INNOVATION ACTIVITIES IN LOGISTICS SERVICE PROVIDER COMPANIES

YUNUS KAYMAZ

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Supervisor: Lars Löfqvist
Examiner: Ming Zhao
Abstract

The concepts of innovation and innovation management have been researched for a long time; however, innovation is generally perceived with regard to technological progress. It is likely to come across numerous research projects about product and process innovation - mostly in manufacturing organizations. However, these concepts are underestimated in some interdisciplinary subjects such as logistics. Briefly, there is an exigency of knowledge about the innovation activities of third party logistics service provider companies.

Third party logistics service providers are organizations which perform certain logistics activities on behalf of other organizations. This study uses the concepts of ‘third party logistics’ and ‘logistics service provider’ (3PLs which can be defined as companies who performs logistics activities on behalf of others) interchangeably and aims to expand the limits of knowledge on logistics innovation in logistics service provider companies and logistics innovation.

In order to fulfill objectives of the thesis, a comprehensive literature review was conducted and possible knowledge gaps were identified. This thesis is based on multiple case studies conducted with three case companies. Case companies were selected in order to find out answers to the research questions of what logistics innovation is, how logistics innovation is applied, which risks exist in logistics innovation and how innovation capability is related to logistics. The revealed findings were discussed in relation to the existing theories on the concept of logistics innovation.

The study concludes that, competition in logistics industry forces companies to become more aware of customer insights and to meet customer needs. In this way, logistics service provider companies maintain their customers and increase their competitiveness. The study demonstrates and recommends some key elements in implementing innovations aimed at logistics activities. Logistics service provider companies are affected by some elements such as knowledge, management, customers, competitors, technology, finance and organizations’ innovative attitudes. Furthermore, it was revealed that logistics service providers use different logistics innovation management types: planned and ad-hoc. The case companies have used the ad-hoc logistics management type and the innovation agent concept is highly significant in the determination of improvements and innovations. Finally, some risks in implementing novelties are revealed and points that managers should consider in creating logistics innovation are indicated.

Keywords: Innovation, logistics innovation, logistics sector, logistics service providers, third party logistics
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Yunus Kaymaz

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1. Introduction

The concepts of innovation and innovation management have been widely discussed and have become more important for many years, but the effects of these concepts on organizations, industries and countries have only become clear recently. The increasing demand on new and improved products/services and the search for new ways to meet such demands in an intensive competitive environment act as a crucial factor for innovation. The importance of the innovation comes from the idea of change, which means that organization, industries and even individuals produce new products, services and ideas in order to survive and grow (Bessant and Tidd, 2007). This condition is also highly valid for the logistics and transportation industry. Although logistics research has ignored innovation (Flint et al, 2005; Wagner, 2008; Evangelista et al., 2008 and Grawe, 2009), there is an increase in applications and implementations of innovation in logistics companies.

In this context, innovation management becomes a process which has positive effects on firm performance, enables companies to exploit potential markets and it also affects customer relationship. From a macro perspective, innovation is effective on countries’ long-term development policies as well as local and regional strategies. On the other hand, the micro perspective includes organizational and industrial attitudes which are effective in the generation and implementation processes of innovation. From an industrial point of view, it can be determined that, studies regarding innovation mostly focus on manufacturing (i.e. processes and product innovation). Besides, relevant researches become intense in these areas; they mostly deal with physical products or processes which can be easily observed and designed. However, intangible products (i.e. services) and processes in service companies mostly deal with non-physical elements. This condition reveals that, innovation has many facets with many elements embodied in it.

Logistics industry appears to be an industry which requires both technological and non-technological innovations. Logistics industry is affected by various elements such as the environment, government policies, international legislation, thus companies operating in this sector need to respond fast to changes. Changing customer structures, technological frameworks and increased competitiveness enable companies within the logistics industry to differentiate, to change and to develop themselves. Logistics innovation offers a competitive advantage through perceiving and analyzing trends and helps to develop the industry. However, there is a lack of logistics innovation knowledge. Therefore, companies may find it difficult to manage. This thesis provides the knowledge regarding logistics innovation and tries to answer the question of how logistics companies provide logistics innovation and perceive innovation management.

1.1 Purpose

The purpose of this study is to examine and expand the knowledge about logistics innovation, specifically, understanding the interaction between the logistics and innovation areas and determining the possible consequences which arise from this interaction. Furthermore, understanding the relationship between logistics attitudes and companies’ innovation capabilities and determining the innovation management of logistics companies are additional aims pertaining to the contribution to the expansion of knowledge in this field.
2. Theoretical framework

This chapter provides a comprehensive overview about innovation, innovation management, logistics concept and logistics innovation. In the light of relevant books and scientific journal articles, the foundations of this study is built by reviewing the concept of innovation, types and models of innovation, logistics management and logistics innovation.

2.1 Definition of innovation

Innovation and its elements have been widely researched. Many definitions regarding innovation have been discussed by different authors and differ in various focuses. Although misconceptions related to the definition of innovation are common, innovation differentiates itself at several points from invention, new product development and design issues.

By looking at the definitions, we generally come across the term ‘new’. Varis and Littunen (2010) define innovation as different kinds of ‘newness’ related to product, organization, method, and technologies. Another definition, by Tidd et al. (2005) is that innovation is the transformation of opportunities to new ideas and putting these into widely used practice. Damanpour (1996) and Knight (1967) highlight the adoption of an idea behavior and change which is new to the organization. In addition to different definitions, some ideas emphasize the role of the individual in the innovation process. For instance, in defining innovation, Drucker (1985) mentions the entrepreneurs who create new-wealth-producing resources. Schumpeter defines innovation as (European Union, 2005:29):

1. Introduction of a new product or a new product quality.
2. Introduction of a new production method. This needs not to be a scientific invention. It might consist of a new way of treating a product commercially.
3. The opening up a new market.
4. The opening of a new source of raw materials or semi manufacturers regardless of whether the source has existed before.
5. The creation of new organizational structure in industry.

Finally, the European Union (2005:46) defines innovation as below:

“An innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations”.

It can be deduced from a broad range of definitions that innovation is mostly related to change and something new. In this context, innovation can be defined as any creation of newness and difference in product/service, process or organizational method.

2.2 Innovation and other related terms

Innovation may be confused with some other related concepts. Creativity, research and development (R&D), invention, change, technological progress and novelty are notions that may be considered under this title. Although innovation has a close relationship with these concepts and they have commonalities, they differ in various aspects.
2.2.1 Invention
According to Fagerberg (2003), there is a difficulty in distinguishing the terms invention and innovation. Furthermore, he also identifies the difference between the first commercialization of an idea and the first occurrence of an idea for a new product or process (Fagerberg, 2003). For individuals, commercialization means the transformation of a new thing for increasing individuals’ benefits. For companies, innovation means the transformation of invention for gaining commercial success and profitability by surpassing rivals. For a country/society, it means putting novelties into place to increase social welfare-benefit. Furthermore, for the world, innovation means the transformation of novelties and it is necessary to increase the welfare-benefit of the global society (Turanlı and Sarıdoğan 2010:18).

Norman (1996) defines invention as a new, man-made device or process. In the context of invention, the device may be in the form of a new physical product, a new biological life form or a new piece of software, to name a few. On the other hand, the process includes a series of events that constitutes the production of products or services (Norman, 1996). In order to create a profitable situation for business, invention requires innovative commercial activities.

2.2.2 Creativity
The word creativity means the capacity to create something new out of disorganized elements in which the creator perceives and observes possible connections (Baccarani, 2005). A useful way to understand the difference between creativity and innovation is by viewing creativity as the process of generating ideas, and concurrently, viewing innovation as the sifting, refining and most critically the implementation of those ideas (Gurteen, 1998). Creativity shares a common ground with the notion of gathering and collecting different ideas.

2.2.3 Research and development (R&D)
“Research and development (R&D) comprises creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications” (European Union, 2005:92).

Both public and private organizations should consider R&D as a tool for contributing to organizational development and growth. Although, innovation and R&D are different concepts, innovation in R&D is also discussed in literature. Holtzman (2008) discusses innovation in the context of research and development and also indicates the impact of R&D in the innovation process. Companies can use innovation and R&D in combination as a strategic weapon to strengthen its resources so that they can gain competitive advantage and can separate themselves from the competition by catalyzing high levels of organic growth and support above average margins, even in mature businesses (Holtzman, 2008).

2.2.4 Change
It seems that everywhere, there is a pressure to change, and a sense of an occurrence of fundamental shifts (Carter, 1999:11). According to Carter (1999), managements of organizations are faced with an unstable nature of the markets and increasing demands from customers, employees and stakeholders as individuals. This situation is the most important challenge for companies and managers. Therefore, organizations should position themselves wisely.

“For many it requires fundamental changes...changes that are reflected not only in strategy, structure and processes but also in more subtle areas such as the relationship and individual
has with his or her organization and the culture and climate that need to exist” (Carter, 1999:13).

Change is not only applied to individuals, it is also related to and connected with organizations. Carter (1999) highlights the renaissance in organizations and defines the renaissance organization as the one that continuously innovates to achieve market alignment through a strategic position that positively differentiates itself from its competitors (Carter, 1999).

2.2.5 Technological progress
As technology continues to develop, the interplay between innovation, technology and science becomes inevitable. Of course, technology is not the only element of innovation. Palmisano (2005) indicates that by applying technology, organizations can transform opportunities derived from innovation in supply chain, manufacturing and R&D processes. He also emphasizes the importance of technology for businesses:

“Technology is now a central component of business strategy. In fact, it is the application of technology to business designs and a core process that is helping enterprises around the world prepare to compete in a globally integrated economy. And it's this combination of technology with strategic insight that produces innovation” (Palmisano, 2005).

2.2.6 Novelty
It is necessary to distinguish between innovation and novelty. The difference should be identified because it is important to understand which activity is considered as innovation and which is not. With regard to the difference Turanlı and Sarıdoğan (2010) state as below:

“Novelty only means newness. Every novelty may not be transformed to innovation that creates meaningful increase from economic units’ objective function. In this context, while each innovation brings and embodies newness and each newness may not be transformed to innovation” (Turanlı and Sarıdoğan, 2010:18).

2.3 Types of innovation
The European Union (2005) identifies four types of innovation. These are: product innovation, process innovation, marketing innovation and organizational innovation. Brief definitions about types of innovation are introduced below.

2.3.1 Product innovation
A product innovation is the introduction of a good or service which is new or significantly improved with respect to its characteristics or intended uses (European Union, 2005). Product innovations include significant improvements in many features of goods and services. Product innovations address good and service innovations by using the current technology or knowledge as well as using new technologies or new knowledge to make significant improvements in many features, such as technical specifications, components, materials and software (European Union, 2005).

In the European Union (2005), both services and goods are listed under the term ‘product’. Thus, major and relevant improvements in the features of existing goods and services or the introduction of new goods and services take part in product innovation. Utterback and Abernathy (1975:642) define product innovation as “a new technology or combination of
technologies introduced commercially to meet a user or a market need”. Johne (1999) concludes that the power of product innovation in helping companies to retain and to grow competitive position is indisputable. The author also states that products have to be updated and completely renewed for retaining strong market presence.

2.3.2 Process innovation

“A process innovation is the implementation of a new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/or software” (European Union, 2005:49).

Organizations may gain some advantages by decreasing unit cost of production or delivery, increasing quality in the production or delivery of new or significantly improved products. Furthermore, process innovation has effects on services because process innovations include new or significantly improved methods for creation of services (European Union, 2005). Knight (1967) defines process innovation (under production-process title) as the introduction of new elements in the organization's task, decision, and information system or its physical production or service operations, the advances in the technology of the company. In the light of this information, process and product innovations have a close interplay with technological progress.

2.3.3 Marketing innovation

The European Union (2005) distinguishes marketing innovation from other changes and identifies related requirements in the definition as below:

“A marketing innovation is the implementation of a new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing” (European Union, 2005:49).

The first and the main objective in marketing innovation is increasing the company’s sales. Accordingly, marketing innovation is achieved through determining customer needs appropriately, positioning the company’s product in the market and opening new markets for the company (European Union, 2005). In addition, the issue of design is important in marketing innovation, because in order to create a new marketing concept, companies may alter product design.

Change in product design refers to the form and characteristics of the product, which are not present in the features or characteristics of existing product (European Union, 2005). However, part of the academic debate on marketing innovation differentiates between market and marketing innovation. As discussed by Johne and Davies (2000), market innovation is concerned with the improvement of the mix of target markets and how chosen markets are best served. Its purpose is to identify better (new) potential markets and better (new) ways to serve target markets (Johne, 1999). According to these authors, market innovation is mostly concerned with the judicious choice and entry into market segments which are new to the company. Thus, Halpern (2009) argues that marketing innovation and market innovation should not be confused with each other.

2.3.4 Organizational innovation

An organizational innovation is the implementation of a new organizational method in the company’s business practices, workplace organization or external relations (European Union, 2005). According to the European Union (2005), organizational innovation aims at:
- Increasing company performance,
- Improving workplace conditions,
- Reducing cost of supplies,
- Gaining access to non-tradable assets.

With respect to the new organizational method listed by the European Union (2005) (i.e. business practices, workplace organizations or external relations), organizational innovation is different from organizational change. It is fair to say that organizational innovation is unique. Due to characteristics such as culture, history, values and personality, each organization should assess and define its own innovation system. This means if the matching level between these elements is high, the innovation is going to be productive and profitable (Maital and Seshadri, 2007:106). As authors (Maital and Seshadri, 2007) state below, innovation should be evaluated within the organizational context:

“No organization is exempt from this voice—each must look inward and outward, examine its culture, structure, strategy and resources, study best practices and, based on this inventory and needs assessment, build an approach for bonding discipline and creativity that is most suited to it” (Maital and Seshadri, 2007:106).

2.3.5 Other definitions for innovation types
Trott (2005:17) demonstrates a typology for innovation. These are:

- Product innovation,
- Process innovation,
- Organizational innovation,
- Commercial/Marketing innovation,
- Management innovation,
- Production innovation,
- Service innovation.

Tidd et al. (2005) identify types of innovation with the 4P’s of innovation:

- ‘product innovation’ – changes in the things (products/services) which an organization offers,
- ‘process innovation’ – changes in the ways in which they are created and delivered,
- ‘position innovation’ – changes in the context in which the products/services are introduced,
- ‘paradigm innovation’ – changes in the underlying mental models which frame what the organization does.

Tidd et al. (2005) structures an innovation space that organizations can operate. Below, Figure 1 shows the innovation space. Here, innovations are identified as incremental or radical according to their distance from the center of the diagram, with respect to four aspects.
2.4 Dimensions of innovation

The types of innovation explained in the previous chapter are interconnected via the degree of their novelty. Innovation which has a major impact on the market or on the economic activity of companies in that market is called disruptive or radical innovation (European Union, 2005). Dewar and Dutton (1986) state that radical and incremental innovations are different types of technological process innovations.

Radical innovations are fundamental changes which represent revolutionary changes in technology (Dewar and Dutton, 1986). On the other hand, Bessant and Tidd (2007) define radical innovations as significant changes in products, services or processes. For radical innovations, Veryzer (1998) uses terms such as discontinuous, really new, breakthrough, revolutionary. Radical innovation is necessary for organizations. Radical innovations, if structured effectively, will affect organizations for a long-term period and are very different from incremental innovations. Radical innovations or breakthrough innovations are crucial for reinforcing a company’s competitive position.

Hence, compared to incremental innovations, new business and product lines based on radical innovations require different management practices, (McDermott and O’Connor, 2002). In contrast, incremental innovations are small improvements in existing products, services or processes (Bessant and Tidd, 2007). According to Dewar and Dutton (1986), radical innovations represent revolutionary changes and they are fundamental changes.

On the other hand, incremental changes are minor changes in current technology. Furthermore, radical and incremental innovations are examined in the context of risk and implications at the organizational level. McDermott and O’Connor (2002) consider radical innovations as more risky. This situation will lead large scale companies to go after innovations with low risks and immediate rewards, in other words, incremental projects. Incremental innovation processes build upon existing knowledge and experience and may therefore represent less novelty, risk, uncertainty, and ambiguity (Löfqvist, 2009).
In Figure 2, Tidd et al. (2005) introduce the dimensions of innovations with their different levels. The main idea here is putting innovations to a scale which increases complexity from bottom to top and left to right direction.

![Dimensions of innovation](image)

**Figure 2- Dimensions of innovation (Tidd et al., 2005)**

### 2.5 Concepts for the novelty of innovations

European Union (2005) defines three concepts for novelty. These are new to the firm, new to the market and new to the world.

#### 2.5.1 New to the firm

The European Union (2005) specifies the lowest level of innovation as new to the firm which means that it is the entry level for the innovation. According to the definition, new to the firm refers to:

“A product, process, marketing method or organizational method may already have been implemented by other firms, but if it is new to the firm (or in case of products and processes: significantly improved), then it is an innovation for that firm” (European Union, 2005:57).

#### 2.5.2 New to the market

As it can be understood from the term, the European Union (2005) defines new to the market as the innovation for the market, when a firm is the first to introduce an innovation on its market. The market should be composed of the firm and its competitors. It may include a geographic region or product line. The geographical scope of new to the market innovation is subject to the firm’s own view of its operating market. Therefore, it may include both domestic and international firms (European Union, 2005).

#### 2.5.3 New to the world

New to the world concept is mainly related with the first introduction of innovations by other firms and needs not to be implemented by other firms in the market or industry. New to the world refers to:
“An innovation is new to the world when the firm is the first to introduce the innovation for all markets and industries, domestic and international. New to the world therefore implies a qualitatively greater degree of novelty than new to the market” (European Union, 2005:58).

2.6 Typical innovation phases
Innovation includes the notion of continuity. Therefore, it is a process that should be managed carefully. Innovation should be assessed as a series of activities rather than an instant image occurred in minds. This means that innovation can be referred to as a process in which ideas and possibilities transformed into reality (Bessant and Tidd, 2007). The activities of generating ideas, selecting the good ones and the implementing phases are the core of innovation management. Bessant and Tidd (2007) explain these as below.

2.6.1 Generating innovation possibilities
New idea generation can be considered as heart of the innovation because nearly all ideas have a place in the innovation management process. Even some ideas will not be considered as applicable, they are treated as possible innovation ideas. New ideas may come from various sources; from users, customers, inspiration, combination of existing ideas that lead to new ideas, however, the point is that if individuals and organizations that want to achieve successful innovations, there should be a careful examination and different ways of selecting potential signals for various opportunities (Bessant and Tidd, 2007). In this phase, what matters is to understand the course and triggers of innovation. In determining these triggers, it is possible that they create a chance to organizations, managers and individuals to determine the further steps.

Bessant and Tidd (2007) indicate that, triggers of innovation may be encountered in various manners and types; changing in shape, size and direction, such as competitor actions, legislative issues, new technology opportunities that force organizations to innovate or changing requirements of the markets. Thus, organizations should pay attention to upcoming triggers and take actions appropriately for the next steps.

2.6.2 Selecting the best of the possibilities
We are facing with many choices in our life and even selecting a simple thing, we face with risks and at the end, some outputs. In the process of innovation, it has the potential of possible uncertainty and risks; however without developing these possibilities it cannot be found that they are worth to study (Bessant and Tidd, 2007) thus, the strategic choice of determining the most applicable ideas is a problematic issue. Furthermore, the authors relate this stage with ‘strategic’ choices. The strategic word refers that if the idea matches with organizations structure, is there enough skill and resources to fulfill the idea and accessibility to the related knowledge. In conclusion, in such processes, selecting the best ones may not occur in full accuracy; however, a precise research and study will minimize the risk and ease the burden of ambiguity.

2.6.3 Implementing the new idea
From choosing an option to the final stage - a new product or service in the market or new process and methods in organization, the accumulation of various elements such as competitor actions, market, and technology, compose the background of the whole process and the close relationship between these reveals the success of the innovation (Bessant and Tidd, 2007). During this phase, Bessant and Tidd (2007) argue that scarcity of resources such as the budget for the implementation of new ideas and time may be balanced with creativity. Furthermore,
there is another evaluation regarding the innovation management process. As Trott (2005)
indicates, innovation is not a singular event, but a series of activities that are linked in some
way to the others. Trott (2005) states the elements within this process as follows:

- A response to either a need or an opportunity that is context dependent,
- A creative effort that for successful results in the introduction of novelty,
- The need for further changes.

2.7 Innovation models
Models which are related to the innovation were analyzed by various authors. Trott (2005)
discussed the models as serendipity, linear, simultaneous coupling, and interactive models.

2.7.1 Serendipity model
Many studies on historical cases of innovation highlight the importance of the unexpected
discovery (Trott, 2005). The author explains serendipity model as a rare issue but also states
that it is a path for fame and fortune that may emanate from an unexpected innovation.

2.7.2 Linear model
Trott (2005) divides the linear model into technology push and market pull model (Figure 3).
The author states the close relationship between science and technology, technological
developments and needs of the market from the basic model for innovation. First, he
explains the technology push model. In this model, Trott (2005) indicates that scientists make
discoveries, then technicians evaluate them for product ideas and then these ideas are turned
into prototypes by engineers. Last, marketing departments make arrangements of promotions
for the customers. However, as the author states, there is a customer involvement at the
background.

The second model, the market pull model, is explained by Trott (2005) as the model which
takes the importance of customer and market into account. Here, customer and market
interaction leads to the innovation process because in certain markets, the customers and the
market are very influential in design and other related aspects.

As mentioned above, Figure 3 indicates the difference between the technology push and
market pull models. Although they have the same goal (i.e. user), they follow different
courses in reaching users.

![Figure 3- Linear Model (Trott, 2005)](image-url)
2.7.3 Simultaneous coupling model
Trott (2005) argues that the aforementioned linear models are far from explaining how innovations occur. In contrast, the simultaneous coupling model emphasizes the fact that innovation is developed by the interplay of knowledge between the three pillars of this model.

In Figure 4, it is demonstrated that there is a close and continuous relationship between the aspects common to the technology push and market pull model. There is no linear approach in reaching users.

2.7.4 Interactive model
The interactive model integrates the technology-push and market-pull models. It emphasizes that innovations occur as the result of the interaction of the marketplace, the science base and the organization’s capabilities. Like the coupling model, there is no explicit starting point. The information flows are used to explain how innovations transpire and that they can arise from a wide variety of points (Trott, 2005)

At the center of the model there are the organizational functions of R&D, engineering and design, manufacturing, marketing and sales. While at first this may appear to be a linear model, the flow of communication is not necessarily linear. There is a provision for feedback. Also, linkages with the science base and the marketplace occur between all functions, not just with R&D or marketing (Trott, 2005).

2.7.5 Other innovation process models
Another explanation on models was introduced by Rothwell (1994). Rothwell’s five generation model explains the main framework for innovation.

Tidd et al. (2005) highlights Rothwell’s five generations of innovation models:

1. First and second generation: Simple linear models need pull, technology push
2. Third generation: Coupling model, recognizing interaction between different elements and feedback loops between them
3. Fourth generation: Parallel model, integration within the company, upstream with key suppliers and downstream with demanding and active customers, emphasis on linkages and alliances
4. Fifth generation: Systems integration and extensive networking, flexible and customized response, continuous innovation

Rothwell (1994) introduces innovation processes within a wide range of timeline. Beginning from 1950, innovation processes were examined and models were composed. Referring to Rothwell (1994) processes and models were examined as below:

In the period of **first generation** in Rothwell’s models, innovation is explained by the rapid technological advance. During this period, the rapid increases in manufacturing combined with technological advances and altered the behavior of the market, industry and customers. Technological development led to significant developments both in new sectors and in existing sectors. Attitudes of the society and governmental policies were effective in stimulating R&D and scientific advances. Thus, a model of technology push has emerged. According to this model, there is a linear way from science through manufacturing and finally marketing.

**In the second generation** the manufacturing attitude continued with existing technologies, but due to competition, organizations began to change their investment attitudes. Furthermore, competition for market share led organizations to try new efforts to increase their market shares. In the market pull model, market is the focal element on which organizations try to position their innovative efforts. The increasing perception about the demand factor makes companies to become more aggressive for their market shares. However, as stressed in the article (Rothwell, 1994) there is a disadvantage of this kind of model, because while organizations position themselves with respect to the increasing demands of the market and customers, it neglects investments and minimize the flexibility of organizations to change in highly unstable market conditions.

**The third generation** innovation process describes that this period was characterized by cost control and cost reduction due to the major oil crises. Cost reduction, therefore, financing and accounting became more important; thus, constraints on resources caused organizations to consider their scarce resources and using resources wisely. It became clear that successful innovations would reduce costs regarding innovation activities. Innovation and R&D are costly decisions and every failure in the innovation attempt will bring organizations unbearable costs. This situation led to cautiousness on innovation activities in order to decrease failure costs and other costs. Hence, a systematic and scientific way to apply innovation became inevitable. The third generation model - the coupling model, has a linear aspect as well. However, it is distinguished from other models by the feedback option, which has enhanced the efficiency of this model (Figure 5).
The fourth generation model strives for the relationship between parties in innovation processes. Integration becomes a crucial aspect for this model. Rothwell (1994) discussed the fourth model with regard to both Japanese implementation and Western implementation. The main idea regarding the fourth generation innovation process is integration and simultaneous development in the product development process. The recovery period in the economy affected businesses and they focused on their core business and relevant IT (Information Technologies) because the salient nature of this period’s environment is short life cycle and intensive competition. In this context, the author compares Japanese and Western companies, because Japanese companies have increased the level of accuracy in product development by adopting integration and simultaneous development. Furthermore, the activity was done by integrating suppliers in new product development as well as departments that have a role in product development and these were both done in a simultaneous way not, in a sequential way.

The fifth generation model has been assessed as a development of the fourth generation process. The fifth generation model has some characteristics which are different from other models. As mentioned, this process is a kind of upgraded model that includes integration. Flexibility, networking and real time information are some aspects regarding to this process. However, the author indicates that the use of electronic toolkits for innovation processes is the radical features of the fifth generation model.

2.8 Models for innovation management
Risk factor is highly substantial within the processes of innovation. In addition to this, innovation management is also difficult, with regard to these associated risks. Trott (2005) indicates that innovation is extremely complex and involves the effective management of a variety of different activities. Furthermore, Bessant and Tidd (2007) indicate that innovation is a process which needs a management approach. As the authors state: “any organization can get lucky once but the real skill in innovation management is being able to repeat the trick”. A brief introduction to some basic models of innovation management is mentioned in this chapter.

2.8.1 Bessant and Tidd model
In addition to generating ideas, selecting and implementing them, Bessant and Tidd model proposes proactive linkages, strategic leadership, direction, deployment and innovative organizational elements. The main idea of proactive linkages is to establish a connection with suppliers, customers, sources of finance and skilled resources. The established interplay between parties is going to activate the multi-functional communication level. Bessant and Tidd (2007:20) emphasize that “the twenty-first-century innovation is most certainly not a solo act but a multi-player game across boundaries inside the organizations and to the many external agencies that can play a part in the innovation process”. In the Bessant and Tidd model, strategic leadership, direction and deployment are the main elements because a precise leadership is necessary in the condition of uncertainty and the risky environment of investments. Innovative organization enables organizations to create an innovative climate for employees and workers.
2.8.2 The pentathlon framework

The pentathlon framework model was proposed by Goffin and Mitchel (2005) and the steps in managing innovation process are identified in this model. Figure 7 demonstrates the pentathlon framework model with its elements. According to this model, innovation strategy represents the holistic perspective of the management to the innovation and represents the management’s responsibility. According to Goffin and Mitchel (2005) managers need to evaluate the environment (i.e. market trends, customer demands etc.). The idea phase includes all kinds of raw materials.

2.8.3 Trott’s model for innovation management

According to Trott (2005), establishing departmental functions to perform the main tasks of business strategy, R&D, manufacturing and marketing is not sufficient to solve the company’s problems. Figure 8 illustrates the main factors of innovation management process while
considering a successful innovation within organizations. Briefly, as in Figure 8, within an organization, the accumulated knowledge is affected both by the internal boundaries of organization and by external inputs (i.e. technology, competition customers).

![Trott’s model for innovation (Trott, 2005)](image)

**2.9 Measurement of innovation**

The measurement aspect should also be examined due to the continuous nature of the innovation process. Tidd et al. (2005) discussed the issue of measurement of innovation. The possible measures and indicators are stated as below:

- Output measures of operational or process elements, such as customer satisfaction surveys to measure and track improvements in quality or flexibility,
- Output measures which can be compared across sectors or enterprises – for example, cost of product, market share, quality performance, etc.,
- Output measures of strategic success, where the overall business performance is improved in some way and where at least some of the benefit can be attributed directly or indirectly to innovation – for example, growth in revenue or market share, improved profitability, higher value added.

Another classification related to measures of innovation is discussed with its strengths and weaknesses. The related measures are:

- Research and Development activities,
- Patents,
- Significant innovations,
- Innovation surveys,
• Product announcements,
• Technical employees,
• Expert judgments (Tidd, 2006).

Tidd et al. (2005) also consider a number of more specific measures of the internal workings of the innovation process or particular elements within it. For example:

• Number of new ideas (product/service/process) generated at start of innovation system,
• Failure rates – in the development process, in the marketplace,
• Number or percentage of overruns on development time and cost budgets,
• Customer satisfaction measures – was it what the customer wanted,
• Time to market (average, compared with industry norms),
• Development human-hours per completed innovation,
• Process innovation average lead time for introduction.

Measures of continuous improvement – suggestions/employee, number of problem solving teams, savings accruing per worker, cumulative savings (Tidd et al., 2005).

Other ways for measuring innovation are:

**-Measures of innovation outputs:**

• Patents, number of new products, % of sales from them,
• Process, e.g. customer satisfaction, quality,
• Benchmarking: Cost of products, market share, quality,
• Strategic: Market share, profitability, value added.

**-Measures of internal innovation processes:**

• Number of new ideas, failure rates, time-to-market, development working hours/innovation, time to introduce processes,
• Number of problem-solving teams, suggestions/employee,

**-Assessing the entire innovation capability:**

There are three broad areas of indicators used in STI (Science, Technology and Innovation) analysis: first, R&D data; second, data on patent applications, grants and citations; and third, biometric data (that is data on scientific publication and citations) (Smith, 2005). In addition to this there are three other important classes of indicators (Smith, 2005):

• Technometric indicators, which explore the technical performance characteristics of products,
• Syntetic indicators developed for scoreboard purposes mainly by consultants,
• Databases on specific topics developed as a research tools by individuals or groups.

**2.9.1 Measuring innovation capability**

For measuring and assessing innovation capabilities a number of authors (Tidd et al., 2005; Gatignon et al., 2002; Gartner Research, 2002) have proposed frameworks. According to
scorecard proposed by Gartner Research (2002), innovation value chain process includes components such as strategic management, human capital management, knowledge management, innovation management. On the other hand, Gatignon et al. (2002) made a structural approach to assess innovation. Tidd et al. (2005) introduce a self-assessment tool to understand the innovation capability. Briefly, the self-assessment tools include strategy, innovative organization, learning, processes and linkages parts and try to understand company’s innovation capability regarding to these components.

2.10 Elements affecting innovation (success factors)
Bessant and Tidd (2007) have structured a three perspective model for a successful implementation and adoption for innovation; furthermore they suggest that there should be integration among these three. The authors described these factors as below (Bessant and Tidd, 2007: 70):

- Personal or individual attributes; include creative style and the ability to identify, assess and develop new ideas and concepts,
- Collective or social factors; involve the contribution of teams, groups and processes necessary to translate ideas and concepts into new products, services or businesses,
- Contextual factors; consist of the climate and resource needed to support the creation and growth of invention and entrepreneurship.

Elements explained by Bessant and Tidd (2007) reveal that they have direct or indirect effect to the innovation process. These elements are listed below.

2.10.1 Freedom
It is fair to say that, freedom is one of the most effective elements of innovation. Although in our daily life we have more freedom, organizations have relatively less freedom. This could come into view from the organizations’ culture or their strategic structure. However, for organizations that want to adopt an innovative nature, or organizations that have already implemented innovations within their structure, there should be a significant level of freedom compared to the others. In this context, with relation to organizations, innovation can be defined as the level of independence that individuals in organizations perceive and act upon.

According to Bessant and Tidd (2007), the creative works and initiative actions are directly related to freedom, which means that if there is enough freedom for individuals in organizations, they will have the autonomy in defining their own work. On the other hand, if there is not enough freedom, individuals are probably going to have difficulties in offering new ways of doing things or suggesting new ideas. The freedom for creative ideas will trigger more creative ideas and innovation.

The level of this freedom is also important. Bessant and Tidd (2007) emphasize that if the freedom level is too high, individuals will not be eager to work with the group or organization. In conclusion, there should be a precise balance in defining the level of freedom in organizations.

2.10.2 Risk-taking
It can be concluded that all projects include a relative amount of risk and as the issue is innovation, risk is inevitable. However, risk taking element has some advantages as well as disadvantages. In general, the degree of risk taking in an organization affects the idea generation process and amount. Thus, there should be an explicit balance between the degrees
of risk-taking. If there is an environment that has a higher level of risk-taking, it is possible to say that people become confused due to the higher amount of ideas. This situation will reduce the team-work within organizations because individuals are determined to produce ideas without evaluating if they are applicable. Of course, few are feasible among these (Bessant and Tidd, 2007). On the other hand, if risk-taking level is too low, the offering and generation of new ideas remain low as well. This is because individuals think that they are safe and such an environment paralyzes the synergy in organizations and it is possible that individuals may complain about the bureaucracy of the process of implementing the ideas (Bessant and Tidd, 2007).

2.10.3 Support and space for ideas
Space and support for ideas are considered as elements that have effects in idea generation. Individuals or employees in organizations often face these two elements to some degree. Time for ideas refers to the time spent by individuals in organizations for the creation of new ideas (Bessant and Tidd, 2007). Time and space for ideas were discussed by Bessant and Tidd (2007) and the authors argue that the optimal level of time and space will promote creativity and idea generation; hence, innovation. Both extensive time and insufficient time would bring upon some drawbacks. For instance, if the time and space for ideas are too much, boredom may emerge due to the extensive amount of ideas.

The amount of ideas generates bottlenecks for the decision process and it extends the time required for evaluation. On the other hand, as the authors indicate, if the time is insufficient, this limitation will hinder the possibility of new ideas because time and space are insufficient for the thought and creation of new ideas and individuals are intensely engaged with the daily tasks and projects. Furthermore, this may pose a threat due to the high level of stress for individuals in organizations.

Another issue is support, which has a crucial impact on innovation and idea creation processes. If enough support is provided, it is possible for organizations to have a constructive and positive atmosphere in favor of idea generation and innovation (Bessant and Tidd, 2007). In contrast, due to insufficient support, individuals in organizations may become frustrated because they start to hide their opinions. They would be aware that the idea evaluation system is not working and ideas are generally seen as problematic issues (Bessant and Tidd, 2007). In conclusion, it is necessary to develop enough space for innovators and adequate supportive actions for profiting new ideas.

2.10.4 Trust and openness
Trust, openness and other attributes which are crucial for relationships become necessary and non-negligible for organizations. Furthermore, since these are highly related to new ideas and projects, the importance of trust and openness increases. Organizations can gain advantages by developing a trustful and open environment because in such an environment individuals may share their opinions and ideas without fear. Bessant and Tidd (2007) indicate that through trust, the positive assumptions and expectations about acts, motives and intentions are achieved and therefore the decision-making process becomes more efficient. Hence, a collective understanding about sharing of information and its use for organizational goals may be achieved.

Trust and openness increase the confidence in the relationship and interplay between individuals. These increase the commitment and knowledge-sharing, as well. The ideas generated within the organization may be evaluated in a systematic way and trust between individuals prevents possible exploitation and inappropriate use of the ideas. In contrast, the
lack of trust and openness may create conflicts between individuals. In such an environment, individuals act in a suspicious way because they may think that their ideas are not secure, that the protection of intellectual property rights is limited.

2.10.5 Culture
As Jain et al. (2010) indicate, culture is the process of operating procedures and unstated assumptions which are emerged and achieved in a cultural group, thus such actions compose individual attitudes such as perceptions, thoughts, and judgments. As may be understood from the general definition of culture which includes shared goals, attitudes and values within an organization or group, culture has a unifying role in organizations. However, in some cases this situation can be completely different and culture becomes a decomposer for organizations.

Organizational culture can become an important element for innovation and new idea creation processes. This is because the established mission, vision and attitudes that are adopted in organizations generally lead individuals to act in accordance with these. Here, the culture effect is in a close interplay with the organization.

Culture also affects the structures of organizations. The important point is to provide and enhance the current culture to be more adaptive and innovative. Enterprises which aspire to compete globally should develop new products and ventures faster than their rivals (Yılmaz, 2008). Enterprises that have a strong cultural structure and have substantially completed their integration are going to make necessary innovations easily (Yılmaz, 2008). Finally, it is necessary to note that culture and climate are notions which may easily be confused (Tidd et al., 2005; Isaksen and Tidd, 2006). It is important to understand the difference between these. Culture is a broader concept and climate is placed below the concept of culture (Isaksen and Tidd, 2006).

2.10.6 Environment
Climate and environment are effective factors in creativity and innovation. They can provide and foster the creation, evaluation and use of new products, the way in which the individual operates, support of new ideas, processes and new ventures in the course of their development, assimilation and utilization (Bessant and Tidd, 2007). However, structuring and developing such kind of an environment is not easy. Actually, it requires some elements that should work in close interplay.

Organizational structures, communication policies and procedures, training policy, accounting, reward and measurement systems are elements that comprise the creative climate with a systematic development (Tidd et al., 2005). The environment which is emerged from the interaction of individuals affects new ideas either positively or negatively. In the micro perspective, the environment includes individuals. In the macro perspective, it includes organizations. Managers should consider these elements and build an environment that fosters creativity and innovation.

2.10.7 Coordination of inputs
During the innovation process, organizations use various inputs for possible outputs. Here, inputs refer to the all resources used for final output creation. Physical and non-physical inputs should be organized carefully. The person who will provide coordination may not only be managers but also team managers and team members. A precise allocation of necessary inputs will ease the whole innovation process.
2.10.8 Learning skills
Learning skills include individuals and organizations and it should not be forgotten. Today, organizations, like individuals, learn and develop activities. Of course the concept of learning is highly connected with innovation. Tidd et al. (2005) assert that innovation may also be seen as a learning cycle and this cycle includes a process of experiment, experience, reflection and consolidation. This process may be managed both by organizations and by individuals within an organization. However, the learning process should not be determined solely by an organizational perspective. At first hand, individuals dominate this process. Individuals learn the level of contact with customers and management of projects. Tidd et al. (2005) indicate that organizational routines configure the learning behavior and develop attitudes which need to be internalized.

2.10.9 Team-work
It is fair to say that cooperation and collaboration probably enhance the effectiveness of idea generation and accelerate new product development and innovation processes. Brainstorming and debate on innovation processes and their effective use will decrease failure.

In our day, organizations try to deal with intensive customer demands and the complexity in products and services, which mostly requires team assets rather than individual attributes. Customer demands require intensive upgrades and customization. Thus, teams and the interplay between team members are crucial. This situation poses a degree of complexity. “Complex service packages are designed and delivered in highly customized fashion and configured and reconfigured to suit the changing needs of a wide range of users” (Tidd et al., 2005:495). These service packages are healthcare, policing, transport, and utilities and they are all in a changing environment that combines radical new demands and new challenges. However, in such a complex-type environment, teams and groups that see innovation as a combination of different views and perspectives for problem solving are likely to be more successful (Tidd et al., 2005). The authors state that, groups have more to offer than individuals in terms of both fluency of idea generation and flexibility of solutions developed; they state that effective team-building is a critical determinant of project success.

2.10.10 Shared vision
One of the elements that affect the innovation process is shared vision. Teams inevitably have a common ground for innovation projects. It is necessary for the teams to have an understanding of this ground, so that they may focus their objectives more accurately. As Bessant and Francis (1999) indicate, policies enable teams and individuals to focus on improvements for necessary strategic objectives.

2.10.11 In-house and outside information channels
Establishing effective networks with technological and scientific information resources refer to the information channels and they may be achieved both in-house and outside of the organization (Korkmaz, 2004). Tidd et al. (2005) argue that some failures in the innovation process are due to insufficient communication capabilities between relevant parties in these processes. In such conditions, the authors indicate that there are some problems within the organizations, and solving these problems are highly related to and connected with various sets of knowledge.

Developing a common system and mechanisms for solving communication problems, removing ambiguities within channels are necessary for the absolute success of the innovation. In conclusion, the effective use of information channels will make innovation processes better, as well as the other attributes of organizations.
2.10.12 Qualified management and leadership
Dynamic and open-minded managers should be aware of and have the capability of attracting skilled managers and researchers to the enterprise and the management should undertake for developing human resources (Korkmaz, 2004). Maital and Seshadri (2007) highlight the importance of leadership in organizations for successful innovation, as a component for overcoming the possible resistance of shareholders, employees, senior managers.

As innovation includes a certain degree of risk, the risks associated with these processes should be examined carefully. Tidd et al. (2005) state that “successful technology management thus requires that the organization be prepared to take risks and to accept failure as an opportunity for learning and development”.

Jain et al. (2010) have identified the managers’ positions and actions over their subordinates. The authors highlight that researchers may become frustrated when they do not get permission for their new ideas which requires basic research. In this context, the ‘top management commitment’ referred to by Tidd et al. (2005:471) is “a common prescription associated with successful innovation; the challenge is to translate the concept into reality by finding mechanisms which demonstrate and reinforce the sense of management involvement, commitment, enthusiasm and support”. In conclusion, the organizations operate like an orchestra which needs extensive harmony and this harmony can be possible with appropriate leadership and management.

2.11 The concept of logistics management

2.11.1 Definition and historical development
Etymologically derived from the words logos and logisticos - which mean logic and accounting in Greek language respectively, the term logistics gained its military perspective with logistikas units responsible for the supply of equipment and material in the Roman period. After this historically based definition, logistics has become a much more complex process. Christopher (2011:2) defines logistics as:

“The process of strategically managing the procurement, movement and storage of materials, parts and finished inventory (and the related information flows) through the organisation and its marketing channels in such a way that current and future profitability are maximised through the cost-effective fulfillment of orders.”

Logistics and its activities have become an important notion for many years and this importance increases day by day. Logistics activities should be considered as a strategic element for both the organizational level and the country level. Wilson (2008) and Lambert et al. (1998) highlight the importance of logistics expenditures, which equals to the approximately 10% of U.S. gross domestic product. Such figures show that expenditures related to logistics activities should be assessed at both country-wide and organization-wide levels. It is necessary to understand the capability of logistics management for an effective competitiveness and increased profitability and to maintain the leadership in the market.

There are various definitions of logistics management and most of them include the terms such as product flow, information, product and planning. The explicit definition was made by The Council of Supply Chain Management Professionals (2011):

"Logistics management is that part of supply chain management that plans, implements, and controls the efficient, effective forward and reverse flow and storage of goods, services, and
related information between the point of origin and the point of consumption in order to meet customers' requirements.”

The importance of logistics comes from the interaction between the economy and organizations. This high level of interaction between logistics, economy and organization is discussed by Rushton et al. (1989), Lambert et al. (1998) and Wilson (2008). They assessed the percentage of logistics within countries’ economies represented by the GDP. In this context, Rushton et al. (1989) highlight the percentage of logistics is about 10 percent of the GDP of two countries (U.K. and U.S.A.), while in Mexico, Ireland and Singapore it has nearly reached 15 percent level.

The authors evaluate that this difference signifies the importance given to logistics by different countries. Lambert et al. (1998) also state that in the USA context, the contribution of logistics to the GDP was about 10 per cent in 1996 with $797 billion dollar expenditure, comprised of activities of transportation, storage and warehousing.

Furthermore, Wilson (2008) states that such expenditures comprise a lower percentage of the GDP in industrialized countries. On the contrary, less industrialized countries have a higher ratio of their GDP comprised by logistics activities, around 10 to 20 percent. Understanding the importance of logistics and its related costs, and trying to minimize them create the advantage of lowering total costs in countries’ economies. The efficient use and operation of logistics activities or managing processes within logistics lower the related costs in the organizational context as well.

2.11.2 Key logistics activities
Logistics processes include various elements which enable the material, financial and information flow within parties. Lambert et al. (1998) list these key activities as below:

- Transportation,
- Warehousing,
- Inventory,
- Customer service,
- Order processing,
- Packaging,
- Material handling,
- Logistics communication,
- Demand planning,
- Reverse logistics,
- Order processing,
- Procurement.

Rushton et al. (1989) identify the components of logistics (Figure 9) as transport, inventory, information and control, storage and warehousing and packaging.
2.12 Logistics and customer interaction

Today, customer perception differs in many ways from industry to industry. However, it is generally same in service sector companies. Thus, customer relationship, public relations, customer service subjects have an important role for logistics companies. There are many reasons for this situation. For instance, in the logistics industry, as a highly dynamic sector with regard to customer and price, company-customer interaction may be seen to be at the highest level in instantaneous routing and pricing. It is necessary to maintain customer interaction at the highest level because competition is fierce and customer satisfaction enables the company’s profitability and continuity.

Lambert et al. (1998) indicate that, customer service performance is a measure of how logistics system functions in creating time and place utility, with a focus on external customers. Public relations and customer service level are crucial both for knowledge resource and effective investment decisions with regard to how companies use those channels of decision-making.

In this regard, company-wide developments, improvements, novelties and innovations enhance the customer-company commitment. Companies are going to increase competitive
powers with their innovative characteristics and flexibilities compared to other subjects such as price, quality and speed.

The development of innovative thinking systems and the creation of logistics innovation eventually enable companies to meet increasing and changing customer demands and to become ready for changing demand trends in advance. On the other hand, customers are able to reach the value added services produced by firms. In an environment which price, quality and speed are almost default characteristics, flexibility and innovativeness are the characteristics which make the difference for companies. In this context, logistics industry - which is considered to be in the service sector - should not be underestimated. Development, continuous improvement and innovation are necessary for companies to think innovative and to strengthen companies’ logistics manners.

2.13 Third party logistics service provider concept

Companies and organizations prefer outsourcing as an option for the effective and efficient use of scarce resources. Such scarce resources are capital, human or knowledge resources. To increase precise management decisions and decrease their logistics related costs, organizations recognize outsourcing. The outsourcing option is offered by third party logistics service providers (3PLs). In order to deliver products quickly to customers, many companies seek to outsource their logistics activities from logistics service providers (Lin, 2007). In this context Razzaque and Sheng (1998:89) highlight the following options that a company may consider in order to handle its logistics activities effectively and efficiently:

- It can provide the function in-house by making the service,
- It can own logistics subsidiaries through setting up or buying a logistics firm (Candler, 1994),
- It can outsource the function and buy the service.

The third party logistics concept has been widely discussed and definitions regarding to this concept slightly differ. Virum (1993) defines the third party logistics as “the services offered by a middleman in the logistics channel that has specialized in providing, by contract, for a given time period, all or a considerable number of logistics activities for other firms”. Furthermore, Langley et al. (1999) explain that “a company that provides multiple logistics services for its customers, whereby the third-party logistics provider is external to the customer company and is compensated for its services called third party logistics service providers”.

According to Delfmann et al. (2003) logistics service providers are companies which perform logistics activities on behalf of others. Furthermore, the author indicates that third party logistics companies or contract logistics companies are other terms used commonly. Some of the services that third party logistics service providers offer are shown as below (Lieb and Bentz, 2005):

- Freight payment,
- Shipment consolidation,
- Direct transportation service,
- Customs brokerage,
- Warehouse management,
- Freight forwarding,
- Tracking/tracing,
- Relabeling/repackaging,
- Order fulfillment,
- Product returns,
- Reverse logistics,
- Operation of IT systems,
- Fleet management/operations.

Flint et al. (2005) refer to logistics service providers as both third party logistics service providers and the component of a company that provides logistics service in support of a broader array of the company's products and services. In this context, this study also uses the terms logistics service providers (LSPs) and third party logistics companies (3PLs) interchangeably. Thus, any possible confusion that may arise from the use of these terms was tried to be reduced.

2.14 Logistics innovation concept

After comprehensive explanations about logistics management and innovation, it is necessary to discuss research on logistics innovation. As mentioned above, logistics industry is a highly dynamic industry. With this regard, logistics service providers (LSP) should have necessary characteristics such as quality, speed and flexibility. In an environment that nearly all companies have identical characteristics, companies with innovative manners gain a competitive advantage.

First, a definition of logistics innovation is necessary. The definition of the concept of logistics innovation was made by Flint et al. (2005) who also have established the logistics innovation theory. According to Flint et al. (2005:114), logistics innovation is “any logistics related service from the basic to the complex that is seen as new and helpful to a particular focal audience”. In brief, logistics innovations are value added logistics activities that include improvements, developments, novelties and innovations for customers. In this study, the researcher takes the innovations in logistics companies as the lowest degree of novelty at the firm.

It is necessary to mention that there is only scant research about innovations in logistics, logistics service and transportation (Wagner, 2008). This means that, logistics research has largely ignored innovation (Flint et al., 2005) and innovation research generally focuses on product or process innovation (Evangelista et al. 2008), and this slow progress in service innovation was named as laggard according to Miles (1993). On the other hand, as logistics industry is considered to be placed within the service industry, it requires innovative actions. This is necessary because the customer portfolio and demand trends change quickly and they are affected by environmental factors (i.e. regulations, political conditions).

Flint et al. (2005) define logistics innovation processes and indicate factors which have contributions to these processes. There is a close interplay between customer value, market orientation, organizational learning in the way of creating logistics innovation. The creation of ideas is derived from many activities including brainstorming, meetings and customer inputs.
Certainly, meeting customer demands which were not previously met, capturing and identifying changing trends within market, leads managers to take necessary actions (Flint et al., 2005). Besides, Flint et al. (2005) see logistics innovation as activities taken by managers to fulfill unmet customer demands. In connection with this situation, market orientation enables companies to create meaningful innovations from ideas, trends and companies gain necessary market knowledge and intelligence through market orientation (Flint et al., 2005).

According to Flint et al. (2005), from a market orientation perspective, logistics innovation can be defined as a response to active gathering of logistics-related market intelligence data and sharing of that intelligence among relevant parties within the company. Logistics innovation is structured from trend analysis, scenario exercises, and product analysis, brainstorming exercises or direct customer inputs. However, the effects of knowledge sharing and idea generation processes are created through a holistic approach which should not be underestimated because they have a close relationship with organizational learning and customer value.

It is crucial to understand the importance of customer value concept and how customers perceive ‘newness’. Flint et al. (2005) point out that, customer value is a complex notion and there can be a great difference between current or actual customer values and changing customer value is highly inconsistent. This means that managers should understand the changes of customers’ market environments and use situations which affect the desired logistics value.

On the other hand, Flint et al. (2005) also indicate that for logistics innovation, intelligence and knowledge about customer can be gathered in many ways. In order to do this, there should be an additional effort and this can be achieved by organizational learning. In connection with logistics innovation, learning level, knowledge sharing, processing and uniqueness are effective and act as determinant factors. In other words, a higher level of learning capability enables companies to produce more options for customer in the means of logistics activities and make organizations more effective in understanding customer insight. At the same time, organizations having difficulty in knowledge sharing cannot foresee environmental and customer trends. Therefore, they cannot achieve logistics innovation (Flint et al., 2005).

On the other side, an effective knowledge sharing process does not mean that companies can achieve logistics activities effectively, which means that processes such as gathering information, processing, disseminating, and interpreting may not be in place. However, this requirement may be fulfilled by reaching outside knowledge resources (i.e. recruiting staff) (Flint et al., 2005). Lastly, Flint et al. (2005) assert that logistics innovation may be unique for every organization and this can be derived from culture and organizational nature.
According to Flint et al. (2005) logistics innovation process occurs as below:

![Logistics Service Context Diagram](image)

**Figure 10- A logistics innovation process (Flint et al., 2005)**

It is necessary to mention that, it is hard to see the same process in all companies. Regarding to this situation, Flint et al. (2005:127) indicate that “no firm was engaged in all of these activities, collectively they represent what appears to be an important set of activities …”.

To mention briefly those process parts, first, setting stage activities should be examined. “Setting stage activities are those activities designed to create an environment conducive to interacting with and listening to customers and being an innovative organization”. (Flint et al., 2005:127). This section includes activities that create foundations of the following sections, such as training and planning activities, survey execution learning, data reviewing techniques or acquisition of computer systems. Briefly, training and environmental factors generate “setting the stage activities” for creating innovations. This section is a prerequisite for the next section; the “customer clues gathering activities”.

Customer clue gathering activities are joint meetings with customers, direct customer meetings and interviews which enable managers to understand customer desires, opinions and comments with a mutual way. Here, the main idea is aiming customers and gaining insight about them. Of course, meeting the unmet customer desires is the challenge. However, it is quite important to reveal reliability, validity and how these demands are applicable. In this sense, interpreting and reviewing section of the customer insights is applied in “negotiating, clarifying, and reflecting activities” section.

Logistics innovation is beyond the creation of an environment for innovations, engaging with customers and listening to them. Beyond those activities, it is important to understand the gained insights and reviewing them correctly (Flint et al., 2005). On this issue, for example, Flint et al. (2005) state that participants in research indicate the difficulty of understanding customer desires, because customers do not mention specific services. However, this situation creates an advantage for those companies which spend a great deal of time with their customers.

The last element for logistics innovation process is “inter-organizational learning” which briefly refers to the new insights and understandings which emerges jointly for managers from the logistics service providers and customer organizations (Flint et al., 2005). The mutual
synergy generated between the parties creates an environment in which both parties trust each other and there is a curiosity for the new viewpoints.

Apart from this, Wagner (2008) establishes a conceptual framework for logistics service companies. In order to expand research on innovation in logistics service companies and transportation companies, Wagner (2008) examines the current status quo of German industry by establishing a conceptual framework. In this sense, innovation activities (inputs), innovation generation and innovation results (outputs) were examined. It is necessary to give a brief explanation about these components of the conceptual framework.

First, inputs, or innovation activities were examined. Wagner (2008) considers this component with the elements of internal and external research and development (R&D), knowledge acquisition, training, investment in infrastructure and capital goods. However, although internal and external R&D exists, they cannot be developed, the reason for this situation is that innovations in transportation industry often occur through the incremental innovation type (Wagner, 2008).

In addition, investments in infrastructure and capital goods will lead companies to create product/service innovations. Wagner (2008) criticizes knowledge acquisition in its various aspects and indicates that it may not be effective because the necessary customer knowledge for improvements and innovations may not be comprehensive about processes, challenges and problems. Also, Wagner (2008) divides the innovation generation component into product/service and process innovation, market novelties, ad-hoc and planned innovation and indicates that in LSP management, technological innovations alone are not sufficient. Wagner (2008) explains product/service innovation as new or improved services and new performance promises created by LSP companies.

Other parts discussed in innovation generation component are market novelties, product range novelties and product imitations. Wagner (2008) sees market novelties as improved products or introduced services prior to competitors by a company. For product range novelties and imitations, Wagner (2008) comments as activities such as product or service innovations may be resulted with enlarging actual product or service offerings. This will create an advantage for companies by addressing customer demands which are not covered so far. However, product imitations are services and products introduced by the company which are already offered by competitors (Wagner, 2008).

Another discussion about the innovation generation component is on how these activities are treated. In other words, whether they occur in an informal way or whether there is a formal and planned way to generate these activities. Planned innovations are achieved through an allocated budget, include a series of processes (idea generation, project selection, etc.) and needs, long term research and development activities. In contrast, ad-hoc innovations are more informal and they result from customer demands (Wagner, 2008).

In addition, Wagner (2008) analyzed innovation activities in terms of macro-sectoral and micro-firm level perspectives and found out that the transportation industry had the lowest percentage and came in the last place among selected industries (i.e. manufacturing, knowledge intensive services, other services). The author explains the reasons of this situation as inadequate strategies, structures, processes and human resources in innovation management. Another reason of such a result is the possibility that LSP’s could only pursue very modest innovation activities. From the micro-firm perspective, the realization of
innovation-induced revenue growth and cost reduction are a means for LSP’s to stay competitive (Wagner, 2008).

Another comprehensive study related to logistics innovation was conducted by Grawe (2009). A literature based conceptual framework was established and the antecedents, outcomes and diffusion of logistics innovation are examined.

As other authors indicate the lack of researches regarding to logistics innovation (Flint et al., 2005; Wagner, 2008; Evangelista et al., 2008), Grawe (2009:361) also points out the insufficient research about logistics innovation:

“The literature does address logistics technologies (Electronic Data Interchange (EDI), Radio Frequency Identification (RFID)) and logistics programs (vendor-managed inventory, cross-docking, etc.) and their roles in logistics operations and relationships, but there remains a significant gap in terms of research aimed at understanding drivers of logistics innovation and the specific benefits of this type of innovation”.

As it can be seen in Figure 11, the proposed model by Grawe (2009) includes environmental factors, organizational factors and these factors are related to logistics innovation. Except the organization of labor (which was indicated by a negative sign), all factors have a positive relationship with logistics innovation. The relative competitive advantage may be revealed as an output for logistics innovation. The propositions regarding to these factors were listed as below (Grawe, 2009):

- Knowledge resources are positively related to logistics innovation,
- Technology resources are positively related to logistics innovation,
- Relationship network resources are positively related to logistics innovation,
- Financial resources are positively related to logistics innovation,
- Managerial resources are positively related to logistics innovation,
- Organization of labor is negatively related to logistics innovation,
- Competition is positively related to logistics innovation,
- Capital scarcity is positively related to logistics innovation.
Grawe (2009) and Busse and Wallenburg (2011) gave us comprehensive knowledge about what has been done regarding to logistics innovation. In order to show the studies which match the best, it is necessary to construct a table as presented below which includes authors and their studies about logistics innovation.

Table 1- Some example researches about logistics innovation

<table>
<thead>
<tr>
<th>Author</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germain (1996)</td>
<td>Radical and incremental logistics innovation activities in logistics service providers.</td>
</tr>
<tr>
<td>Chapman et al. (2003)</td>
<td>Examines the resources such as knowledge, technology and relationship networks through an extensive literature review.</td>
</tr>
<tr>
<td>Flint et al. (2005)</td>
<td>Construction of logistics innovation theory and case studies regarding to logistics innovation creation.</td>
</tr>
<tr>
<td>Panayides and So (2005)</td>
<td>The interplay between organizational learning and logistics innovation examined through empirical study.</td>
</tr>
<tr>
<td>Richey et al. (2005)</td>
<td>Provides an empirical study regarding relationship between reverse logistics and innovation.</td>
</tr>
<tr>
<td>Lin (2007)</td>
<td>Determines factors affecting the innovation in logistics technologies for logistics service providers in China.</td>
</tr>
<tr>
<td>Mena et al. (2007)</td>
<td>Analyzes administrative and technological innovations in logistics services.</td>
</tr>
<tr>
<td>Authors</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Busse and Wallenburg (2011)</td>
<td>Analyzes literature and databases through a comprehensive research and indicating possible research areas.</td>
</tr>
<tr>
<td>Daugherty et al. (2011)</td>
<td>Analyzes the effect of organizational structure on a firm’s logistics service innovation and firm performance.</td>
</tr>
</tbody>
</table>

### 2.15 Logistics innovation types and management

After analyzing literature about logistics innovation it is necessary to explain logistics innovation types and management as well as logistics innovation process under the light of relevant literatures.

#### 2.15.1 Logistics innovation types

Logistics innovation concept, as mentioned comprehensively in the previous part, may be analyzed in two ways; first, the logistics concept and second, the innovation concept. Logistics itself includes many processes and activities and highly interacts with customer and technology. In addition, logistics has a high level of interplay with marketing, services and organization. This situation creates an environment which increases the importance of logistics for organizations. This condition solely affects logistics outsourcing organizations. However, logistics service providers need to examine logistics and innovation concept as well.

Logistics service providers highly interact with technological progress and customer demands. In order to satisfy increasing customer demands, logistics service providers use many tools. Briefly, these service/products or organizational and process improvements are called logistics innovations.

The types of logistics innovation are discussed by authors and a proposed figure for logistics innovation types was introduced. With this regard, Wallenburg (2009) introduces the types of
offered innovations by logistics service providers as in Figure 12. Wallenburg (2009) divided the innovations offered, into internal and customer-related innovations. According to Wallenburg (2009), first class innovations are innovations which are not easily noticeable from the outside but have affects for the efficiency of logistics service providers. In this part, fuel-efficient vehicles or vehicle routing systems were considered as internal innovations.

The second class innovations (customer-related innovations) are innovations which are easily noticeable from the outside and have direct impact to customers. The second class innovations are divided to multi-customer-related innovations and single-customer-related innovations. The difference between these two is due to the fact that logistics service providers may focus either on a whole market or on a specific area of customer demand. Single-customer-related innovations have two sub-classes which are innovations at the beginning of the customer-shipper relationship and other is innovations in ongoing relationship.

Customers may be an effective factor in demanding specific innovations and the emergence of the innovations are examined according to the relationship type between the customer and the shipper. Ongoing relationship innovation type has sub-classes named as reactive and proactive innovations. Reactive innovations are normally generated by the demand of the customers, whereas proactive innovations are offered to customers in advance. The last sub-class defined by Wallenburg (2009), is the proactive cost improvement and the proactive performance improvements.

![Figure 12- Classification of innovations by LSPs (Wallenburg, 2009)](image_url)
Another classification is done by Germain (1996) who analyzes the logistics innovation process according to incremental, intermediate and radical innovations. Germain (1996) indicates that logistics innovation is able to improve logistics performance. Some of the examples of introduced innovations by Germain (1996) are shown as below:

- Radical innovations: robotics, automated storage/retrieval systems, automated material handling equipments,
- Intermediate innovations: electronic data interchange, optical scanners, bar codes, distribution modeling software, material requirements planning software,
- Incremental innovations: vehicle routing software, freight consolidation software, supporting financial software.

Mena et al. (2007) divide innovations with regard to their nature, pertaining to technological/technical and administrative/non-technical innovations. Furthermore, Mena et al. (2007) relate this classification to logistics. The authors divide logistics innovations as technological innovations and administrative innovations.

**Technological innovations:**

- Technological innovations includes telematics (i.e. shipment tracking, satellite tracking systems),
- Information technology infrastructure includes control towers or web-based services to support and develop real-time data to the supply chain parties,
- RFID (radio frequency identification),
- Vehicle routing, scheduling and transport management systems,
- Digital administration tools (i.e. electronic signatures),
- Transport technologies (i.e. electric vehicles, alternative fuels).

**Administrative innovations:**

- JIT (just in time),
- Value added services,
- Green logistics,
- Organizational structure change,
- Collaboration with parties in supply chain.

With regard to logistics innovation types, Wagner (2008) introduces these kinds of innovations in logistics service providers:

- Product/service innovations,
- Process innovations,
- Market novelties,
- Product range novelties,
- Product imitations.
2.15.2 Management of logistics innovation

It is revealed from various definitions that innovation management includes and interacts with many aspects. This condition is also valid for the logistics innovation management process. Additionally, it is more complex due to the nature of the logistics concept. While dealing with the customer aspect, logistics innovation should not underestimate technological and administrative side of innovations. European Logistics Association (ELA) and Arthur D. Little Consultancy (2007) have structured the logistics innovation process model (Figure 13). The Figure 13 briefly introduces the emergence and collection of relevant logistics innovations and it comprises both customer specific and market inclusive innovations.

![Figure 13 - Logistics innovation management process (ELA and Arthur D. Little Consultancy, 2007)](image)

With regard to management of logistics innovation, Wagner (2008) introduces a conceptual framework. According to Wagner (2008) innovation management in logistics companies comprises three pillars; first part is the innovation activities which are also refer to inputs, second part is the innovation generation phase and third part is innovation results which also refer to outputs.

Wagner (2008) highlights that although there is a planned innovation process there is also ad-hoc innovation in logistics service provider companies. Wagner (2008:223) defines planned innovation as “budgeted as project funds and allocated for long-term research and development activities” and defines ad-hoc innovations as innovations created from customers’ demands and experimentations on an informal basis. These definitions are necessary in analyzing case companies’ management decisions.

2.16 Theory gap summary

It has been clarified above that whereas research regarding innovation generally focuses on product and process innovations, it seldom focuses on service innovations. As a branch of the service sector, the logistics sector generates innovations. However, it is a fact that logistics
Research has not fully focused on innovation. Research and studies on logistics innovation need to be deepened in order to extend and understand the capacity of innovation in logistics sector. There are limited case studies and empirical studies regarding the logistics innovation context. Furthermore, innovation capability and perception of LSPs apparently have not yet been researched.

### 2.17 Research questions

In order to comprehend logistics innovation, which is a relatively new concept for the logistics literature, the research questions of this study are:

1. What is logistics innovation?
2. How do logistics service provider companies apply innovation?
3. What are the factors affecting logistics innovations?
   3.1 What are the risk factors developing innovations in logistics?
4. Does innovation capability affect logistics attitudes?

RQ-1 will help readers understand the theoretical foundations of logistics innovation. Since many companies operate in logistics sector, there are many different ways to satisfy the changing demands of customers. Companies operating in different areas apply different improvements and developments. In this sense, RQ-2 will provide insight through exemplary implications offered by the case studies on companies and seek to explain how companies apply innovations. The application of new ideas and innovation derived from customer demand or market trends, eventually produce some outputs. Hence, RQ-3 explains the factors which affect logistics innovation and possible risks which may emerge in connection with these factors. RQ-4 aims at the analysis of the innovation capability of each case company and providing managerial implications.
3. Research method

This thesis is based on comprehensive literature review and case studies. This chapter aims to describe and discuss the methods in answering the research questions.

3.1 Scientific approach

3.1.1 A qualitative case study approach
This thesis is a qualitative case study about innovation activities in logistics service providers. Qualitative research is one of the research methods (Creswell, 1998) and in order to understand the factuality of specific situations it is necessary to use this type of research method (Büyüköztürk et al., 2011). Furthermore, Yin (2003) concludes that case study research is useful in explaining “how” and “why” questions, providing the researcher with a good viewpoint in order to understand contemporary issues. As mentioned in the research questions section, this thesis focuses on a relatively contemporary issue which requires comprehensive research.

3.1.2 Literature review
In order to find theory gaps within the research area regarding to logistics innovation, an intensive literature study was carried out. Firstly, a literature review regarding to innovation area was conducted, in addition to these, researches about logistics innovation and service innovation literatures were searched. In order to give a comprehensive understanding to the reader, logistics management was also studied.

3.1.3 Case selection and units of analysis
It is necessary to choose appropriate cases in order to solve research questions. For this study, relevant companies were searched for, in order to understand and contribute to the theory regarding to logistics innovation. Companies for the case studies were selected from Turkey, located in the region of Southeast Anatolia in Gaziantep province. This province is unique within its region due to its intensive economic activities. Among eighty one provinces in the country, Gaziantep takes place within the first ten, with respect to its state of development. According to International Transporters’ Association (UND), there are approximately fifty registered logistics and haulage companies in Gaziantep province.

In the case company selection process, academic and industrial guidance and recommendations were provided, therefore the largest companies tried to be used for analysis. However, the term large is used to refer to the relative size within the context of company size.

The thesis includes three companies; two of them can be considered as “large” and the other one company are relatively small compared to the first two. Large scale company notion amounts to relative size, thus a determination is needed on company size. According to the new definition of the European Commission (2003) and regulations about small and medium sized enterprises (SMEs) in Turkey, micro, small and medium-sized enterprises are enterprises which employ fewer than 250 persons and which either have an annual turnover not exceeding 50 million Euros, or an annual balance sheet total not exceeding 43 million Euro. Thus, it may be concluded that, the case studies are on one small company and two medium-sized companies. In this sense, Table 2 demonstrates the characteristics of the three companies.
Table 2- Characteristics of three case companies

<table>
<thead>
<tr>
<th></th>
<th>Company A</th>
<th>Company B</th>
<th>Company C</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
<td>Logistics Service Provider</td>
<td>Logistics Service Provider</td>
<td>Logistics Service Provider</td>
</tr>
<tr>
<td><strong>Services</strong></td>
<td>Warehousing, Bonded warehouse, transportation services, custom clearance services,</td>
<td>Domestic and international Transportation</td>
<td>Transportation, custom clearance, warehousing, and insurance services</td>
</tr>
<tr>
<td><strong>Kinds of Transported Goods</strong></td>
<td>Partial goods, Bulk goods, Full container transports, Project goods</td>
<td>Partial goods, Full container transports, Petroleum products, Personnel transportation</td>
<td>Partial goods, Full container transports, Project goods,</td>
</tr>
<tr>
<td><strong>Mode of Transportation</strong></td>
<td>Road</td>
<td>Road</td>
<td>Road</td>
</tr>
<tr>
<td><strong>Employees</strong></td>
<td>275</td>
<td>200</td>
<td>35</td>
</tr>
<tr>
<td><strong>Geographical Market</strong></td>
<td>Europe, Russia, domestic market</td>
<td>Europe, Middle East countries, domestic market</td>
<td>Europe and domestic market</td>
</tr>
<tr>
<td><strong>Age of logistics activities</strong></td>
<td>10</td>
<td>10</td>
<td>17</td>
</tr>
</tbody>
</table>

3.2 Research process

3.2.1 Sources of data
This section introduces the initiation process of research and methods of gathering sources of evidence. In order to collect data and resources, Yin (2003) proposes six sources of evidence used in case studies. According to Yin (2003) these sources are documentation, archival records, interviews, direct observations, participant observation and physical artifacts. Below, Table 3 demonstrates the sources of the data gathered for the study:
Table 3- Six sources of evidence for case companies

<table>
<thead>
<tr>
<th></th>
<th>Company A</th>
<th>Company B</th>
<th>Company C</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Documentation</strong></td>
<td>Mainly company website, brochures, sector magazines and brochures.</td>
<td>Company web site.</td>
<td>Company web site.</td>
</tr>
<tr>
<td><strong>Archival records</strong></td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td><strong>Interviews</strong></td>
<td>Yes, semi-structured interviews with the company manager about 2 hours of</td>
<td>Yes, semi-structured interviews with the company manager about 1.5</td>
<td>Yes, semi-structured interviews with the company manager about 1</td>
</tr>
<tr>
<td></td>
<td>interviews.</td>
<td>hours of interview and a short conversation with the company manager</td>
<td>hour of interview and a short</td>
</tr>
<tr>
<td><strong>Direct Observations</strong></td>
<td>No, however the company was visited.</td>
<td>No, however the company was visited.</td>
<td>No, however the company was visited.</td>
</tr>
<tr>
<td><strong>Participant Observations</strong></td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td><strong>Physical artifacts</strong></td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

### 3.2.2 Interviews and questionnaire

A semi-structured interview was applied with the managers of the three case companies. In general, interviews were conducted within 1-2 hours range at company headquarters. The purpose of the semi-structured interviews was necessary to understand viewpoints, general attitudes of company and individual thoughts about innovation, logistics sector and applied developments.

In order to examine and understand the environment of company, face-to-face interviews were preferred rather than online connection instruments. Furthermore, visiting companies enables the examination of the site and to gain insight regarding innovations and developments. During the interviews, conceptual definitions and examples were given when necessary. This was done for two reasons; first, to provide the fundamental knowledge related to innovation and logistics innovation and second, to understand which activities are considered to be innovation and development within the company. On the other hand, in Company A, providing such information was unnecessary because the interviewee was highly knowledgeable about the subject of innovation. However, in the other two case companies the procedure defined above, was performed.
Case study interviews started with Company A. The interview at Company A was conducted in 20.12.2011. Approximately 2 hours of interview with the company manager was conducted at the company headquarters. The interview was recorded with the permission of the manager. The interview at Company B was conducted in 22.12.2011. This interview was conducted with a board manager of the company. In addition, a short conversation with the owner of the company was conducted. For Company C, the interviews were conducted in 24.12.2011. Two of the companies were visited at company headquarters. However; only the warehouse and the vehicles of Company C could be examined.

In order to cover the topics of discussion fully and eliminate unnecessary questions, approximately twenty questions were asked. A selection of questions used during the interviews is presented below:

- What does innovation mean to you?
- In the context of the logistics sector, what are your general thoughts about innovations in logistics sector?
- How could you define innovation in logistics? In other words, how does innovation occur in logistics service provider companies?
- How could you describe your company’s management viewpoint to innovation?
- How could you describe the attitude of management of the employees in the company related to the creation of new ideas, thought and innovative ideas?

During the interview, different questions and subjects which were not covered by interview questions were also discussed. In addition to interview questions a self-assessment tool for innovation capability (Appendix B) was conducted. The interviewees filled the self-assessment tool. The tool was proposed by Bessant and Tidd (2007) which examines the current innovation capability of the case companies from five aspects and determine which aspects needs attention and to be improved.

Interviewees were asked to fill the self-assessment tool. This is important because even the interview questions were selected and asked carefully and neutrally, the reader can be doubtful about the validity of the response. In this sense, the self-assessment tool provides a relative strength to the study by comparing primary data and secondary data with assessment tool.

Another questionnaire structured by thesis writer for the Research Question 4. A small survey about company’s logistics attitudes and its assessment were done by interviewees. This is necessary to understand if there is a relationship between innovation capability and logistics attitudes of companies.

### 3.3 Research quality

Four conditions were discussed in order to determine the quality of the case studies. These conditions are proposed by Yin (2003) and are discussed as below:

- Construct validity tries to establish correct operational measures for case studies. Yin (2003) states that, there are three components to increase construct validity. First one is the use of multiple sources of evidence, second one is to establish a chain of evidence, and last component is having key informants to review the case study. In this sense, this thesis uses multiple source of evidence (Table 3) to understand the specific nature of the researched topic.
• Internal validity refers to establish relationships between specific events which lead to other events within the researched topic (Yin, 2003). Internal validity deals with data analysis and mostly it is hard to construct in qualitative studies. Thus, it is difficult for this thesis to construct an internal validity. However, by the use of the innovation capability measurement tool, the validity of the study has increased and strengthened. Both the primary data (i.e. interviews) and secondary data (i.e. websites, documents) were analyzed with the measurement tool. Furthermore, in order to increase the scientific value of the results on innovation capability, a cross-check was done by conducting a small survey of logistics attitudes.

• External validity refers whether a study’s findings can be generalized beyond the immediate case study (Yin, 2003). However, this situation is tricky because findings about one case study may not applicable again and again. Also researched patterns can pose a changeable nature. Yin (2003) also states that single case offer a poor basis for generalization. In this context, this thesis has a good position in case number. In theory, findings can be generalized, however due to various elements (i.e. environments, organizational nature, sector characteristics) it is hard to find the same sample. It is not possible to say the findings of the thesis can be generalized due to lack of researches related to this subject in Turkey. Still, it is highly possible that same results can be gathered because the approach of companies to innovation in different size and structures are highly matches with existing theories.

• Reliability component means whether the results may be repeated. However, as mentioned above, this situation cannot be structured again. Interview documentations were recorded and this situation increases the reliability of the thesis.
4. Findings

This section explains and reveals information and findings gathered from interviews and site observations. This section is composed of brief introductions of the case companies, managerial aspects of the companies, their innovation activities, innovation capabilities and the assessment of their logistics activities.

4.1 The case Company A

Company A’s foundation was based on the transportation activities conducted by the owner with a single truck in 1936. The second generation owner took the lead in 1956 and the company operates as a family company. The Company started with the Gaziantep- Istanbul route in the 1980’s. In addition, it started commercial vehicle trade and export. In 1996, the company continued its business life as a distributor of commercial vehicle goods. In those days the Company started to gain knowledge about the logistics industry. However, investment decisions on logistics activities were taken in 2001. In 2003, commercial activities except logistics were eliminated and logistics was chosen as the primary activity. In addition, a five year plan was created for physical development.

From 2001 onwards, beginning with the investment of twenty vehicles, the company gradually invested in 2005, 2008 and 2010 and reached approximately a 300 hundred vehicle fleet. The Company has 275 employees with an approximately 46 million Turkish Liras (TL) which is equal more or less 23 million Euros. The organizational structure of the company includes board of managers, export and import departments, domestic transportations and operations, finance and accounting, custom and data processing.

4.1.1 Managerial aspects

This section explains the managers’ viewpoint and thoughts about various aspects about logistics sector and their approach to innovation management. First, the manager indicates that innovation culture within the company is a crucial element for the new product and service generation, developments in internal services and technology based interface developments between the customer and the company. The Company sees innovation as leverage for creating difference among other competitors in the sector. Furthermore, they also have a positive attitude for innovation. The general thought on developments is that improvements and innovations regarding the logistics sector have a highly changing nature due to rapid changes in technology and customer profiles.

Customers play a determinant role in the company’s logistics investment and development decisions because meeting with customer demands is necessary. Furthermore innovation acts as leverage because the logistics sector is going to create value added services, products and customer-sector integration for trend and paradigm changes in sector.

The importance of customers was underlined, which is a crucial element for development, innovation policies, and the interviewee emphasized the importance of the subject of customer orientation. According to the manager, shipper selection criteria for the customer also pose a changing nature. In this sense, flexibility becomes more important and a desired characteristic in logistics services.

Dynamic pricing and routing system provide a relative flexibility for customers and this situation poses a criterion for tendering process for customers. In addition to this, the instability of customer demands and customer environment is another critical subject for the
company. However, as a company policy, flexibility, customer orientation and service quality became more preferable compared to pricing. Hence, it may be concluded that there are effective elements from a customer perspective, as well as consideration for the logistics service provider (i.e. service quality, lead time, flexibility etc.). However, on the other side, from a company perspective; it was determined that the company is selective in considering customers, which means that they are not a company for customers whose primary criteria is price.

Also there was a horizontal hierarchy regarding to knowledge transfer and the received knowledge may be transferred directly without any interruption. The main idea is to conserve knowledge and ideas, so that employees do not need to deal with highly procedural processes and managers are highly connected with employees regarding any knowledge transfer. The direct relationship between managers and employees are adopted as a company policy. Hence, managers are able to gather knowledge within its initial context. Additionally, this situation creates a trustful relationship between managers and employees.

Improvements and developments in the logistics and marketing context are reviewed closely by the management. Applications for technologies are considered in terms of their applicable nature and possibility of matching with the infrastructure of company. However, non-technological innovations are as much important and instantaneously reviewed with technological innovations. Therefore, it may be concluded that there are both technological and non-technological innovations within company.

Knowledge is an important factor for the transfer and the creation of innovation activities. Thus, there is an effective relationship with universities. Furthermore, meetings and workshops are done with regional and national unions. The Company is aware of the external knowledge and tries to keep close to outside parties.

The manager indicated that competition keeps the Company “fit”, which means the necessity of producing different viewpoints, opening new routes has emerged from the highly competitive nature of sector. In conclusion, competition has a great influence on company’s idea generation and knowledge gathering by interacting with competitors.

4.1.2 Company A’s innovation activities

This section identifies how Company A introduces innovations; the purpose of created innovations, and tries to explain the innovation process of the company.

In the context of innovation processes (idea generation, selection, and implementation), the idea generation generally occurred within the management board. Innovation activities are also considered as projects and treated as individual projects. However, innovation management is not structured. There is no formal context. On the contrary, there is an unstructured, informal way to deal with innovation activities. Informal and formal approaches to innovations refer to the company’s way to deal with the innovation process. Informal approach means that, it is a way for the company to achieve improvements and innovations by ignoring or adding additional process within innovation management.

In this company, there is no dedicated team or department for innovation or an R&D team, which means that ideas may come from various channels. In addition, the manager indicated for the measurement subject that they do not approach the measurement of results in a structured way.
According to the manager, the company tries to be innovative and creative. During the interview, ongoing and completed innovations which range from customer relationship to used software in the company were discussed. However, the information about incomplete innovation processes or unsuccessful innovations were not identified. Ongoing and completed innovations are shown below:

- Excluding human factor in routine operations,
- Developing own software program,
- Marketing and PR (public relation) innovations,
- User friendly computer systems for employees,
- Integration of truck operations and financial pillar.

To explain these innovations briefly, the company developed its own software program for route optimization, price calculations etc. Yet, there are companies which use traditional ways (i.e. spreadsheet) in controlling fleet activities but this condition neglect companies to control the information and distribution flow effectively. Furthermore, by enabling this software which was designed by the interviewed manager, customers are able to find information about goods on route. This situation dramatically reduced the human factor in this process.

Another aspect is the subject of design. For marketing and public relations, the company used special design trailer tents. They demonstrated Rodin’s sculpture The Thinker so the company tries to create not just a company logo but also a visual demonstration for the public which can be easily remembered. The company wants to show not just their company logo but something different. Furthermore, a special design agenda for customers was created. The manager said that: “nearly all companies sent sample agendas to their customers but we want to make them special and add something notable. After we sent them to our customers, we got highly positive returns and appreciation”.

The company improved their computer systems and made some advancement for their employees. It was indicated that in order to reduce resistance to change, employees were sent to take training about computer systems.

### 4.1.3 The Innovation capability of Company A

A general insight about Company A’s innovation capability is necessary to understand innovative characteristics of company. The results of the key aspects are demonstrated in Table 4 and Figure 14.

<table>
<thead>
<tr>
<th>Aspects</th>
<th>Strategy</th>
<th>Processes</th>
<th>Organization</th>
<th>Linkages</th>
<th>Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Scores</td>
<td>6.6</td>
<td>6.6</td>
<td>6.6</td>
<td>6.7</td>
<td>6.6</td>
</tr>
</tbody>
</table>
The data shows that, in Company A, strategy, learning, processes and innovation organization aspects are in a good shape and linkages are high compared to the other aspects (i.e. strategy, processes, organizations, linkages and learning) and got 0.1 point higher value. Every aspect is discussed below in briefly:

- **Strategy:** top management gives a great importance to innovation and support innovative ideas. Also commitment from the management to idea generation is considerably high. The company vision and strategy give importance to innovative activities both financially and managerially.

- **Learning:** the specific training system and adopting employees to the changing corporate goals require intensive importance. The internal and external knowledge resources are evaluated carefully. University collaborations, union meetings and workshops are effective here.

- **Linkages:** the horizontal hierarchy between management and employees allows company to gather knowledge with its original context. As mentioned above, external and internal linkages are structured well.

- **Processes:** company’s processes for innovation work well, due to the customer directions and needs, the possible innovations and ideas are emerged. Furthermore, for internal use of improvements and developments, company also pays sufficient attention.

- **Innovative organization:** there is a creative environment within the organization. Individuals in different departments find opportunity to share their ideas and there are no restrictions or limitations for individuals and departments in terms of creating ideas through cooperation.

**4.1.4 Assessment of logistics attitudes**

Interviewees were asked to assess company’s logistics attitudes. The statements below assess the logistics attitudes of a company in order to find a relationship between innovation capability of a company and its logistics attitudes. Company A’s assessment is presented as below:
4.2 The case Company B

Founded in 1983 as a personnel transportation company under proprietorship status, Company B began their operations under limited company status in 1990. The Company operated as a partnership until 2000. From this date onward, it abandoned partnership status and began to operate in different business areas. Due to the increasing market demand in different business areas, the Company increased its affiliates by introducing sub-companies. The Company currently operates in the fields of personnel transportation, international transportation, petroleum product transportation and public transportation. The company is a family-owned company and its board of directors includes three members.

The company has departments of financing, purchasing, fleet leasing, public transportation, international logistics, and personnel transportation. The Company started international transportation and export transportations to Europe, Balkan countries and Middle East.
countries in 2002. The Company has approximately 200 self-owned vehicles operating in the logistics area. On the other hand, in its personnel and worker transportation operations, the company uses 300 self-owned shuttle vehicles. The Company also provides fleet leasing services to public and private institutions with 200 vehicles since 2004. Furthermore, the company gives public transportation services since 1997 with 30 vehicles. From 2000, company has also transported petroleum and fuel with 15 tankers. Company B has approximately 200 employees and has a revenue about 15 million Euros.

4.2.1 Managerial aspects
During the interview with Company B, conceptual definitions and examples were given when necessary. This was done for two reasons; first, to provide the fundamental knowledge related to innovation and logistics innovation and second, to understand which activities can be considered as innovation and development within the company.

In order to provide site observation and the interview, Company B was visited. First, a short conversation was conducted with the owner-manager of the company. The second interviewee was the import specialist of the company. The import specialist of the company highlighted that there is a lack of knowledge about innovation. This means the literature, news and contemporary issues were generally underestimated, however this situation occurred from the intensive working conditions.

It was highlighted that in order to stay competitive, customers act as the key element for the company. The company tries to gain competitive advantage with price, quality services and lead time. Furthermore, they experienced change with regard to customer profiles. A demand for new routes emerged and in order to meet this demand, the company wants to open new branches in different countries. Furthermore, they have got some domestic transportation demands; however, the company management ignores such requests. According to the information provided by the specialist, the company considers the actual routing. The reason is to conserve the routines of the company. The specialist commented about this situation as: “we have routines and for now it is not negotiable issue for us”.

With regard to competition aspect, which has effects to the company’s innovativeness, it fluctuate price margins and this will eventually lead companies in this sector to increase service quality. Furthermore, in order to improve service quality, get tax advantage and cover depreciation value, the company renews its equipment (i.e. lorries, trucks).

Another important aspect about customer relationship is how they are treated by the company. According to the specialist, the relationship is established in a regular basis. However, there are no scheduled meetings with customers in order to understand and gather customer demands and insights. The routing information and all other information are given to the customer via phone, e-mail or fax.

4.2.2 Company B’s innovation activities
Ongoing and completed innovations and developments are shown below. However, incomplete or abandoned innovations were not identified by this company.

- Vehicle tracking system,
- Increasing vehicle number,
- Informing customers with a regular basis,
- Opening new branch offices,
- New routes.
The Company adopted a vehicle tracking system due to customer demands and to increase the traceability of their vehicles. Furthermore, the company adopted a policy of renewing company assets one of which is the vehicle fleet so that they may increase the service quality and reduce the maintenance time for the vehicles. In addition, for a further step, opening new branches in Middle East regions are going to be considered.

4.2.3 The innovation capability of Company B

A general insight about Company B’s innovation capability is necessary to understand innovative characteristics of company. The results of the key aspects are demonstrated in Table 6 and Figure 15.

Table 6- Average scores of Company B’s innovation capability

<table>
<thead>
<tr>
<th>Aspects</th>
<th>Strategy</th>
<th>Processes</th>
<th>Organization</th>
<th>Linkages</th>
<th>Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Score</td>
<td>4.0</td>
<td>3.8</td>
<td>4.7</td>
<td>4.7</td>
<td>4.5</td>
</tr>
</tbody>
</table>

Figure 15- Innovation performance of Company B

- **Strategy;** the management’s support pose an average figure and this will eventually create an environment in which routines and habits increase the resistance to change. The management is not enthusiastic about improvements if it is not necessary. The research process of management related to innovation is low. Furthermore, this situation affects the future considerations and decisions.

- **Learning;** there is a training program for new entries. However, internal and external learning channels cannot be used effectively. There is no effective use of local educational channels. Moreover, the relevant communication with unions or chambers was not considered as knowledge gathering areas. This condition of neglect would prohibit the company to position itself according to the changing patterns of customers.

- **Linkages;** linkages with universities, unions and gathering data from them are low. Also gathering insight data from customer side is controversial which needs to be developed more.
• Processes; processes regarding to innovations are low. This condition arises because there is a lack of procedure for the development and improvements. Daily concerns are more important and future concerns for innovations mostly stayed as ideas.
• Innovative organization; company has lack of innovativeness. This situation may be occurred both from management’s perspective and lack of individual involvement to innovation activities.

4.2.4 Assessment of logistics attitudes
Interviewees were asked to assess company’s logistics attitudes. The statements below assess the logistics attitudes of a company in order to find a relationship between innovation capability of a company and its logistics attitudes. Company B’s assessment is presented as below:

Table 7- The assessment of logistics attitudes for Company B

<table>
<thead>
<tr>
<th>Please evaluate your company according to these statements with</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8 No idea</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Service quality management system.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>2. Entering into never service routes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Regularly improve company’s operational systems.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Exploring best methods to achieve corporate goals.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Employee reward system for innovative ideas.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Tools and methods to support innovation within logistics.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. We created our own procedures and systems to better handle logistics activities.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4.3 The case Company C
Established in 1995, Company C has operated for 16 years serving in transportation sector. Company C gives services between Turkey and Europe route with their import-export warehouse, vehicle maintenance unit, and extensive service network. Company actually has approximately 55 vehicles which give transportation services to European and Iraqi market. Company has 35 employees and with a revenue 5-7 million Euros.

4.3.1 Managerial aspects
The interview was conducted with the owner-manager of the company and a short conversation was made with another board member. According to the manager of the company, customer relationship poses extreme importance for companies in logistics. This is because it was indicated that the customer is selective in many respects. Service quality is one of the aspects and due to fierce competition and increasing costs, customers become more selective, thus the company manager mentioned that innovation is going to become a crucial element for competitive advantage. On the other hand, Company C has some difficulties with finding the right channels.

The context of customer relationship is important for the company success and it can be changed positively or negatively depending on the service quality and delivery time.

In conclusion, Company C has some efforts to make innovations and support processes. However; due to the lack of capital contribution, many of these are not fully exploited.

4.3.2 Company C’s innovation activities
Some example improvements and innovations were mentioned as below;

- Vehicle tracking system,
- Integrating first producer and end user,
- Implementing Pareto Principle to customers.

The Company adopted a vehicle tracking system and tried this system when it was first introduced. However, it generates additional expenses. According to the manager, this situation occurred because the infrastructure of such systems was not fully established. They could not use this system because of the additional costs and unreliable infrastructure (i.e. international roaming system). Thus, this innovation was unsuccessful. On the other hand, although they experienced such situations before, they are not fully withdrawn from thinking of new processes and innovations.

The manager indicated that they are thinking about constructing a system that integrates the first producer and end users. According to this system, products (i.e. agricultural products) gathered from the first producer will be processed in their warehouses, and after this process, products will be sent to end users. The logic here is to eliminate the subcarriers and interact with the supplier more effectively.

4.3.3 The innovation capability of Company C
A general insight about Company C’s innovation capability is necessary to understand innovative characteristics of company. The results of the key aspects are demonstrated in Table 8 and Figure 16.
First, it is necessary to mention that the company shows an average innovation capability. However, management support and a positive attitude on innovation were determined.

- **Strategy**: this component takes 5.1 points, a relatively good position. Within the company, employees are truly sure about how innovation affects the competitiveness of the company. Furthermore, as a part of their corporate vision, innovativeness is one of the crucial elements for the company. Although the management has supported innovation and new ideas, due to lack of financing, and bad experiences from previous attempts, the management has a cautious nature.

- **Learning**: there are some problematic parts such as collaborating with other companies in sector, learning from other companies and low level of interaction with universities unions etc.

- **Linkages**: this component also should be treated carefully as well, because the company finds itself in a difficult position to construct an efficient communication.

- **Processes**: processes regarding to innovations are low; there is no formal selection of innovations and improvements. This situation was determined through the interview that, the company is not using a formal way of selecting or implementing innovations.

- **Innovative organization**: it can be easily referred that company lacks of innovativeness. This situation occurred both from management’s perspective and lack of individual involvement to innovation activities.

**4.3.4 Assessment of logistics attitudes**

Interviewees were asked to assess company’s logistics attitudes. The statements below assess the logistics attitudes of a company in order to find a relationship between innovation capability of a company and its logistics attitudes. Company C’s assessment is presented below:

### Table 8- Average scores of Company C’s innovation capability

<table>
<thead>
<tr>
<th>Aspects</th>
<th>Strategy</th>
<th>Processes</th>
<th>Organization</th>
<th>Linkages</th>
<th>Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Score</td>
<td>5.1</td>
<td>4.2</td>
<td>5.7</td>
<td>4.7</td>
<td>5</td>
</tr>
</tbody>
</table>

**Figure 16- Innovation performance of Company C**
Table 9 - The assessment of logistics attitudes for Company C

<table>
<thead>
<tr>
<th>Please evaluate your company according to these statements with</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8 No idea</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Service quality management system</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td>X</td>
<td></td>
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<tr>
<td>2. Entering into newer service routes</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. We created our own procedures and systems to better handle logistics activities</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
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</tbody>
</table>
5. Analysis and discussion

The purpose of this section is to analyze findings from the case companies by considering innovation capability self-assessment tool, interviews and aforementioned theories about innovation in logistics service provider companies. The research questions are discussed and answered on these aspects and with the sequence presented in the research questions section. Furthermore, a comparison between companies is made in order to understand the differences, similarities and unique implementations.

5.1 Logistics innovation

Rogers (1995) defines innovation as an idea, practice or object that is perceived as new by an individual or other unit of adoption. This condition is of course possible for many industries and logistics industry is not an exception. Logistics innovation is a new concept compared to the other types of innovations (i.e. product, process and organizational innovation). This situation emerged from the condition that logistics research has not focused much on innovation. This situation also highlighted by Flint et al (2005) and Wagner (2008). The authors state that logistics research has largely ignored innovation.

Flint et al. (2005:114) define logistics innovation as “any logistics related service from the basic to the complex that is seen as new and helpful to a particular focal audience”. It is hard to find different definitions related to logistics innovations. However, logistics innovation may be perceived as a combination of various innovation types.

Flint et al. (2005) give examples of logistics innovation such as the initial shift to inter-modal containers or radio frequency identification (RFID) usage in tracking activities of transported goods. Wagner (2008) gives examples for product/service innovations, such as temperature managed transport or real time electronic proof of delivery. Furthermore, with respect to process, Wagner (2008) defines innovation as the implementation of new or improved techniques, methods and procedures to increase quality of a service or reduce the cost of providing a service.

Logistics innovation has a close relationship with various types of innovation such as service innovation, process innovation or organizational innovation. Logistics innovation deals with administrative and technological innovations. With regard to this situation, Wagner (2008) introduces product/service innovations, process innovations, market novelties, product range novelties and product imitations. On the other hand, Mena et al. (2007) divide logistics innovations as non-technological and technological innovations. Wallenburg (2009) also analyzes the types of logistics innovations and divides these into internal and customer-oriented innovations.
Figure 17 demonstrates the concept of logistics innovation which is comprised of both administrative and technological innovations.

![Figure 17- Logistics innovation concept](image)

5.2 Management of logistics innovation

Logistics innovation applications differ from company to company. The applications of logistics innovation are also related with types of the logistics. It is possible that each organization has its own procedures or system for innovations. Even companies are not aware of applied improvements or innovations; there are different ways to apply innovation within organizations. The management of logistics innovation is important, however, it needs different approaches for different companies.

Different authors discuss the context of logistics innovations. With regard to this, Wagner (2008) divides logistics innovations as planned and ad-hoc innovations. In addition, Flint et al. (2005) identify a sequence of procedures (Figure 10) while introducing logistics innovations. ELA and Arthur D. Little Consultancy (2007) also introduce logistics innovation management process (Figure 13) and emphasize the inner-logistics innovations and customized logistics innovations for customers. Although the literature focuses on planned logistics innovations, ad-hoc innovations constitute a great place in the management and application of logistics innovations.

From the literature, a simplified model can be structured as shown below (Figure 18). In this figure, ideas and information refer to the created, gathered intelligence and ideas from the outside or the inside. After this phase, management and technology shape the gathered information according to the needs of the organization and the customer.

The generation phase is comprised of the structuring phase of generated ideas, afterwards, customer insights, demands and financing elements are effective in selecting best ideas. The competition element is also effective because companies which want to gain advantage should not underestimate competitors.

The implementation phase is the final stage for the best ideas that were generated and selected. It is necessary to indicate that the arrows at the top and the bottom of the figure demonstrates the interaction between the organization and the outside elements of the supply chain.

Organizations’ innovative attitude comprises the elements discussed in chapter 2.10. Of course all elements cannot be possible for all organizations. It is certain that the elements
mentioned, for instance risk taking, freedom, strategic leadership and others affect the logistics innovation processes.

Figure 18- Planned logistics innovation management

While planned innovations can be seen in many logistics service provider organizations, ad-hoc or simultaneous innovations are also possible. As revealed in this study, companies without a structured innovation process mostly depend on innovation agents. The innovation agent refers to the managers within organizations who are fully capable of arranging and gathering ideas, information and structure innovations and developments. While analyzing case companies, it was revealed that logistics companies use ad-hoc type while constructing logistics innovations. This means that logistics service providers ignore some phases within the logistics innovation management process. Thus, ignored steps are filled up by innovation agents (i.e. managers). A model may be structured such as below:

Figure 19- Ad-hoc or unplanned logistics innovation management

Figure 19 briefly describes the ad-hoc logistics innovation which ignores some aspects discussed in other logistics management processes. It is possible that logistics service providers without planned innovation processes use such kind of model. This condition arises from many reasons.

First of all, when compared with other companies in the sector, small companies use agents. Innovation agents placed in such organizations are the key facilitators because they have full responsibility for implementing and selecting the best ideas. However, this situation is somehow difficult and risky. This is due to the fact that companies which cannot find adequate human resource may face an uncertain position of determining right innovation and development choices.

5.3 Factors affecting logistics innovation

As mentioned above, company analysis was done in terms of different aspects. These key elements for logistics innovation are:

- Management,
- Finance,
- Knowledge,
- Technology,
- Customer,
- Competition,
- Organizations’ attitudes for innovation.

This section will analyze the effects of key elements which has effect to innovation activities in companies.

5.3.1 Management

The effective and efficient use of management resources and their support are necessary to company based innovations and improvements for the logistics infrastructure. In this sense, Richey et al. (2005) analyze management resource commitment to reverse logistics innovation. On this subject, Grawe (2009) points out a positive relationship between management resource and logistics innovation. Management support and commitment differs from organization to organization. In this thesis, it may be concluded that management perspective of company A, B and C also differ.

Company A’s management perspective may be interpreted as highly eager to new ideas and improvements. Management’s support of the employees and the trustful environment strengthens the supportive environment for innovations. It can be seen that management’s openness fosters the idea creation. These attitudes can be supported by created improvements and innovations (i.e. public relations for customers and customer satisfaction activities). Furthermore, Company A uses agent element for effective decision making and innovative actions. The agent of Company A is highly aware of environment and trends of logistics sector. This situation enables company to get relevant knowledge on time and get supportive actions regarding to demand or other type of environmental changes (i.e. price, customer trend changes).

For Company B, the innovative climate and support for innovations and improvements are low. This situation can be supported by the lack of innovative actions, improvements and the number of produced innovations. The attitude and perspective of Company B’s management towards innovation and improvements may be commented as insufficient. Therefore, it may
be argued that this situation will eventually affect both the employees and the management. Although the management has efforts for developing services, the lack of gathered information and insufficient information regarding the logistics sector and customer demands, creates a bottleneck in understanding customer insights completely.

Company C’s management support and commitment is at a fine level. This finding may be supported by innovations under consideration and completed innovations. Although, Company C experienced a failure in one of its innovation attempts (i.e. vehicle tracking system), management support and commitment did not decrease. Moreover, the company tries to produce new improvements and ideas for their future attempts.

In conclusion, there are differences between companies regarding to management element. Between these three companies, a comparison for this element is useful to understand the differences and variations at business level. Below, lists of differences between companies were revealed:

- Agent issue (innovation agent),
- Awareness of innovation,
- Accurate timing for strategic decisions.

In order to describe the differences briefly; first, it should be said that the agent element is used effectively in Company A. However, for other companies (Company B and Company C) there is no effective and efficient use of agents. Here, agent means an employee of the company. With the adequate information which is gathered by agent the necessary information for customer demands or other means of developments and innovations are structured adequately. However, Company B and Company C are dramatically faced with the gap of this element.

Another issue is the awareness of innovation which may be understood from the general environment of the companies and there is a great difference between the companies. Its awareness about innovation would assist the company in capturing the information necessary for following the innovation through. In Company A the awareness of innovation creates a climate for both employees and managers to set their goals to innovate and to generate new ideas. However, for Company B, it may be seen that there is a lack of awareness about innovation. This finding is supported mostly by the manager’s viewpoint on innovation and improvements. Setting routines and their continuation is important for Company B and this situation results in a neglect of innovation awareness. For Company C, there is an adequate awareness for innovation, however, compared to Company A, Company C is in very low condition. On the other hand, Company C is at a higher level compared to Company B. It may be evaluated that Company C is highly aware of the change for trends and customer demands. Moreover, the managers are aware of the rapid progress in technology. However, on account of other reasons (i.e. problems about financing), investments, improvements and innovations remain merely at the level of ideas.

Another remark about differences between the companies is the accuracy of strategic decisions made by the management. It is important to construct and set organizational goals and decisions within the relevant time and revising them. Company A is highly capable to set the accuracy of certain decisions. For instance, as an organizational strategy, continuous investment in logistics equipment, understanding customer insight and generating innovative actions provide a positive reputation for company. To give an example for this section, the software program developed in Company A reduces consumed time during negotiations. On the other hand, Company B is very conservative about taking strategic and innovative actions.
This is because the management is highly dependent on routines and the changes related to logistics activities are ignored. This situation eventually affected customer satisfaction and created a bottleneck in the customer-company relationships. For Company C, the situation is different. It is important to understand the infrastructure methods of invested technologies; however, Company C has a bad experience in this. As mentioned in previous sections, Company C’s innovation for the tracking system could not be fully exploited and this resulted in great financial loss. One of the lead users of this system, Company C underestimated inconsistencies in roaming systems between countries. The timing and intelligence is not in the right condition however, the board of management could not foresee this situation.

5.3.2 Finance

As one of the key elements, finance acts as a stimulator of innovation within companies. Financial commitment for logistics innovation is also taken into consideration by Richey et al. (2005). Richey et al. (2005) indicate that financial resource commitment has a positive effect on reverse logistics. On the other hand, Grawe (2009) highlights that financial resource is positively related to logistics innovation.

It may be inferred that Company A has a high level in the subject of supporting logistics activities. This situation may be connected with investments which are occurred periodically. For instance, buying additional vehicles and renewing the current vehicles periodically are examples and evidence for financial resources used in order to increase the customer satisfaction. Of course, financial resources are important regarding to achieved and considered developments. In this sense, Company A is able to balance managerial resources and financial resources. As a consequence, allocating financial resources and using them effectively increases the innovative ideas and possible problems regarding to finance were minimized. From another view, in order to fulfill possible customer demands financial resources used effectively for instance, using special design trailer tents or public relation activities.

For Company B, it may be inferred that financial resource use is not actually at a high level. The financial element for Company B may be examined from various aspects. First, Company B renews its vehicle fleets and this situation is definitely in interplay with the management’s attitudes. It was revealed from the interviews that financial resources were used only for necessary developments. This means that additional innovative actions could not find proper support.

On the other hand, Company C has efforts in creating innovative ideas. Managers of Company C are aware of finance problems of company and its effect to investments, developments and innovations. Due to the lack of financial resources, improvements and possible innovative ideas could not be implemented.

In conclusion, the three companies have unique characteristics on the financial aspect. A comparison between the case companies reveals some interesting differences:

- Company A’s financial capability is enough for relevant logistics investments and innovations,
- Company B’s financial capability is enough for relevant logistics investments and innovations however, it was experienced that there is no extensive effort for innovations and developments,
- Company C’s financial capability is not enough compared to other two companies and this situation effected the innovation process also. However, the level of willingness to innovate is high compared to Company C.
5.3.3 Knowledge

This component of logistics innovation and its importance has been discussed and highlighted by some authors (see Wagner, 2008; Chapman et al., 2003; Flint et al, 2005; Grawe, 2009). Knowledge element should be used in order to understand and gather relevant information from market and sector environment. Knowledge becomes one of the major sources for competence in today’s economies. In this sense, according to Chapman et al. (2003), a worker with high knowledge has a high status and plays a leading role, because the knowledge of their employees is the single greatest asset possessed by companies today. Furthermore, knowledge resources are mostly related to learning and teaching within companies.

A company’s commitment to provide contemporary knowledge by being a “learning” and “teaching” organization is essential if a company needs to sustain and enrich the value of its knowledge resource (Chapman et al., 2003). Furthermore, Flint et al (2003), argue that learning enables the inclusion of additional ways of understanding the customer desires and sharing them through the organization. Moreover, Grawe (2009) indicates a positive relationship between knowledge and logistics innovation. The analysis for knowledge element used for developing innovations and improvements in case companies has been discussed, also a comparison between companies has been mentioned.

In the light of such information, Company A’s knowledge acquisition and knowledge sharing are at a high level. This situation may be supported by some evidence within the company. Company A had a horizontal organizational structure which enables the transformation of knowledge and information effectively and efficiently. Gathering external and internal knowledge is a crucial activity for the company, revealed by the interview, during which the importance of relevant market intelligence was mentioned. It was perceived as crucial in management’s perspective. External knowledge sharing is one of the critical elements for innovation because it enables those ideas overlooked within the organization to be captured by outside expertise.

For Company B, it may be inferred that subjects of logistics were connected with and affected knowledge resources poorly. The intelligence gathering about the market and the sector is not in a good shape, because as mentioned above, Company B could not effectively use internal and external knowledge acquisition processes.

Furthermore, Company C’s level of use of knowledge resource may be inferred to be average because, the relationship with external knowledge resources is not highly structured. For example, without any feasibility reports and expertise recommendations, Company B has experienced a lot of difficulty with its vehicle tracking system. Such innovations and improvements should be considered carefully in order to minimize the risks.

In order to compare case companies these considerations should not be underestimated:

- External and internal knowledge gathering,
- Knowledge sharing within company.

There is some difference between the companies regarding the issue of knowledge. For instance, whereas Company A uses knowledge resources (i.e. trade unions, external experts, universities etc.) efficiently, there is no sign of such relationship for Company B. Company C, on the other hand, is much more inclined to make use of the external knowledge element compared to Company B. Furthermore, while Company A structured an effective and efficient knowledge transfer system within the company (i.e. less procedures, more
interactivity between employee-manager), the other two companies could not benefit from such kinds of activity within their processes.

5.3.4 Technology
Technology and related advancement act as a determinant for innovations and novelties. Chapman et al. (2003) indicate that, technology has a direct effect on the creation of innovative services. Furthermore, Richey et al. (2005) also emphasize the positive effect of technology on reverse logistics innovation. Grawe (2009) proposes that technology resources have a positive relationship with logistics innovation. This is true for several reasons. Logistics services have been historically developed in terms of delivery, distribution and warehousing systems. Technology resources have been used for optimization of routes, optimal lead times etc. Furthermore, various instruments are used for other reasons, for instance, tracking goods (i.e. RFID) or enhancing communication (i.e. EDI). Of course, these are used and developed for meeting customer demands.

The case companies use technology resources at different levels. The comparison between the companies reveals that the more willing the company is to innovate, the more technology is used and adopted. Company A uses technology resources with a high level. This may be proved by the software and programs used by the company. Company A mostly develops software designed by the manager himself and structured to meet customer demands. Furthermore, additional technology instruments are under consideration, such as the use of RFID solutions in warehouse and trailers to track material movements.

In Company B, technology resources are not completely effective in terms of logistics activities. It was found out that Company B uses traditional instruments for fleet operations (i.e. spreadsheet) and this brings a burden to the company. The flexibility of the company decreases for the reason that the company is not able to assign vehicles to customers in the case of emergent demands.

Company C’s condition with respect to the technology element may be inferred not to be in a good position. There is no effective use of technology resources. For instance, fleet movements are organized in the traditional manner.

In order to compare the case companies, it may be inferred that Company A is the only company that effectively uses technology resources and invest such instruments. On the other hand, Company B and C are faced with consequences of this insufficiency of technology resources. For the reason that logistics activities are highly connected with technology, Company B and C should be aware of such improvements and developments.

Another issue worth mentioning is that technology resources and usage are mostly related to financial position of the company. It may be expected that financially strong companies are more confident in searching and implementing relevant technological instruments. It may be seen that, of the three case companies, Company C is not capable to finance relevant technologies which are necessary for logistics activities. On the other hand Company B has potential but ignores investing in such technologies which will support logistics activities. This situation may be inferred from the general attitudes of the managers and agents in the company most of whom accept the routines of logistics activities.

In conclusion, companies face pressures to adapt to technological progress, which has become a precondition for success. Thus, it is possible to demonstrate that technological progress induces logistics companies to innovate and introduce service novelties to their customers.
5.3.5 The Customer

The customer element should be considered as another crucial aspect for key logistics innovation. Yet, service innovation and product innovations are achieved to meet customer demands and to construct a level of customer satisfaction. This is important from various aspects. The changing patterns of today’s customers, increasing demand types force companies to meet them.

According to the study of European Logistics Association (ELA) and Arthur D. Little Consultancy (2007), customers’ selection criteria for logistics service providers are changing. Among various criteria including price, reliability, innovative power and flexibility/customer orientation, the analysis shows that between the years 2007 and 2012, customers intend to choose companies with innovative power and flexibility/customer orientation (ELA and Arthur D. Little, 2007). In this sense, customers become a positive reflector for companies which have good relationships with them - in order to understand the general trends of sector. Moreover, the companies in the case studies were mostly aware of this situation. In the next section, the comments about customer relationship and a comparison between case study companies are analyzed.

Considering Company A’s characteristics related to customer satisfaction and relationship, it may be inferred that the customers have a great influence over the company. The company tries to construct a good relationship with its customers and in order to achieve this, many instruments help the company. Information sharing with the customers (which mean what customer wants or how company finds solution for certain problems) eases the burden of procedural processes.

Company B on the other hand, experience difficulties in establishing an appropriate information flow with the customers. During site examinations, it was revealed that, relationship with the customers was achieved only on a procedural base. Hence, this situation neglects the information transformation from the customer to the company and restrains the company’s awareness of customer insight.

For Company C, it may be said that customer satisfaction and meeting demands are important. However, it may be inferred from the company profile that Company C does not construct an intensive relationship with its customers. This situation is related to the demand and supply situation. During the interviews, the manager of the company indicated the company’s customer profile. Their customer profile does not pose much challenge, resulting in a lack of motivation for the company to become innovative in this area.

Thus, the following should not be underestimated in evaluating the companies’ innovative attitudes:

- Customer insight,
- Customer relationship,
- Customer profile.

Retaining customer insight, relationship and understanding the changing type of customer profile are achieved by Company A. This is so because during the interview, manager indicates that they oriented company regarding to customers. This means that Company A has efforts for getting customer insights. In order to give example for this situation, special price variations and additional distribution routes for customer can be good examples. Selecting and considering customers that pose an appropriate match with company is another strategy for creating innovations and improvements.
A proposition such as the better relationship the more innovative activities can be said. On the other hand, such situation cannot be structured effectively in Company B and Company C. This condition also effects innovation and improvement decisions of both companies. With this regard, customers with more demands regarding to logistics activities push forward the companies to become more innovative and creative in certain activities. Thus, a proposition such as the more innovation awareness of customer resulted with more innovative companies can be stated.

5.3.6 Competition

Today a fierce competition may be observed in almost every industry. Either in manufacturing or knowledge intensive, or the service sector competition, companies are under a competitive pressure to view the environment, customers and trends differently. The increasing number of competitors and the fast change in customer demands push companies into adopting new approaches to maintain and attract customers. In such a competitive environment, to gain advantage and to differentiate themselves, companies should use competition as a trigger element.

In this context, Grawe (2009) points out the positive relationship between competition and logistics innovation. The companies under study deal with an intensive competitive environment. Thus, a discussion regarding the competition element has been conducted and a comparison between case companies is made.

Among the three companies, it may be inferred that the level of the importance of competition and its effect on the innovative characteristics of the company are different for each case company. With this regard, Company A achieved competitive advantage by combining various elements. For instance, according to the manager of the Company A, it is necessary to gather data before other companies in the sector. Furthermore, the process does not end at this point, because the use of relevant knowledge also poses a curial element. Using relevant information in time is going to create a competitive advantage eventually. For instance, the dynamic pricing issue attracted many customers according to the manager of the company; because this attribute provides flexibility for the customer. On the other hand, the cross-check for this information should be collected for further research.

The Company B’s specialist also indicated that they are considering opening new routes which may be considered as innovation because the specialist indicates that customers are demanding this kind of service.

Company C also considers innovations in order to gain a competitive advantage. The vehicle tracking system was an innovation attempt in the view of the customers although the company experienced failure in the end.

In conclusion, it may be stated that, competition has positive effects on the three companies. Yet, the level of effect is different for each company. Company A combines the competition element with its financial and management attributes and gains an important advantage in the sector. Company B and C are not in a good condition and competition level due to management and financial disadvantages.

5.3.7 Organizational attitudes

The aspects discussed in part 2.10 reveal that organizations are organic life forms which interact with environment and have internal dynamics. The aspects mentioned here are freedom, risk taking, support and space for ideas, trust and openness, culture, environment, coordination of inputs, learning skills, team working, shared vision, in-house and outside
information channels and qualified management and leadership. These aspects should not be underestimated by managers. Of course this condition is true not only for organizations which operate in different sectors but also for logistics service provider companies.

Additionally, it cannot be expected that, companies includes all the success factors. The success factors mentioned below cover both organizations, individuals (i.e. employees) and managers. However, as mentioned above, it is not possible to experience all elements. Nonetheless, agents should provide the minimum requirements and these minimum requirements probably are going to increase the efficiency and effectiveness of the innovations.

5.4 Risk factors
The unpredictable and different various risks should not be underestimated while considering innovations in logistics sector.

- Customer profile- the increasing demands and variety of demands of customers are challenging for companies. This situation poses a risk because companies without appropriate classification of customers mostly try to fulfill demands which do not match with the company’s current condition at all. Furthermore, the knowledge about customers and their needs and demands also creates a risk if an appropriate information gathering is underestimated.

- Uncertainty of the sector and the increasing number of competitors in the sector, both pose stimuli for innovation but these also pose risk for companies which are late for necessary innovations and developments. The increasing number of competitors lowers prices and this situation eventually affects small companies with good ideas for innovations.

- Cost issue- planning a budget associated with innovations and improvements is important. Companies mostly underestimate additional costs and this results in the neglect of companies for further innovations and research. Before implementation, cost estimations and planning are necessary.

5.4.1 Innovation capability and logistics attitudes
This section discusses logistics service provider companies’ innovation capability and their logistics attitudes with regard to the case company findings. The innovation capability of the case companies were discussed individually in previous parts (i.e. Findings chapter).

Firstly it is crucial to mention that, innovation capability assessment is necessary in order to validate interviewees’ answers. Thus, the measurement tool is capable of and reflects a holistic view to organizations’ innovation perception. However, while this study tries to understand logistics innovation, it is important to add a measurement for logistics attitudes of companies. Thus, a small survey was conducted and it was revealed that there is a positive relationship with logistics innovation capability and the company’s logistics attitudes.

For Company A, the general attitude for innovation capability is very high compared to other case companies; for the reason that Company A had structured its organizational innovative attitudes and other factors (i.e. management, finance, knowledge, customer, technology, competition). On the other hand, the innovation capability of Company B and C is not at a high level. The reason is that companies are not able to use factors effectively and efficiently.
Companies which are incapable of using management, financial and knowledge resources are suffering in reaching customer insight and this prohibits companies from finding out the right improvement or innovation.

At the table below, a comparison of the case companies is demonstrated:

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<th>Innovation Capability</th>
<th>Logistics Attitudes</th>
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<td>Company B</td>
<td>4.3</td>
<td>3.8</td>
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<tr>
<td>Company C</td>
<td>4.9</td>
<td>4.5</td>
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</table>

It may be evaluated that, the difference between the innovation capabilities of the companies arise from their perspectives. In other words, each company sees innovation in its own way. For instance, the Company A got the highest point in innovation capability. This was possible due to the fact that Company A is more aware of innovative actions and effects to the company performance. Scores of Company B and C are nearly the same; however, Company C is more interested in developments and improvements even though it was faced with a bad experience.

With regard to the results, it has been revealed that, there is a positive relationship between innovation capability and logistics attitudes of the company. The companies with higher scores on innovation capability values got higher logistics attitude scores. This is valid for all of the case companies.
6. Conclusions and further research

This chapter provides concrete answers to the research question derived from the case analyses and the literature review. With a comprehensive literature review and analysis of case companies, new results and additional knowledge have been revealed. Applicable recommendations and conclusions may be made from the relevant literature study and case studies.

Logistics service providers and their relationship with innovation have been discussed by many authors (see Table 1). Hence, logistics innovation is becoming crucial for the logistics sector as well as other sectors. In addition, Flint et al. (2005) and Wagner (2008) and Evangelista et al. (2008) indicate the lack of knowledge related to this concept. Briefly, the definition of logistics innovation given by Flint et al. (2005:114) is “any logistics related service from the basic to the complex that is seen as new and helpful to a particular focal audience”. Logistics innovations may be observed in various forms. It may be an administrative effort, a technological improvement or an organizational change within the company. The main idea here is to serve and meet the demands of customers.

Authors such as Mena et al. (2007), Wallenburg (2009), Wagner (2008) and Germain (1996) differentiate logistics innovation and give specific examples. For instance, investment in equipment may be a logistics innovation, as well as the use of RFID technology in logistics activities. In this context, while analyzing the case companies, vehicle tracking, increasing vehicle number (i.e. increasing the fleet number) or public relation efforts were considered as logistics innovation. Thus, any idea or physical material which is helpful to the parties of the supply chain may be considered as logistics innovation.

The management of logistics innovation is another topic which has been discussed in the previous chapters. The application of logistics management in logistics service provider companies differs in planned and ad-hoc types. With regard to management of logistics innovation, ELA and Arthur D. Little Consultancy (2007), Flint et al. (2005) and Wagner (2008) discussed the occurrence of logistics innovation and management of logistics innovation.

Figure 18 and Figure 19 in previous chapters describe the planned and ad-hoc logistics innovation. The planned logistics innovation follows a linear process which includes gathering information, generating, selecting and implementing phases. On the other hand, the ad-hoc or unplanned logistics innovation ignores some of the phases and replaces these with innovation agent. Innovation agents (i.e. managers) are responsible for arranging ideas and selecting them as well as generating the developments.

Both the types of logistics innovation have some drawbacks. The planned management type takes more time comparing to the ad-hoc type. In another view, the ad-hoc type suffers when there is a wrong selection of human resource. With this regard, as represented in Figure 18, in planned logistics innovation process, companies follow a linear way to achieve innovations while keeping communication and information channels.
On the other hand, logistics companies may use and consider the ad-hoc process in creating innovations. This type of innovation management system is applied by the companies with no formal research and development procedure or defined structure for developments. With this method, companies reduce the time consumed by procedures such as generation and selection. These phases are eliminated and replaced with innovation agents (i.e. managers). The innovation agents are carefully positioned employees with an extensive knowledge about the logistics and also customer insights and with this way, they are able to perceive and gather relevant information and create or think logistics innovations.
6.1 Key elements and their effects to logistics innovation

It may be summarized that some elements have positive effects in introducing innovations in logistics activities.

- **Technology** - it is necessary for companies to understand and use relevant technologies for appropriate logistics activities. It is highly possible that companies use technology instruments to gain a competitive advantage.

- **Competition** - the innovative activities fosters with a chain effect. Companies either benchmark or produce unique solutions for certain problems. Competition enables companies to stay fit and ready to response to changes.

- **Customer** - companies which have good links with the customers are naturally more aware of customer insights and are in a better position to offer necessary innovations and improvements.

- **Finance** - financial power of the company is necessary to finance developments and innovations. Of course this element is needed mostly in the implementation and application phase, whereas finance should not be considered as a must for creating innovative ideas.

- **Management** - managers and agents for innovations and improvements and their support and guidance are crucial. Without a proper declaration of corporate aims and goals employees are going to be frustrated and confused. The necessary commitment of management to innovative activities and trustful relationship with employees will prosper the introduced innovations.

- **Knowledge** - internalizing appropriate information channels and making use of these efficiently also triggers the activities of change and innovative ideas. The relevant knowledge of agents (i.e. manager, experts) should be combined with the other elements. Gathering or acquiring external knowledge and examining them with internal knowledge channels eventually increase innovative ideas.

- **Information & communication** - this element could be a linked with knowledge. The market intelligence, and customer relationship level decrease the risks associated with change occurred within company or innovations under consideration.

- **Innovative attitudes of the organization** - the aspects mentioned in Chapter 2.10 affect organizations in terms of acquiring and disseminating knowledge and the characteristics of the organization towards innovation is shaped by those elements. Here, organizations’ innovative attitudes emerge from the organization, employees and managers. It may be said that such attitudes will increase the efficiency and effectiveness of the innovativeness of the company.
6.2 Risk factors in developing innovations in logistics companies

The unpredictability and variability of risks should not be underestimated during the consideration of innovations in logistics sector.

- Customer profile- the increasing demands and variety of demands of customers are challenging for companies. This situation poses a risk because companies without appropriate classification of customers mostly try to fulfill demands which do not match with company’s current condition at all.

- Uncertainty of the sector- the increasing competitors in sector, pose a stimulus for innovation but also pose a risk for companies which are late for necessary innovations. The increasing number of the competitors lowers prices, however; this situation eventually affects small companies with good ideas for innovations which means that small scale companies will focus more on daily routines instead of focusing fully on creating new ideas.

- Cost issue- planning a budget associated with innovations and improvements is important. Companies mostly underestimate additional costs and this prevents companies from making further innovations and research. Before implementation, cost estimations and planning are necessary.

6.3 The innovation capability and logistics activities

It has been revealed that the innovation capability of the case companies affect their achievement in their logistics attitudes. Higher logistics capability results in higher effective logistics activity level. With this regard, it may be concluded that innovations and logistics are at close interplay. Companies that are logistically effective and efficient are more innovative companies and logistics innovations provide leverage for companies to increase logistics operations and internal innovative decisions.

Innovation capability results and overall logistics attitudes results of the companies have been demonstrated. In accordance with the findings, it may be argued that companies with higher innovation capability are more capable in their logistics attitudes. Briefly, if the innovation capability increases the logistics attitude score increases as well, and if the innovation capability decreases, the logistics attitude score decreases consequently.

6.4 Limitations and further research

This thesis analyzes multiple case study companies from the logistics sector. However, quantitative analysis is necessary in order to generalize the study. Furthermore, additional research should be done to include other aspects such as customers to analyze both parties to the logistics processes. Since this study includes only three companies, it is possible that additional case companies may be studied to deepen and generalize the acquired knowledge.

Some additional research points and areas are listed below:

- A quantitative study is necessary,
- The customer’ side should be examined,
- A comparison between different companies with different size would provide an accurate understanding for the management of the logistics innovations.
References

Baccarani, C. (2005). What do you think creativity is and where can we find it?. The Asian Journal on Quality, 6(2), 90-104.


Access Date: 2012-02-02.


Appendix A
Main questions for interviews

1- What does innovation mean to you?
2- In the context of logistics sector, what are your general thoughts about innovations in the logistics sector?
3- How could you define innovation in logistics? In other words, how does innovation occur in logistics service provider companies?
4- How could you describe your firm’s management viewpoint to innovation?
5- How could you describe the attitude of the management to the employees in the firm related to the creation of new ideas, thought and innovative ideas?
6- How could you describe the firm management’s commitment and willingness to logistics innovation?
7- How do you manage relationships with customers within the firm?
8- How customers are effective in your firm development policies of your firm?
9- How could you describe the attitudes and characteristics of the customer profile?
10- Are there any projects, innovations and improvements created for answering specific customer demands?
11- Are there any innovations in progress?
12- How could you describe your innovation and project processes?
13- Do you measure the results of the projects and innovations applied?
14- How could you describe the commitment of technology resources to your logistics activities?
15- According to you, are these innovations and projects organization based or technology based or both?
16- How could you describe the commitment of knowledge recourses to your logistics activities?
17- How could you describe the commitment of financial recourses to your logistics activities?
18- What are your opinions about competition in the logistics sector?
19- How could you describe the relationship between logistics activities and innovation activities?
20- In which logistics area (i.e. warehousing, inventory, communication etc.) did your company make innovations?
## Appendix B

<table>
<thead>
<tr>
<th>Statement</th>
<th>Score 1 = Not true at all to 7 = Very true</th>
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<tbody>
<tr>
<td>1. People have a clear idea of how innovation can help us compete</td>
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<td>2. We have processes in place to help us manage new product development effectively from idea to launch</td>
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<td>3. Our organization structure does not stifle innovation but helps it to happen</td>
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<td>4. There is a strong commitment to training and development of people</td>
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<td>5. We have good ‘win–win’ relationships with our suppliers</td>
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<td>6. Our innovation strategy is clearly communicated so everyone knows the targets for improvement</td>
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<td>7. Our innovation projects are usually completed on time and within budget</td>
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<td>8. People work well together across departmental boundaries</td>
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<td>9. We take time to review our projects to improve our performance next time</td>
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<td>10. We are good at understanding the needs of our customers/end-users</td>
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<td>11. People know what our distinctive competence is – what gives us a competitive edge</td>
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<td>12. We have effective mechanisms to make sure everyone (not just marketing) understands customer needs</td>
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<td>13. People are involved in suggesting ideas for improvements to products or processes</td>
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<td>14. We work well with universities and other research centres to help us develop our knowledge</td>
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<td>15. We learn from our mistakes</td>
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<td>16. We look ahead in a structured way (using forecasting tools and techniques) to try and imagine future threats and opportunities</td>
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<td>17. We have effective mechanisms for managing process change from idea through to successful implementation</td>
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<td>18. Our structure helps us to take decisions rapidly</td>
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<td>19. We work closely with our customers in exploring and developing new concepts</td>
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<td>20. We systematically compare our products and processes with other firms</td>
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<td>21. Our top team have a shared vision of how the company will develop through innovation</td>
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<td><strong>22.</strong> We systematically search for new product ideas</td>
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<td><strong>23.</strong> Communication is effective and works top-down, bottom-up and across the organization</td>
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<td><strong>24.</strong> We collaborate with other firms to develop new products or processes</td>
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<td><strong>25.</strong> We meet and share experiences with other firms to help us learn</td>
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<td><strong>26.</strong> There is top management commitment and support for</td>
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<td><strong>28.</strong> Our reward and recognition system supports innovation</td>
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<td><strong>29.</strong> We try to develop external networks of people who can help us – for example, with specialist knowledge</td>
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<td><strong>30.</strong> We are good at capturing what we have learned so that others in the organization can make use of it</td>
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<td><strong>31.</strong> We have processes in place to review new technological or market developments and what they mean for our firm’s strategy</td>
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<td><strong>32.</strong> We have a clear system for choosing innovation projects</td>
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<td><strong>33.</strong> We have a supportive climate for new ideas – people don’t have to leave the organization to make them happen</td>
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<td><strong>34.</strong> We work closely with the local and national education system to communicate our needs for skills</td>
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<td><strong>35.</strong> We are good at learning from other organizations</td>
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<td><strong>36.</strong> There is a clear link between the innovation projects we carry out and the overall strategy of the business</td>
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<td><strong>37.</strong> There is sufficient flexibility in our system for product development to allow small ‘fast-track’ projects to happen</td>
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<td><strong>38.</strong> We work well in teams</td>
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<td><strong>39.</strong> We work closely with ‘lead users’ to develop innovative new products and services</td>
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<td><strong>40.</strong> We use measurement to help identify where and when we can improve our innovation management</td>
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Now plot a profile for the five dimensions:
Result of Questionnaire for Company A

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Result of Questionnaire for Company B

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