

# Evaluating Innovation Obstacles in the Logistics Services Sector during Economic Downhill

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**Abstract:** The economic crisis in Greece has created -first of all- a serious crisis in demand. The consumption was dramatically decreased, every form of trade was downscaled, and inevitably, shipping and export were seriously damaged. One of the pillars of the trade (and the consumption) is the management of logistics activities. Logistics' management includes the effective and efficient management of all the activities for the storage, handling and movement of products from the point of origin to the point of consumption. Many academics and practitioners argue that the companies in the logistics' services sector have been affected by the economic crisis more than any other sector in the country. Furthermore, the findings of several researches revealed that the companies in the logistics' services sector postponed investments especially in ICT and personnel training. This paper aims to answer the following question: "What is keeping logistics service providers from innovating?" It presents and analyses the findings of a questionnaire-based research, asked managers at the examined sector to evaluate the significance of the innovation obstacles. Managers can use the findings of this study in order to overcome potential difficulties and obstacles that might face in the near future regarding innovation initiatives.

**Keywords:** Innovation, Logistics services, Third Party Logistics, Economic crisis.

## 1. INTRODUCTION

One of the key consequences of the economic crisis in Greece has been the decrease of the demand. The last five years every form of trade was downscaled and production was downsized to a desperate degree and, inevitably, shipping and export were seriously damaged. Consequently, the economic downhill has had a huge impact in major service sectors of the Greek economy such as banking, insurance companies, and also the logistics' service sector. Today, the main players of the examined sector, the Third Party Logistics companies (or just 3PL's or LSP's) are facing a number of restraining factors such as the high competition, the constantly increasing fuel costs, and other social and political issues such as environmental regulations, infrastructure issues, and security. However, it is obvious that the most critical factors which are now threatening the 3PL Greek industry sources are the impacts of the current economic crisis and the drastic reduction of consumption.

The effects of the financial economic crisis to the global market at the logistics services sector have been the subject of several research initiatives. These researches have been focused either to logistics services providers (3PL's) or to operations / logistics managers of companies in various business sectors.

The PRTM Consulting group run a survey titled "Flexibility in Times of Crisis-2009 / An extended edition of PRTM's "Global Supply Chain Trends 2008-2010". One of the survey's findings was that one to two managers of the sample (which consisted of managers of 350

enterprises in USA, West Europe and Asia) considered that the main hurdles in the pursuing of profits are the variability of markets and the inability of making reliable forecasting of demand. Moreover, the majority of managers (more than 85%) argued that the complexity of markets and supply chains will get higher in the next few years.

According to another survey conducted by the “Eye for transport” in 2011, almost half of the managers declared that they would not make any new recruitment and 25% would keep their work force in low numbers. Based on the afore-mentioned there are 5 challenges that the managers need to face today: 1) Demand variability. 2) Ways to reduce costs. 3) Visibility across the SC. 4) Effective inventory management, and 5) Increased customers’ needs.

Capgemini Consulting in 2009 made a survey titled “Crisis dominates supply chain agenda in 2009” asking managers of 300 enterprises (62% in Europe, 16% in USA & Canada, 13% in Asia and 5% in Latin America) about the effects of the economic crisis in the examined sector. According to the results 65% of the managers argued that their companies’ strategy has been affected by the economic crisis more than any other factor and that also more than one-third had postponed investments in ICT.

On the other hand ICT is a critical success factor for the 3PL’s. ICT applications support the effective and efficient management of all the logistics activities (such as procurement, storage, handling and movement of products from the point of origin to the point of consumption).

The aim of this study is the identification of barriers that prevent logistics’ service providers from innovating especially regarding ICT investments. It presents and analyses the findings of a questionnaire-based research. Managers of the examined sector in Greece, were asked to evaluate the significance of the obstacles posed against innovation. The study is focused on the sector’s SMEs. As stated in [Martikainen et al. \(2013\)](#), despite the fact that logistic services have been identified as a source of competitive advantage for firms, the research theme has focused mainly on large firms and little attention has been given to the sector’s SMEs (Soinio et al., 2012)

In the following section, the findings of previous researches on the barriers for innovation especially in service-oriented companies are presented and analyzed. Their outcomes were used in order to identify and prepare a preliminary list of barriers. Then, managers of the targeted sector are asked to estimate the significance of the above barriers. Their responses are presented and discussed in section 3. In the last section the arguments arising from this study are discussed in addition to useful managerial insights. Finally thoughts on possible future research and challenges are discussed.

## **2. LITERATURE REVIEW**

### *2.1 LOGISTICS SERVICES*

In today’s increasingly global economy, as May (2005) notes, “transport is the life-blood of the twenty-first century economy”. Many researchers have noted that the development of transportation and logistics’ services has created, in addition to the numerous benefits, issues amongst others, related to air pollution, damage of ecological systems, noise and climate change (Wu and Dunn, 1995; Murphy et al., 1995).

According to Delfmann, Albers and Gehring (2002, p.204), and Wolf and Seuring (2009), LSPs are “companies which perform logistics activities on behalf of others”. In addition, as Sheffi (1990) notes, LSPs emerged from the outsourcing of logistic services to third companies.

According to Soinio et al. (2012) the outsourcing of logistics’ services in a developing industry and the range of services offered to customers is currently broader than it was in the past. They argue that “today there is more strategic and long term focus to increase market coverage, improve service level or increase flexibility processes that require multiple services of logistics information operational knowledge and relationships in addition to direct participation in the integration of the supply chain (Soinio et al., 2012. pp. 32-33). Similarly a

number of researchers have argued that customers demand more added value services from their logistic suppliers. In addition, the value of logistic services suppliers in the offering of the total product becomes increasingly important ([Wagner and Franklin, 2008](#)). [Vickery et al. \(2004\)](#), note that integrated logistic services are highly complex, uncertain and are characterized by high variability and interdependence among the parties involved. Research has shown that customers are willing to pay more for the added value services they are requesting ([Langley, 2012](#)).

## *2.2 INNOVATION IN THE LOGISTIC SERVICES SECTOR*

According to [Rogers \(1995\)](#), innovation is an initiative or process that is considered to be new. In the logistics' sector it is perceived as any logistic related service, simple or complicated that has practical importance ([Flint et al., 2005](#)). Innovation is a source of competitive advantage for firms and provides numerous benefits for companies such as increased revenues and improved processes ([Khazanchi, Lewis and Boyer, 2007](#); [McGrath and Ming-Hone 1996](#)). Firms that have been open to innovation are the most successful ones in the industry ([Kandampully, 2002](#); [Grawe et al., 2009](#)).

As [Busse \(2010\)](#) indicates, a number of researchers have argued that logistic companies have not been very innovative. Furthermore he adds that innovations in the logistics' industry have been initiated by customers and not by the firms (as noted also by [van Hoek, 2000](#); [Flint et al. 2005](#)).

There is an increasing need for innovation for the logistic service sector, due to various environmental reasons ([Busse and Wallenburg, 2010](#)). Numerous researchers argue that this need has increased since the logistics services are becoming more and more sophisticated ([Langley, et al., 2006](#); [Lieb, 2005](#)). Furthermore, the global environment allows for more competition thus the need for increased innovation ([Capacino and Brit, 1991](#); [Langley et al., 2005](#); [Semeijn, 1995](#)). In addition, since deregulation is allowing for more competition, ([Allen, 2005](#); [Jensen & Stelling, 2007](#)) and the need for lower costs, and higher quality -all these conditions taking place in a time-pressured environment- logistic services are forced to innovate. However others claim ([Ackerman, 1996](#); [Ellram and Cooper, 2000](#)), that logistic service firms are not very innovative. Some researchers believe that it is the logistic services' customers who demand the improvements ([van Hoek, 2000](#); [Flint et al., 2005](#)) especially in the area of new and innovative solutions and faster delivery times ([Langley et al., 2005](#)).

[Busse \(2010\)](#) suggests that the above characteristics affect innovation in LSPs and management innovation. The fact that these services require high capital investments on equipment, as well as that they are tangible in nature their effectiveness and efficiency, play an important role on the innovation related decisions. In his research they found that the differences in innovations between LSP's and non-LSP's are significant and should be further explored. In addition they have concluded that innovation in LSP's are more costly than non-LSP's and that LSP's should focus on the efficiency of their tasks and the return on the capital invested in innovation.

## *2.3 FACTORS THAT LEAD TO INNOVATION*

[Mehta \(2004\)](#) notes that the driving forces for changes in the Supply Chain Management arise from the external environment and the expected benefits to the firm. As external factors he specifies the advantages in technology, increased consumer demand and maintaining low costs that serve the more diverse consumer needs, as well as the increased competition.

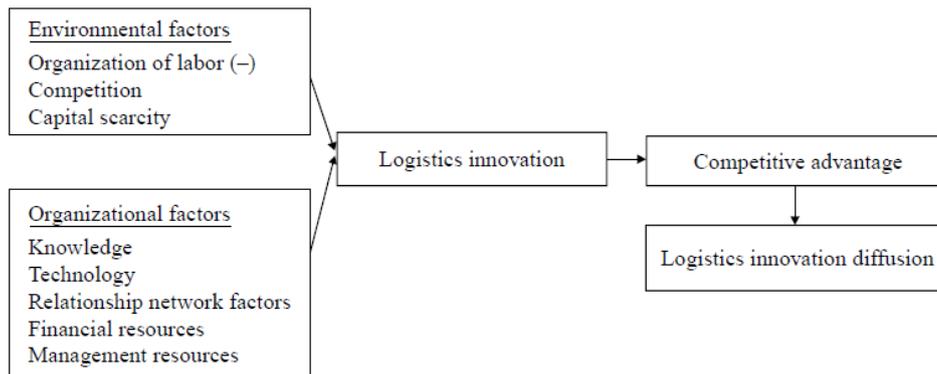
## *2.4 BARRIERS TO INNOVATION*

According to [Fawcett et al. \(2008\)](#), human nature is the most important barrier to supply chain collaboration, since individuals are reluctant to accept changes, often becoming suspicious and resistant to them. All barriers according to the same study are related to the human factor; in particular:

*“organizational culture and structure, functional conflicts, lack of managerial commitment, conflicting and non-transparent processes, policies, procedures performance measurement, information sharing, lack of trust, resource constrains and complexity of SC networks”.* (Fawcett et al., 2008, pp. 44)

Soosay and Hyland (2004) record six drivers for innovation in their literature review: available knowledge and information, performance measure, human resource management systems, organizational structure, procedures and protocols, and technology. In the findings from their investigation of Australian and Singapore distribution centers and managers, they identified seven issues: competition, employee orientation, customer orientation, shareholder orientation, financial reasons, and operational performance. The results were classified as very similar, which is also true for the theoretical model suggested by Grawe (2009). In the proposed model (Figure 1), Environmental factors (organization of labor, competition, and capital scarcity) combined with Organizational factors (knowledge, technology, relationship network factors, financial resources, and management resources) are positively related to logistics innovation with the exception of labor (negative relationship). This proposed model summarizes the research findings on innovation in leading logistics journals.

As mentioned earlier, to be successful in the new global technological and highly competitive market, logistic firms, which adopt innovation practices, can gain competitive advantage, a notion which is also supported by the Grawe (2009) model (innovation and competitive advantage are positively related).



**Figure 1: Factors related to logistics innovation**

An interesting observation regarding labor should be made at this point. In Grawe’s (2009) extensive literature review as well as in Fawcett et al. (2008), labor is considered as a negative influence on innovation. In the contrary, Soosay and Hyland (2004) note how important employees are since they try to acquire knowledge and information from various sources including the customers and they can, with proper management and favorable conditions, bring new ideas and innovations in their companies and overall improve/increase innovation. The latter finding is similar to Crossan, Lane and White (1999).

Grawe (2009) emphasizes the importance of the services sector and how well-paid and talented employees are contributing to the economy; hence, more of these highly trained individuals are needed improve the economy. Based on the above it is reasonable to conclude that there is a research gap on a) the barriers of innovation in logistic firms and, b) how these factors can become an obstacle for innovation.

Busse, and Wallenburg (2010) note that researchers (Lin, 2006, 2007, 2008, 2009 and Lin and Ho, 2008) have identified six factors that have an impact on technology adoption: a) explicitness and transferability of technology, organizational encouragement and, b) support for innovation, quality of human resources, government support, existence of an R&D department and capital size. Regarding the adoption of new technology, two are the most important barriers: lack of expertise on information technology and on implementation (Lai et al. 2005).

Fawcett et al., (2008), found that barriers to effective supply chain management arise from the firm's characteristics and from the individuals within the firm. They argue that "external and internal turf protection" lack of trust and of collaboration among partners can have a negative impact on innovation. Regarding the individuals involved with the processes, they identify the willingness to collaborate, managerial complexity and differences in the parties' structures, procedures, processes and culture as the most important factors impeding innovation (Park and Ungson, 2001). They also note that very often individuals are reluctant to share information, their knowledge and experiences because they fear they will become more vulnerable. On their survey research they identified as the greatest barrier to effective supply management the "inadequate information systems". The same researchers interviewed senior managers from the purchasing, manufacturing and logistics sectors. Interestingly enough the human factor (trust, poor communication, conflicts, commitment etc.) emerged as the most important obstacle to effective management of supply systems.

### 3. PRESENTATION AND ANALYSIS OF FINDINGS

This section describes analytically the methodology and the findings of a questionnaire-based research. Company managers, from the 3PL sector, were asked to first identify the obstacles for innovation and second to rate their significance.

#### 3.1 RESEARCH METHODOLOGY

This study is part of a greater research which has been conducted during the last 2 years. The purpose of the main survey was to investigate the influence of the economic crisis to the logistics services sector in Greece. The process of analysis revealed that the Third Party Logistics providers have been significantly affected by the crisis and these effects have influenced all the main functional areas of the logistics management (procurement, warehousing, inventory management, transportation and distribution). A number of research questions has arisen, one of the being, "*What is preventing logistics service providers from innovating?*"

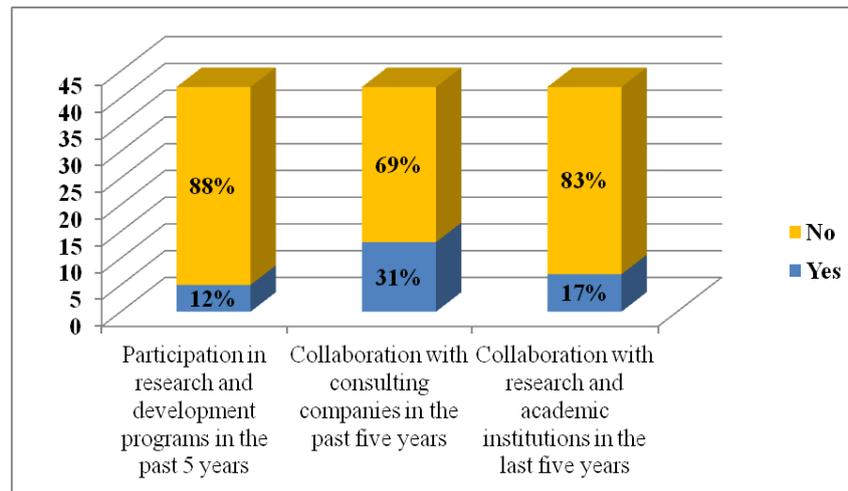
A structured questionnaire (see Appendix) was used as a survey instrument. It included a series of closed-ended questions, in a structured interview and resulted in a collection of quantitative data. Descriptive statistics were first utilized to provide a basic overview of the quantitative data. Qualitative data were analyzed more with some inferential statistics tests. The questionnaire was submitted to the logistics or operations managers of the Third Party Logistics providers in Greece. The initial list of 3PL's was taken from the online catalog of the e-journal of plant-management online journal ([www.plant-management.gr](http://www.plant-management.gr)). This catalog consists of approximately 150 SME companies that operate in this sector. Finally, 44 companies agreed to participate in this research. A corresponding number of interviews were arranged with the managers of these companies from March to June of this year (2013). The final number of the interviews was 42 which can be considered sufficient (27% percent). Twenty one questions were included in the questionnaire and were grouped in the following three parts:

- Part A: includes questions regarding the name of the company, the name of the responder and his/her main roles and responsibilities.
- Part B: in this part managers were asked to identify their previous participation in research initiatives. Specifically, whether they had participated in research projects and if they had cooperated with academic institutions and consultancy companies in the past.
- Part C: in this part managers were asked to estimate the significance of various barriers that emerged from the literature review. Fifteen barriers have been identified and managers had to rate their significance from: "0: No barrier", "1: Low (significance)", "2: Medium", and "3: High".

### 3.2 RESEARCH FINDINGS

The majority of the sample's companies (more than 90%) are located in Northern Greece. The respondents hold the position of General Manager (71.5%), Logistics and/or Operations Manager (19%), and Sales Manager (9.5%), which was expected due to the nature of the sample companies (SME's and 3PL's in Northern Greece).

The findings on the previous participation of the 3PL's in research initiatives are presented at Figure 2. According to the results only 1 out of 10 companies has participated in research projects in the five last years. Almost 30% have cooperated with consultancy companies and 17% with academic institutions.



**Figure 2: Factors related to logistics innovation**

Finally, regarding the significance of the fifteen barriers that emerged from the literature review the results indicate that the following five are the most significant based on their mean scores. In addition, the same results emerged by checking the mode (value that occurred most often). The results are presented in Table 1:

1. Non-support / encouragement to projects and innovation initiatives (culture) (Q15).
2. Lack of trained / skilled 3PL's personnel in innovation issues (Q14).
3. Difficulty in accessing support services and financing innovation projects (such as research and development programs) (Q9)
4. Lack of available information and expertise in introducing new products and services in the Greek market (Q5)
5. Difficulty of finding capital to finance innovation projects (such as bank loans, grants, funding development programs, etc.) (Q2).

**Table 1: Significance of barriers of innovation**

		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
N	Valid	42	42	39	42	42	42	42	39	42	42	42	42	42	42	42
	Missing	0	0	3	0	0	0	0	3	0	0	0	0	0	0	0
<b>Mean</b>		1,86	2,14	1,54	1,93	2,14	2,00	1,93	1,85	2,29	2,00	1,86	1,71	1,64	2,36	2,57
<b>Mode</b>		3	3	1	3	2	3	3	1 <sup>a</sup>	3	2 <sup>a</sup>	1 <sup>a</sup>	1 <sup>a</sup>	2	3	3

a. Multiple modes exist. The smallest value is shown

#### 4. DISCUSSION-CONCLUSIONS

The logistics industry is a key example of the service-based industry and is one of the dominant sectors in the Greek and global economy that has been “hit” dramatically by the economic crisis during the last five years. The paper addresses and studies the phenomenon of innovation in the Greek logistics industry and the obstacles to innovation firms are facing. The main objective was to identify and estimate the significance of innovation obstacles in the industry, during the economic downhill. A closed type questionnaire was constructed for the purposes of the study and sent to Third Party Logistic companies.

The managers, who responded, suggest that the most significant obstacle to innovation is related primarily to their company’s culture and human capital. These results are aligned to the findings of Tourigny and Le (2004) who considered these factors (Lack of skilled personnel and Organizational rigidities in the firm) as the third and fifth correspondingly most serious impediments to the sector’s innovation. Interestingly enough financing issues, which were expected to be the most significant obstacle to innovation in many service sectors, and especially in the examined sector, were identified as the third and fifth most significant obstacles in our study. The difficulty in accessing support services and financing innovation projects (such as research and development programs) was rated as the third most important obstacle to innovation according to our respondents. In addition the difficulty of finding capital to finance innovation projects (such as bank loans, grants, funding development programs, etc.) was regarded as the fifth most important obstacle. In many research initiatives the financial issues were considered as the most important obstacles (Boer and Caffyn, 2001; Soosay and Hyland, 2004; Boer and Gersten, 2005; Esper and Fugate, 2007).

The fourth most important obstacle -according to the findings- “Lack of available information and expertise in introducing new products and services in the Greek market” is an obstacle that also Zeithaml and Bitner, (2003) had identified in their study.

The findings of this research are of great practical importance to the individuals involved in the logistics sector, as they reveal the significance of barriers to innovation. As underlined in the 2013 Third-Party Logistics Study “innovation is a critical driver of growth, differentiation, and profitability; nevertheless, as the logistics industry matures and markets become more global, innovation in this industry is becoming more challenging”. It’s therefore a key priority for Greek 3PL’s to invest in innovation projects so as to confront with the negative impacts of the economic crisis.

It should be noted that due to the small sample size the generalization of the findings may not be possible. However, this paper presents an interesting and original inside look into the obstacles to innovation Greek 3PLs are facing. Another limitation is that most of the responding firms were companies from the northern part of Greece. To address the above issues the researchers intend to explore the issue of determinants of innovation in a larger sample size on a national level.

Finally, another interesting issue that has arisen from this study is how Greek companies deal and react to the obstacles identified. A comparative study with 3PLs from other countries with a more developed logistics sector could provide meaningful and practical information to the industry’s key individuals.

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## Appendix: Questionnaire

### *Part A: Personal info*

Last / First name:	
Company:	
Role and responsibilities:	

### *Part B: Experience in research initiatives*

	Yes	No
Participation in research and development programs in the past 5 years		
Collaboration with consulting companies in the past five years		
Collaboration with research and academic institutions in the last five years		

### *Part C: Barriers*

Classify (using a scale from 0 to 3: 0: It is not barrier, 1: Low, 2: Medium, 3: High) the following factors that may hinder innovation in your business.

	Factor	0: No barrier	1: Low	2: Medium	3: High
Q1	Lack of own capital for innovation				
Q2	Difficulty of finding capital to finance innovation projects (such as bank loans, grants, funding development programs, etc.)				
Q3	Inability to manage copyright issues and operational knowledge				
Q4	Lack of experience and capacity to manage innovation projects (without the support of third parties)				
Q5	Lack of available information and expertise in introducing new products and services in the Greek market				
Q6	Lack of available information and expertise in introducing new products and services in international/global markets				
Q7	Weakness in networking and cooperation with third parties (clients - stackers, suppliers, consulting firms, research centers / institutes, etc.)				
Q8	Non-satisfactory knowledge of the existence of bodies/organizations supporting innovation initiatives				
Q9	Difficulty in accessing support services and financing innovation projects (such as research and development programs)				
Q10	Non-satisfactory use of available market tools, practices, and tools to support innovation in 3PL's companies				
Q11	Lack of products (technologies, applications, systems and equipment, etc.) focused/geared to the specific requirements of Greek 3PL's				
Q12	Lack of services focused/geared to the specific requirements of Greek 3PL's				
Q13	Non-satisfactory implementation / use of technologies and practices of internet searching, finding and managing innovation				

	initiatives				
Q14	Lack of trained / skilled 3PL's personnel in innovation issues				
Q15	Non- support / encouragement to projects and innovation initiatives (culture)				