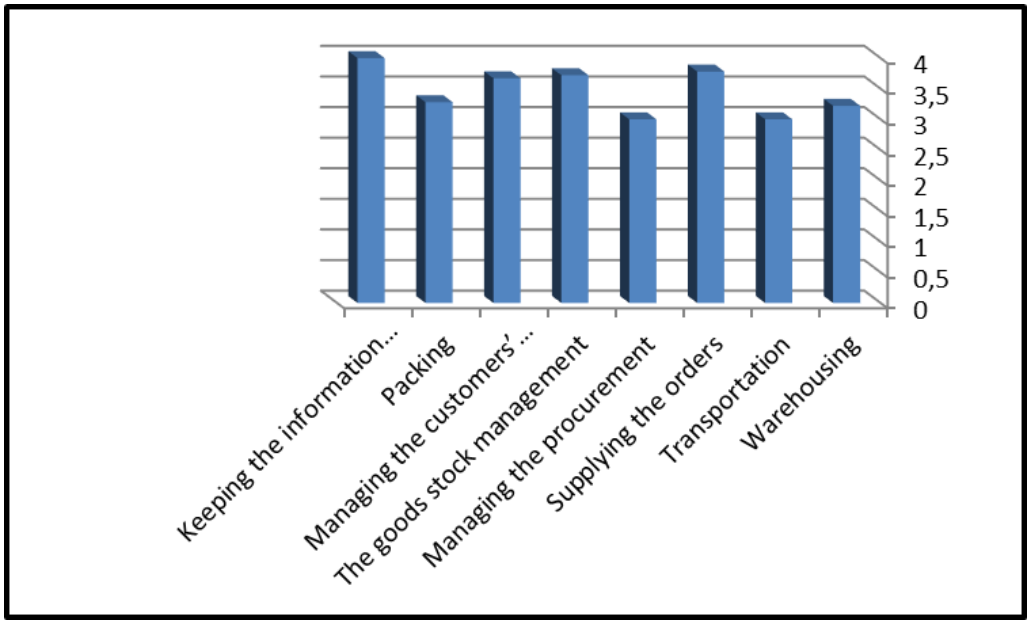

Figure 12. Descriptive statistics of the sub-indicators of present procurement needs in the retailing sector

4.5.2 Inferential results of the questionnaire/ranking the present procurement needs in the retailing sector

As we can observe from the following table, the significance level is lower than the 0.05, the variable priority is not identical, and ranking is possible.

Table 24. Summary of the test

Number	Chi-squared statistics	Degree of freedom	Significance level
18	33.244	7	0.001

The following table (Table 25) is involved with ranking the present procurement needs in the retailing sector. The results show that managing information (hardware and software) has the highest priority, and after that supplying orders, stock management, managing receipt and shipping of customers' orders, warehousing, packing, and managing procurement and transportation are the next priorities in the retailing sector. The order of rankings is as follows:

Table 25. Ranking priority of present procurement needs in the retailing sector

	Average of the ratings	Priority
Managing information (hardware and software)	6.00	First priority
Supplying orders	5.47	Second priority
Stock management	5.14	Third priority
Managing receipt and shipping of customers' orders	5.11	Fourth priority
Warehousing	4.03	Fifth priority
Packing	3.92	Sixth priority
Managing procurement	3.28	Seventh priority
Transportation	3.06	Eighth priority

4.6 Quantitative section (Customers of 3PL companies)

- **Validity and reliability of the research instruments**

If the research instruments are researcher-made, it is necessary to ensure their validity and reliability.

4.6.1 Validity

In this research, the triangulation method was used to acquire qualitative data. The triangulation method seeks to confirm the study findings by using verifying

evidence, and the triangulation process involves using various methods of data collection, the use of several data sources and analyses or theories that are used to investigate the validity of the research findings. In using triangulation one can eliminate orientations that might result from over-reliance on any of the methods of data collection, sources, analyses, or theoretical principals.

Therefore, to answer the research questions, document analysis and interviews were used as the data collection instrument. Moreover, during the interview, the researcher tried to continue the course of data collection and interviewing until consensus results were achieved, because the validity of the interview partly depends on the experts agreeing on what they were asked about, and the researcher will continue the interview until he reaches a consensus on the viewpoints of the respondents in devising components and sub-components.

4.6.2 Reliability

Reliability is the rate of achieving the same outcomes by different researchers if they study a unit with similar approaches. For the results of the study to be valid, the data that they are based on, the participants involved in the analysis of the data, and the actions that deliver the results, must be reliable. many researchers state that the importance of reliability is that it ensures the data is independent of the act of measurement, the tools, or the individuals. Reliable data is data that remains constant during the process of measurement. Therefore, for the research to be replicable and have the required reliability, the standard qualitative method and documentation process were employed. There is not much consensus among researchers about determining validity and reliability criteria in qualitative research. This disagreement comes from the fact that in the qualitative method, the reflections of the researcher, their interpretation of events, and the context of the occurrence of events constitute the basis of the findings. Due to the inconsistency of both factors, the expectation of achieving any consistent and replicable outcomes or their validity according to the definition in the philosophy of positivism is far from reach. Thus, in the qualitative approach, the definition of validity and reliability is different (Gal et al., 2014).

In the current study, the following methods were applied to verify the validity and reliability of the results of the qualitative data and to prevent potential errors by using the mentioned criteria. Diversity and integration in resources: An integrated approach was used to gather, analyze, and interpret the data. Different sources of analysis, analysis of the apparent and hidden content, and a combination of their interpretations, have been used in the study. To detect the components examined in this research, samples were chosen from executives and experts from 3PL

companies in order to gather data from different perspectives. This approach is consistent with the validity and reliability of qualitative data.

However, as mentioned above, since the reliability of qualitative research cannot be verified like quantitative research, we do not have reliability in that sense in qualitative research and instead use the dependability of the findings. The initial draft of the research findings was given to research colleagues (supervisor and advisors), and additionally, the researcher made a continuous comparison of the extracted codes and research documents (interviews) and tried to make the necessary corrections in the final processing.

The reliability of the quantitative section (questionnaire) was also verified by calculating Cronbach's Alpha. The Cronbach's Alpha for the quantitative section questionnaire was 0.82.

Table 26. Cronbach's Alpha of the questionnaire and its components

Questionnaire components	Number of selected companies
Quality of service provided	0.80
Retailers' motivations and barriers	0.79
Criteria for retailers to choose	0.81
Questionnaire	0.82

4.7 Quality of services offered by 3PL companies in Iran

By studying the quality of the service, the average of the indices was compared to the society average, which is equal to 3, so that the obtained results in tables 4-18 show that in the intended model, the statistics of the calculated t, t = -0.139(α=0.889) are not significant at the level of 0.05 Comparing the average difference of this factor M = -0.005 by zero (mean difference of the society) shows that the quality of the service offered by 3PL companies in Iran is intermediate.

Table 27. Results of the one-sample T-test to identify the quality of service

	Society average ≤ 3					
Variable name	Average difference	T-test statistic	df	Significance level	95% confidence interval	
					Lower bound	Upper bound
Service quality	-0.005	-0.139	383	0.889	-0.080	0.070

4.8 Motivations and barriers for retailers when outsourcing 3PL activities

In the following sub-section, we take a closer look at the descriptive statistics of the sub-indicators of the variable motivation. We consider factors such as reduced price, improving the performance of the supply chain, taking advantage of newer technology, combinations as well as integrations, information management and security, higher income, diversity in products and services, and more customer satisfaction.

4.8.1 Descriptive statistics of the questionnaires

According to the data, the table and the chart show that in studying the indices of motivation, the factor index related to reduced price has an average of 3.80, improving supply chain management performance an average of 3.70, utilization of newer technologies index 3.75, improvement of customer service index 3.30, integration and combination3.57, managing information and security 3.22, preventing high infrastructure costs 3.09, more income 3.41, more product and service diversity 3.14, and more customer satisfaction 3.07, with the index related to reduced price having the highest average amongst the related indices.

Table 28. Descriptive statistics of the sub-indicators of the motivation variable

	Numbers	Average	Standard deviation	Minimum	Maximum
Reduced price	384	3.80	0.97	1.0	5.0
Improving supply chain management performance	384	3.70	0.96	1.0	5.0
Utilization of newer technologies	384	3.75	0.88	2.0	5.0
Improvement of customer service	384	3.30	1.20	1.0	5.0
Integration and combination	384	3.57	1.16	1.0	5.0
Managing information and security	384	3.22	1.13	1.0	5.0
Preventing high infrastructure costs	384	3.09	1.02	1.0	5.0
More income	384	3.41	1.04	1.0	5.0
More product and service diversity	384	3.14	1.03	1.0	5.0
More customer satisfaction	384	3.07	1.19	1.0	5.0

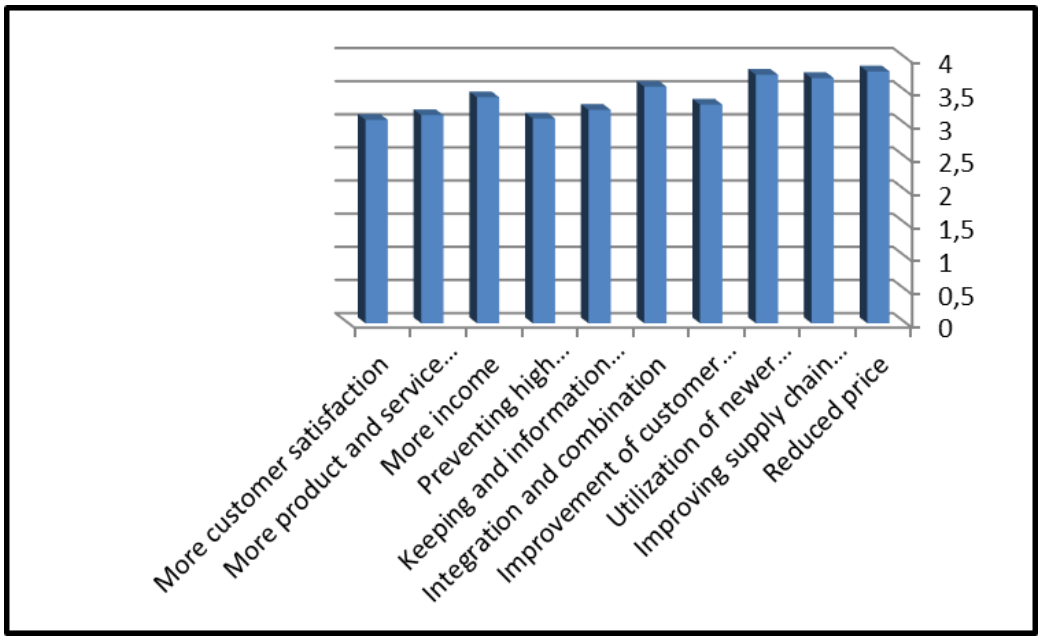

Figure13. Descriptive statistics of the sub-indicators of the motivation variable

Table 29. Descriptive statistics of the sub-indicators of barrier variable

	Numbers	Average	Standard deviation	Minimum	Maximum
Legal barriers	384	2.94	1.16	1.0	5.0
Management challenges	384	3.25	1.25	1.0	5.0
Law barriers	384	3.38	1.16	1.0	5.0
Not doing tasks properly	384	3.32	1.18	1.0	5.0
High costs	384	3.28	1.13	1.00	5.00
Use of non-specialist workforce	384	2.81	1.14	1.00	5.00
Wrong choice of 3PLcompany	384	2.87	1.13	1.00	5.00
Absence of precise review of programs	384	3.53	1.01	1.00	5.00
Problems in the coordination of the company with the 3PL company	384	2.93	1.15	1.00	5.00
Ambiguity in some items of the contract	384	2.82	1.2	1.00	5.00
Unpredicted cases	384	3.07	0.86	1.00	5.00

According to the data, the table and the chart show that in studying the indices of barriers, the factor index related to legal barriers has an average of 2.94, management challenges an average of 3.25, law barriers3.38, not doing the tasks properly 3.32, high costs 3.28, use of non-specialist workforce 2.81, wrong choice of 3PL company 2.87, absence of precise review of programs 3.53, problems in coordination of the company with the 3PL company 2.93, ambiguity in some items of the contract 2.82, and unpredicted cases 3.07, with the index of absence of precise review of programs having the highest average amongst the related indices.

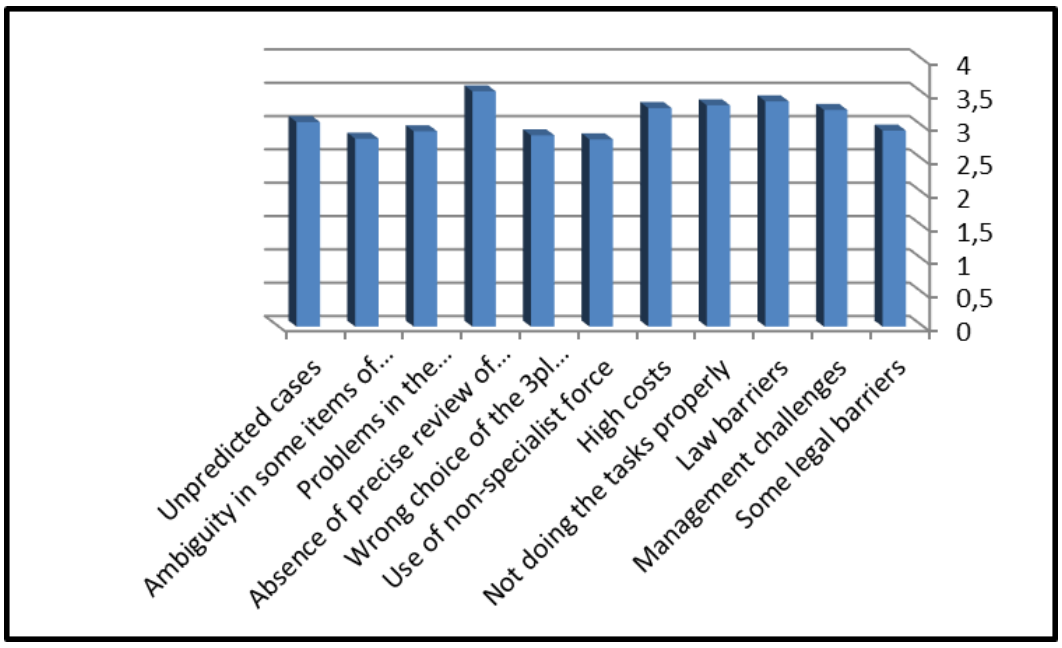

Figure 14. Descriptive statistics of the sub-indicators of the barrier variable

4.8.2 Inferential results of the questionnaire

To study the motivation, the index average was compared to the society average, which is equal to 3, and the results in Table 29 show that in the intended model, reduced price, improving supply chain management performance, utilization of newer technologies, improvement of customer services, integration and combination, managing information security and more product and service diversity are significant at the level of 0.05. Comparing the average difference of this factor with zero (mean difference of the society) shows that these factors of the company are the motivations for retailers in outsourcing activities to 3PL companies.

Table 30. Results of one-sample T-test to identify motivations

Society average ≤ 3						
Variable name	Average difference	T-test statistic	df	Significance level	95% confidence interval	
					Lower bound	Upper bound
Reduced price	0.8	16.06	383	0.001	0.7	0.89
Improving supply chain management performance	0.7	14.23	383	0.001	0.6	0.79
Utilization of newer technologies	0.75	16.78	383	0.001	0.66	0.84
Improvement of customer services	0.3	4.99	383	0.001	0.18	0.42
Integration and combination	0.57	9.62	383	0.001	0.45	0.68
Managing information and security	0.22	3.75	383	0.001	0.1	0.33
Preventing high infrastructure costs	0.09	1.75	383	0.08	-0.01	0.19
More income	0.41	7.67	383	0.001	0.3	0.51
More product and service diversity	0.14	2.58	383	0.01	0.03	0.24
More customer satisfaction	0.07	1.2	383	0.23	-.0.05	0.19

To study the barriers, the index average was compared to the society average, which is equal to 3, and the results in Table 30 show that in the intended model, the factors of legal barriers, not doing tasks properly, high costs and absence of precise review of the programs are significant at the level of 0.05. Comparing the average difference of this factor with zero (mean difference of society) shows that these company factors are the main barriers for retailers in outsourcing activities to 3PL companies.

Table 31. Results of one-sample T-test to identify barriers

Society average ≤ 3						
Variable name	Average difference	T-test statistic	df	Significance level	95% confidence interval	
					Lower bound	Upper bound
Legal barriers	-0.06	-1.06	383	0.29	-0.18	0.05
Management challenges	0.25	3.93	383	0.001	0.12	0.38
Law barriers	0.38	6.37	383	0.001	0.26	0.49
Not doing tasks properly	0.32	5.28	383	0.001	0.2	0.44
High costs	0.28	4.87	383	0.001	0.17	0.39
Use of non-specialist workforce	-0.19	-3.26	383	0.001	-0.3	-0.008
Wrong choice of 3PL company	-0.13	-2.22	383	0.03	-0.24	-0.01
Absence of precise review of programs	0.53	10.37	383	0.001	0.43	0.64
Problems in coordination of the company with 3PL company	-0.07	-1.24	383	0.22	-0.19	0.04
Ambiguity in some items of the contract	-0.18	-2.93	383	0.001	-0.3	-0.06
Unpredicted cases	0.07	1.61	383	0.11	-0.02	0.16

4.9 Retailers' criteria for selecting 3PL companies

In the following sub-section, we take a closer look at the descriptive statistics of the retailer`s criteria sub-indicators. We also consider factors such as reputation of the company, size of the company, recommended prices, more work experience, social responsibility, more innovation, expert human resources, higher technology, better response, and distance.

4.9.1 Descriptive results of the questionnaire

According to the data, the table and the chart show that in studying the retailers' criteria, the factor index related to reputation of the company has an average of 3.09, size of the company index an average of 3.06, the recommended prices index3.16, more work experience index 3.30, social responsibility index 3.52, more innovation3.35, expert human resources 3.42, higher technology 3.25, better response index 3.13, and distance index 3.45, with the index of social responsibility having the highest average amongst the related indices.

Table 32. Descriptive statistics of the sub-indicators of the retailers' criteria

	Numbers	Average	Standard deviation	Minimum	Maximum
Reputation of the company	384	3.09	1.15	1.0	5.0
Size of the company	384	3.06	1.05	1.0	5.0
Recommended prices	384	3.16	1.01	1.0	5.0
More work experience	384	3.30	0.98	1.0	5.0
Social responsibility	384	3.52	0.98	1.0	5.0
More innovation	384	3.35	0.95	1.0	5.0
Expert human resources	384	3.42	0.95	1.0	5.0
Higher technology	384	3.25	1.12	1.0	5.0
Better response	384	3.13	1.01	1.0	5.0
Distance	384	3.45	0.97	1.0	5.0

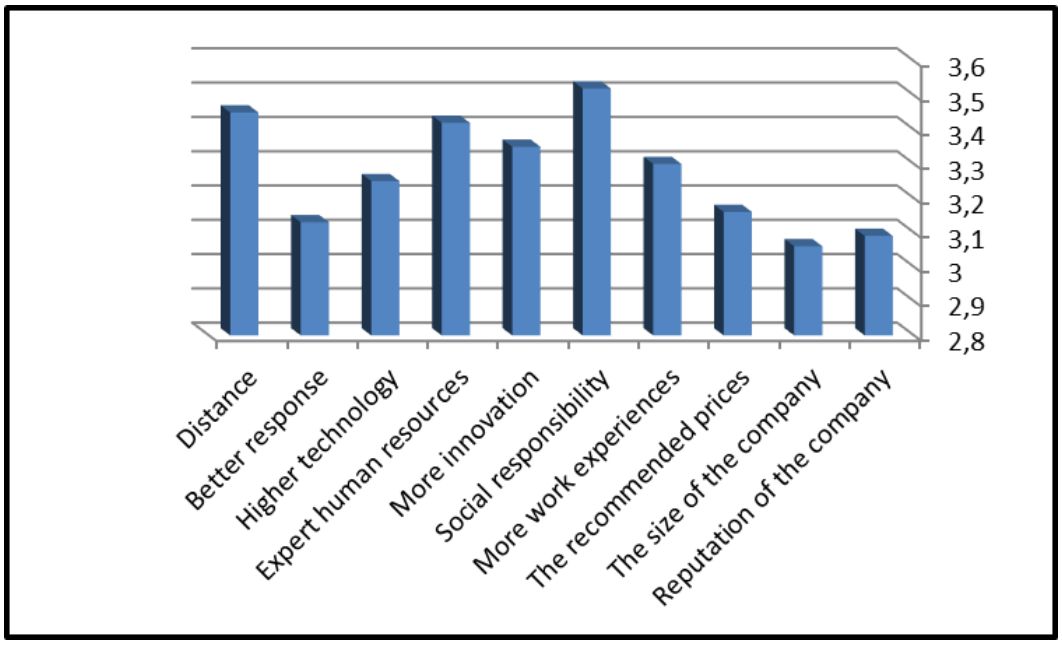

Figure 15. Descriptive statistics of the sub-indicators of the retailers' criteria

4.9.2 Inferential results of the questionnaire

According to the following table, the significance level is lower than the 0.05, the variable priority is not identical, and ranking is possible.

Table 33. Summary of the test

Number	Chi-squared statistics	Degree of freedom	Significance level
384	119.223	9	0.001

In accordance with the following table (Table 33), the results show that social responsibility has the highest priority, and after that expert human resources, distance, more innovation, more work experience, higher technology, better response, recommended prices, and reputation and size of the company are the next priorities for retailers in choosing 3PL companies.

Table 34. Ranking priority for retailers in choosing 3PL **companies**

	Average of the ratings	**Priority**
Social responsibility	6.30	First priority
Expert human resources	6.03	Second priority
Distance	6.00	Third priority
More innovation	5.71	Fourth priority
More work experience	5.49	Fifth priority
Higher technology	5.33	Sixth priority
Better response	5.23	Seventh priority
Recommended prices	5.08	Eighth priority
Reputation of the company	4.99	Ninth priority
Size of the company	4.84	Tenth priority

4.10 Research Considerations

In all standard research, there are various factors which should be taken into consideration systematically. The main research consideration of this thesis is data collection, the researcher's lack of bias in gathering and interpreting the data, consensus on the categorization and classification of the data, clarity in the presentation, and achieving data saturation. In this section of the research, we take slightly closer look at each of these factors.

- **Data collection**

Data collection in all sections of the study was without responder identification and was kept confidential by the researcher and not disclosed to any other person or organization, nor was it used for any purpose other than the present research

- **Researcher's lack of bias in gathering and interpreting the data**

There is an incompatibility in the collection of qualitative data: on the one hand, the researcher should have a background and experience related to the subject and

have knowledge of the environment, but on the other hand, the researchers' closeness and attachment to the research environment might affect the gathering of resources, analysis, and interpretations, or provoke the researcher to show more tendency towards selecting some sources that are related to his questions. In this research, the researcher attempted to remove dependence and attachment to a specific process, and this has provided a basis for the relative and unbiased identification of resources and information. In theoretical resources, this is called the acceptability and trust index.

- **Consensus on the categorization and classification of the data**

One of the important indicators of the reliability of research and its qualitative data is that if the reports and notes from the interview are given to another researcher, both would discover the same findings. In theoretical resources, this concept is also called the index of determination. In this research, this work was done with a Ph.D student.

- **Clarity in the presentation**

To create a common comprehension of the analyses and the qualitative interpretations, the researcher has presented his inference and deductions in the summary of each section, so the connections between the concepts and the perceptions of the researcher can be more objectively transferred to the reader. In this case, the transferability criterion would be more favorable.

- **Achieving data saturation**

To make sure that the data is complete and that all dimensions of the research are considered, the interviews continued to the furthest extent possible on the subject of the research until the data was completed and saturated or started to become repeatable.

5 CONCLUSION, DISCUSSION AND RECOMMENDATIONS

In this chapter, first, a summary of the research findings is presented. Then, these findings are analyzed and discussed. Following this, the conclusions of the study are presented, and some suggestions given based on the results of the study. Finally, future research areas, the limitations of the study, and recommendations for future research are presented.

5.1 Research summary

The aim of this study is to improve competitive advantage in 3PL companies. Hence, it is applied research in terms of purpose, because besides the informative and scientific aspects, it also has an applied aspect for small businesses and various companies. With respect to the aim and nature of the study, it constitutes mixed research in terms of method (quantitative-quantitative). The statistical population of the qualitative section is comprised of executives and experts of 3PL companies in Tehran. The statistical population of the quantitative section includes all the clients of 3PL companies in Tehran.

Global logistic activities are the main directive factors of global commerce. Therefore, a complete and comprehensive range of indicators involved with national logistic performance is rather critical for the creation of a sound plan for the development and improvement of domestic logistic operations. The factor of resiliency in logistics is of immense importance to various businesses as the production rate becomes increasingly specialized. The main factors involved with the process of risk management and improving the competitive advantage of logistics companies lie within the boundaries of sound communication between the suppliers and retailers. However, there are various other factors directly affecting the extent to which the logistics performance could be influenced. The main concern of this study is to understand the performance of logistics operations in certain geographical regions in the Middle East. This study, in comparison to previous research, has been an effort to highlight the main underlying factors influencing the efficiency of logistical operating companies in Iran, by considering both the internal and external factors affecting the quality of the service provided.

The results of the study indicated that the factors related to employees, policies, and government support are the most important factors affecting the quality of services that are provided by 3PL companies in Iran. According to the results, the seven first priorities considered part of the competitive advantages of 3PL companies as compared to other competitors in providing services include better strategy, better customer services, more market share, a more coherent corporate

structure, a more popular brand, more human resource expertise, and higher capital and funding. According to the results, the storage of information (hardware and software) has the highest priority in current procurement requirements in the retail sector; the other priorities include supply orders, inventory management, management of customer orders, displacing, storing and packaging the products, and management of procurement and transportation. Furthermore, the results indicated the average quality of service provided by 3PL companies in Iran. The main motivation and limitation for retailers when outsourcing 3PL activities were the use of more novel technologies and lack of expert knowledge of the programs. In addition, the main criteria of retailers for choosing 3PL companies include social responsibility, expert human resources, distance, more innovation, higher work experience, higher technology, better accountability, suggested prices, corporate credibility and the size of the company.

5.2 Discussion and conclusion

In this subsection, we go through the research questions and provide answers, based on the analysis, to each of the questions.

1) **What are the factors affecting the quality of services provided by 3PL companies in Iran?**

According to the results of the qualitative interviews and textual encoding (Table 8) the factors affecting the quality of services provided by 3PL companies in Iran were classified into two groups:

1) Internal factors, including personnel, equipment and facilities, hardware and software infrastructure, quality of company management, history of the company, size of the company, human resources training and empowerment, internal and international certifications and standards

2) External factors, including the economic situation of the business, the client's work situation, the requirements of the customers, prevalence or non-prevalence of outsourcing by customers, government policies and support, and reputation and popularity of the company.

3PL companies in Iran suffer from many restrictions resulting from international sanctions, and in addition to the shortcomings and factors that affect the quality of their services, these sanctions will also affect their work. In any case, in many of these companies, the lack of knowledge management and well-planned planning and not using the models of successful countries has caused a lack of proper

progress in this field. Similar results were obtained by Giannikas et al. (2019) and Pamukar et al. (2019). The prosperity of logistics businesses and supply chains depend on various factors, but the disadvantages and weaknesses in these factors can prevent businesses from reaching the desired prosperity in the short or long term. When different economic sectors do not have the necessary dynamics and growth, logistics businesses and the supply chain cannot reach the top. Furthermore, the prevalence or non-prevalence of outsourcing of logistics and supply chain activities in Iran can also contribute to the prosperity and development of these businesses. Although the formation of the logistics business and supply chain has passed its initial stage and is growing, it has not reached its desired position in comparison with global standards. A considerable part of these businesses could not adapt to new service providing approaches and are still working traditionally. Moreover, some of the new businesses in this field, which have been active globally, do not have a place in Iran. It is not possible to expect a significant improvement in the situation of the logistics business chain and supply chain without support from the government. Like other businesses, the government is considered as the main source of legal regulations associated with improving the business environment. Establishing laws and regulations that can facilitate investment in the logistics industry is one of the main duties of governments. These laws and regulations are very important both in the internal logistics sector (distribution system and warehousing companies, etc.) and in the international sector (export and import, customs, international trade conventions, etc.), and should be regulated precisely.

2) What are the competitive advantages of 3PL companies in terms of providing services to competitors?

The results of the qualitative interviews and textual coding (Table 17) indicated that the competitive advantages of 3PL companies in terms of delivering services to competitors include greater market share, greater social responsibility, greater diversity of activities, more popular brand, higher work experience, more attractive prices, innovation in the processes, better performance, compliance with market conditions, higher technology levels, more human resources expertise, higher capital and budget, more knowledge-oriented, more access to resources, better information about the customer requirements, better customer services, more coherent structure, and better strategy. In general, some 3PL companies in Iran have been able to gain a large market share without having any special competitive advantages and with government rents. Such companies are also very strong in terms of capital and have provided better facilities and equipment for their company. Similar results were reported by Navicelii and De Carlo (2018). There are clear and strong reasons for the importance of outsourcing logistics

activities, which include the tendency towards globalization, the need for organizations to increase their agility, the complexity and specialization of the work, the existence of risks, market uncertainty, heavy competitive pressure, the development of technology, the development of special customer service, time pressure, the expansion of organizational integration, increased demand for services with value-added in logistic businesses, rational use, and maximizing the utilization of available resources. Logistics outsourcing is seen as a solution to these complex problems. On the other hand, global trends are emphasizing the need to increase outsourcing in the future. Today, different models are being created by companies for their development and presence in the market. The company needs to use one method or a combination of methods to stabilize its presence and increase its market share. The advent and development of ICT (Information and Communication Technology) has created profound and deep effects on business processes. However, many companies do not have the necessary knowledge on the use of various marketing methods and their effects on export markets.

3) What are the current logistics needs in the retail sector?

According to the qualitative interviews with 3PL companies and textual encoding of factors (Table 21), it was determined that the current procurement requirements in the retail sector in Iran include warehousing, transportation, supplying orders, logistics management, inventory management, customer order management and displacement, packaging and maintenance of information (hardware and software). Iran has not done badly in terms of transportation infrastructure, and road development has been part of the government's plans in recent years. However, in the field of education, especially the training of managers, there has been poor performance and the relationship between the university and industry in the field of logistics is very weak. Similar results were reported by Govindan et al. (2018) for other countries. In recent years, industrialized countries have considered the outsourcing of logistics activities as one of the policies for reducing production costs. Active companies in these countries have improved the speed and quality of their logistics services by entrusting the logistics activities to third-party firms.

Third-party logistics means a trilateral relationship between the buyer, the supplier and the logistics service provider, who is responsible for providing logistical services (transport, packaging, warehousing, etc.) between the first and second parties. In another world, third-party logistics implied a collaboration with a foreign organization, which is entrusted with all or part of the companies' product supplement management activities. At the business level, the purpose of

competitive strategies is to improve the competitive position and competitive methods in the market and provide tactics to achieve business and competition goals. Therefore, competition strategies seek to upgrade the company's competitive position. Business strategies, sometimes called competitive strategies, can be defined with six dimensions, which include the markets and products that are the subject of competition for a business, the level of investment, the strategies of responsibility level required for competing in that market, strategic assets and skills, allocation of resources to business units, and the development of synergies between businesses.

4) How is the quality of services provided by 3PL companies in Iran?

The results of the study (Table 26) indicated that the services provided by 3PL companies in Iran are at an average level. Coherent and integrated planning at the macro level in the country, or the existence of a guiding and advocacy viewpoint from the government for the development of strategies and programs are essential to generate prosperity in these types of businesses. The existing evidence indicates that, at least in this area, there is no strategic document or executive plan or design, and no comprehensive guidance and support for business development in this area. The government can help the growth and development of these businesses by planning to provide academic and professional training in order to increase ability and business knowledge in this field as well as through applying supportive and encouraging policies (for example, holding logistical awards).

Long-term planning for the development of this field, the development of incentive and supportive policies and implementation of them, the formulation of rules and regulations for new types of businesses and the determination of relevant agents, applying the required modifications in standards and regulation to provide the minimum level of service for these business entities, are some steps the government can take in this regard. Furthermore, the four main factors of 3PL service development in recent years include market pressure to reduce prices, pressure to improve customer service, globalization, and the development of new information technologies. In particular, the outsourcing development of non-key activities in large manufacturing and service companies has increased the importance of the development of the third-party logistics industry. Other studies also highlight the fact that the third-party logistics business is growing globally, especially in developed countries.

5) What are the motivations and limitations for retailers when outsourcing 3PL activities?

According to the findings of this study (Table 29 and 30), the factors considered as motivational when retailers are outsourcing 3PL activities are the reduction of agreed cost, improving the management performance of the supply chain, the use of newer technologies, customer service improvement, integration and combination, information security and maintenance, higher income, more diversity in products and services, and similar results were reported in other countries by Yuan et al. (2018). Logistics and supply chain-related businesses in foreign countries are growing. The establishment of large international companies in the logistics and supply chain management fields is an indication of this rapid progress.

On the other hand, official statistics show a significant increase in the level of entrusting logistics activities to third-party logistics services companies (3PLs) globally. One of the most important criteria for outsourcing logistics activities is the cost criterion. Investigating different criteria including logistics costs, inventory costs and fixed equipment costs indicate that these costs are decreased if the outsourcing is carried out for 3PL companies. Most manufacturing and service organizations that use these companies have reported that the utilization of 3PLs increased their income each year. It should be noted that partnership with 3PL companies is not the only way to improve the cost criteria or the level of service provided. In recent years, criteria such as fuel efficiency and carbon emissions, and paying attention to environmental issues have gradually become more important in the decision-making process for selecting 3PLs by senders. Additionally, some limitations of retailers when using 3PL activity outsourcing include management challenges, legal limitations, failure to do the task properly, high costs, and lack of expert knowledge of programs. The same results were reported by Rahman et al. (2017) in other countries. The most common reasons are logistics in the company is considered a basic function; logistics is much more important than outsourcing; cost savings will not be made; and integrating the company's own IT system with the 3PL system is very difficult. While there is a particular logic behind each of these reasons not to outsource, these same factors are also reasons for deciding to outsource special activities to other companies.

6) What are the criteria for retailers in selecting 3PL companies?

According to the results (Table 31), the criteria for the selection of 3PL companies by retailers include social responsibility, specialist human resources, the issue of distance, more innovation, more work experience, higher level of technology, better accountability, suggested prices, company credit and the size of the

company. Of course, in many cases, companies do not have much choice in entrusting their logistics tasks, and competencies are not always the criterion for selection. Some 3PL companies have a large market share and have blocked the way for other companies to compete. These results are consistent with Giri and Sarker's (2017) reports. The surveys indicate that the service level of 3PL companies is increasing every year. Moreover, 3PL users work with logistics service companies of the third parties that provide service to them in order to improve their performance and enhance their level of collaboration.

5.3 Recommendations

According to the results of this study, the following suggestions and recommendations are presented:

- Since the factor related to employees and the policies of government is one of the most important affecting the quality of the provided services, it is recommended that 3PL companies should keep their employees up to date with high knowledge and expertise. Moreover, the government should take positive steps in this regard by considering support policies for 3PL companies.

- According to the results, the seven criteria for achieving competitive advantage in 3PL companies in providing better services compared to others are better strategy, better customer services, more market share, more coherent corporate structure, a more popular brand, more human resource expertise and having higher capital and budget. It is recommended that 3PL companies determine their strategy according to business conditions in Iran. This strategy can cover many work-related aspects including market share, service quality, scope and area of work, etc.

- The results of the study indicate that the criteria of current procurement requirements in the retailer sector include maintaining and storing information (hardware and software), supplying orders, inventory management, customer order management and shipping, warehousing, packaging, logistics, and transportation management. It is recommended that 3PL companies in these areas develop their expertise to provide the best service to their customers.

- The results also indicated that the quality of services provided by 3PL companies in Iran were average; therefore, it is suggested that they improve their work quality through modeling and investigating their work

practices and the reasons for the success of 3PL companies around the world.

- The results showed clearly that the use of more novel technologies and lack of expert knowledge about programs are the most important motivation and limitation for retailers during the outsourcing process. It is suggested that managers and experts of 3PL companies put the adoption of new technologies on their agenda and be more serious about precise investigation of the programs and the use of technology in this sector.

- According to the results, the retailers' criteria for selecting a 3PL company include social responsibility, human resources, distance, more innovation, higher work experience, higher level of technology, better accountability, suggested prices, company credibility, and company size. It is recommended that all 3PL companies consider the environment, society and regulations and conduct and develop social responsibility policies in the company.

5.4 Research limitations

The information was obtained from retailers, and their generalization should be conducted cautiously. The reason for the complexity of the model is the impossibility of entering other important intervener variables into the research. In this study, it was not possible to import information on government rents of companies and the use of political influence. Some companies talked about being forced to choose 3PL companies, but for some reason refused to give a reason.

5.5 Directions of future research

Future studies in this field could investigate the services received from 3PL companies in different countries comparatively. Researchers who are interested in this field could investigate other business factors, including market share, overall company performance, customer satisfaction, and related components in the future. In Iran, 3PL companies have used few successful world models in this field to improve the quality of their own company services. In this regard, a comprehensive study could examine the effect of using the experience of successful countries and provide solutions for the development of such companies in Iran. Collaboration between several 3PL companies can eliminate many weaknesses for all companies. A study in this field could examine the effects of cooperation on the

development of service quality and identify the most important reasons for cooperation or non-cooperation.

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Appendices

Appendix 1

A: Qualitative Interview Questions:

Using the guidance of the supervisor and the advisor of the research, an interview in the form of five main questions was prepared. These questions were as follows:

1) What factors within the company impact the quality of your work?
2) What factors outside the company impact the quality of your service provision?
3) What advantages do you have to surpass your competitors in providing your services?
4) What are some exclusive competitive advantages that you have in your service provision?
5) What are the logistics orders in the retailer sector now? How are…? retail sector?

B: Questionnaire for quantitative section:

	Very strong	strong	medium	weak	Very weak
How is the quality of the services offered by 3PL companies in Iran?					
What kind of motivations and barriers exist for retailers when outsourcing the activities to 3PL companies?					
Motives	Very high	high	moderate	low	Very low
Reduced price					
Improving supply chain management performance					
Utilization of newer technologies					
Improvement of customer service					
Integration and combination					
Maintaining information security					
Preventing high infrastructure costs					
More income					
More product and service diversity					
More customer satisfaction					

Barriers	Very high	high	moderate	low	Very low
Some legal barriers					
Management challenges					
Legal barriers					
Not doing the tasks properly					
High costs					
Use of non-specialist force					
Wrong choice of 3PL company					
Absence of precise review of the programs					
Problems of coordination with the 3pl company					
Ambiguity in some items of the contract					
Unpredicted cases					
What are the retailers' criteria for selecting 3PL companies?	Strongly agree	Agree	No idea	Disagree	Strongly disagree
Reputation of the company					
Size of the company					
Recommended prices					
More work experience					
Social responsibility					
More innovation					
Expert human resources					
Higher technology					
Better response					
Distance					