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# Structural Investigation of Project Logistics and Transportation

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**Abstract:** This paper contains structural studies in the field of project logistics and transport. Project logistics and transportation has become a field which is rapidly developing and requires ownership in a separate area of expertise. The study analysis the risks, process and management stages that can be encountered with the investigation of the increasing cost and different risk factors along with the interconnection of the logistics area with the other sectors and the three main basic values of the project logistics and transportation. This study, in which the results obtained in case of good flow of the project in logistics processes are evaluated, makes a literature review.

**Keywords:** Project Logistics, Project Transportation, Logistics, Logistics Process Analysis, Project Logistics Risk Elements

## 1. Introduction

In recent years, project cargo and transportation has been developing in the world. The main reasons are increasing labor costs and investment projects. Labor high country of the workforce of the production parts to countries with the lower ones (Factories), transportation, mining according to define sectoral investments, factories, energy, construction (airports, bridges, private / public facilities, etc.) In areas such as the transport of construction or continuity which is a requirement when parts It covers. In terms of quotas it is used, it is used to transport heavy and bulky goods (Sarı, 2016).

Project transportation is currently serving many sectors. They are divided into their own fields of expertise. For example, loading and unloading operations should be done within the engineers.

Project logistics, especially in the field of logistics operations in line with the spatial tasks; It covers the field operations such as handling, distribution, storage, and also the function of completing the production of semi-finished construction parts or machine parts, especially

in the construction sector. The reason for its customers across multiple institutions, bodies can provide integrated service instead of a single person, the people prefer not to see. In this case, the way to logistics companies is outsourcing.

Selection of application, technique and decision type in the field of project logistics and transportation has an important place.

## 2. Project Logistics and Transportation

Project transportation is an area that does not contain standardized methods, methods and techniques. (Örnek, 2009). The reason for this is that there are non-gauge materials in the first order. The equipment and tools used in these installations must be compatible with the size and power equivalent materials. The characteristic of the load to be carried, the route, the carrier according to the mileage should be determined (Sarı, 2016). Another factor that disrupts the transport standards is the type of transport we will use in the destination process. Sea, road and rail transport modes are more common to be determined according to the quantitative and qualitative status of the cargo and the destination to destination (Sarı, 2016). The type of transport covers the entire logistics area. Together, it is a factor that directly affects cost items.

Project logistics and transport concepts have a special meaning in the sector. (ERDAL, 2007) Within the scope of international transportation, transportation of cargoes (150 tons or more) considered out of gaps is considered as project transportation (GILLESPIE, 1992).

In addition to the transport factor in the logistics activities of the project, it fulfills the responsibilities of the customers, such as storage, handling and distribution, which are complex and demanding focus.

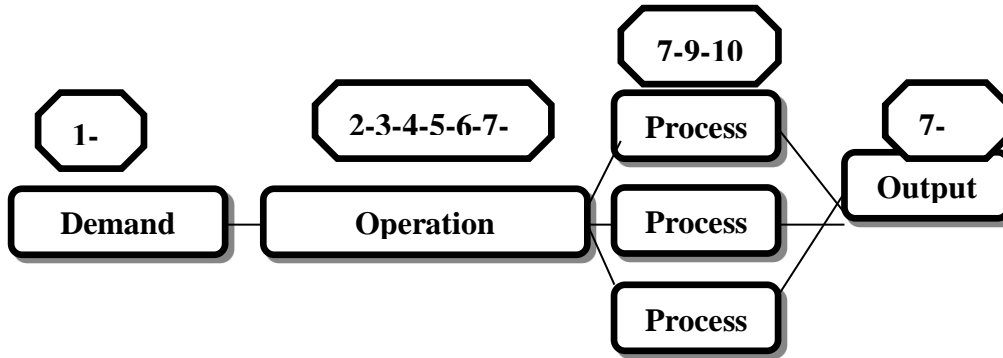
The choice of transport type in project transport is an important constraint in the exit and arrival (country, location, location) range. This process should be planned very well and data (size, volume and digital indicators of the goods to be transported) should be provided on site. The following factors are important when selecting transport type and mode (Örnek, 2009).

1. **Technical specifications of the material / goods to be transported:** It is an item that applies to all logistical activities. The project comes to the fore in logistics. The material width, length, height and weight measurements as well as structural

characteristics of should be presented. By determining the center of gravity of the material, the position of the load in the vehicle is formed.

2. **Consultation with experts if deemed necessary:** Project transport is an area that sometimes involves engineering and expertise activities. Therefore, the internal and external security of the material to be transported should be taken. For example, a material containing ADR (hazardous material) cannot be moved without the control and approval of the ADR expert.
3. **Risk management plans:** Materials plans to follow the route in position, all obstacles to the delivery of the material is determined to cause trouble. The next step is the removal or removal of our shaft.
4. **Possible risk areas:** In the case of risk areas, the status of the material to be transported or the service to be provided in the logistics area of the project can be mentioned which are different and which fall into the same category. This process is completely related to the progress and development of the project and can be said as concrete and abstract situations.
5. **Route of the materials:** It consists of determining the route to be followed and forwarding the reports by the leading team.
6. **National or international conventions:** It covers the documents used in the field of import and export.
7. **Legal process:** It is the process that proceeds from the beginning to the last stage of the project. It is carried out together with legal advisors.
8. **Insurance:** The materials are secured. An investigation is initiated for any damage union. In accordance with these reviews, concrete results are obtained.
9. **External security elements of the material:** The destruction of the material, the difficulties in the area of the climate and route, examples of confiscation of the material by persons / persons at unsafe crossing points can be given.
10. **Intrinsic safety elements of the material:** If the plans are not processed properly, the security elements that will be able to spread to the environmental factors will start to occur.
11. **Final Arrival Area Supply:** The destination area (project area) ensures that the material is protected and emptied in a healthy manner.

All stages of project logistics require coordination skills from beginning to end (Sarı, 2016). In this direction, the functional areas are numbered with the help of the figure and shown below.



**Figure 1. The distribution of the group of factors.**

There are three main basic elements of Project Logistics. These are "Health, Safety, Security". At the same time, the personnel who will work in the field of project logistics have to implement the OHS (Occupational Health and Safety) rules and environmental compliance should be taken into account (Örnek, 2009).

Another important constraint in the project logistics is the measures to be taken if the risk analysis results. This constraint is important in terms of the high financial value of the material to be transported and the high production time of some materials. Especially in terms of period, it is possible to encounter such materials in construction projects called mega projects. Material production can sometimes be more or less than this process if it can have processes over a year.

If the risk analysis data flow does not have an accurate transmission, a possible material loss may be encountered. This situation may leave the customer facing sanctions. Damage can be more costly than the service cost that given.

### **2.1. Project Logistics and Transportation Processes**

The process management and stages of project logistics and transportation take place in the form of a chain ring. The loss of three major essential elements (Health, Safety, Security) in the field of project logistics can occur in a weak or missing cycle of chain rings.

Project logistics and transportation processes consist of six main parts. These processes can be listed as preparation, analysis, design, planning, implementation, result and quality control (Çorak, 2015).

### 2.1.1. Preparation Stages

The preparation phase of the project not only includes logistics and transportation, as well as "project management" encompasses the area. Although the project management preparations are presented with different observations, they are the same as the variables.

The preparation phase is the stage of feasibility preparation. It is the most important chain link of the stage. Inaccuracies in the incoming data feeds the entire process in a time-sensitive manner. It can cause loss of life and property.

The feasibility study has to address the whole process of operation.

We can list the important elements of the preparation stage as follows.

- Receiving all technical information.
- Requesting technical drawings.
- Examination of operation processes.
- Establishment of the vehicle for the field operation (towing for the highway, full ship rental, etc.) and equipment lists.
- Examination and preparation of national and international permits for vehicles and equipment.
- Creation of cost items.
- Determining the transition routes and sending the front audience if necessary. Reporting of obstacles in vehicle transit or loading – unloading areas.
- The timing of the loads to be transported must be determined. Climatic conditions and final destination should be taken into consideration the land conditions. In this case, if there is a compulsory installation, the cost, the transport mode and the means to carry will be changed. This situation is one of the most common situations in project logistics transportation. Therefore, all decisions given by project managers should be reviewed in detail.
- Reporting and making a report

### 2.1.2. Analysis

The stage of analysis is the stage of how the operational processes will be carried out. This phase covers all items mentioned and identified in the operation process (Örnek, 2009). Supply chain management has an important place at this stage. The reason is the

procurement process of the vehicles and equipment to be used in the field operation (towing, forklift, crane, etc.).

### **2.1.3 Designing**

The phase of the final project is related to logistics and transportation. The cornerstones of the operation process are determined. The main lines of coordination occurs.

### **2.1.4 Planning**

The planning phase cannot be regarded as a standard operational system since there will be no standardized transport and field operation in the project logistics and transportation. Planning is an important element in project transportation. Transport documents and pass permits are obtained for the designated routes. Tools are prepared for escorting the vehicles determined during the preparation phase. Equipment procurement process and the field is given a date for the vehicle (Sarı, 2016).

### **2.1.5 Application**

The implementation phase is the stage in which the whole preparation process takes place. The checkpoints established on the specified routes are reported to the status of the transported materials. Insurance and customs procedures are carried out.

The drop off area is kept ready before the material. The equipment and the subcontractors to be employed in this field (if necessary, a contractor firm) are kept ready with the field equipment. In addition, pre-planned preparations are applied unless there is an opposite in the loading and unloading areas. There should be experts in these areas. In the loading and unloading areas, the reporting reports are made with the photographs where the plates of the vehicles taken from different angles appear. It is important to request vehicle location information from shipowner companies as project-based outsourcing in project logistics transportation. If the main contractor is doing the company transportation, the location information will be found in them. This rule will prevent vehicles from being off-route.

### **2.1.6 Quality Control**

The quality control phase is the finalization phase. The project is examined from start to finish. Profit – loss analyses are performed. If there are error points, it is possible to conduct research in these areas. The profit margin upgrade opportunities should be reviewed if the project is in the field of logistics. It is important to carry out satisfaction meetings with customers.

### **3. Differences of Project Logistics and Transportation From Sectoral**

Management of the project logistics area is not possible with a traditionalized structure. Since each project has different processes or process factors, suppliers can remain committed to the main contractor logistics company (Cebeci & Güner, 2015). This may disrupt the process flow of any project. Therefore, suppliers of equipment and shipowners must be suppliers. Labor law and its operation increases its importance in this field. The purchase and pricing of the projects is determined by the negotiation or tender procedure (Morledge, Knight, & Grada, 2009). This situation leads to a competitive structuring between logistics companies.

There are standard production concept and quality control stages among the differences of the project logistics area with other sectors. The quality and efficiency level is high in the stages of the replacement of a material which is produced with the standard approach and reaching the final consumer (Cebeci & Güner, 2015). However, the project takes a higher percentage of the time when the unique characteristics of the materials transported and produced in the logistics transportation are compared with the rate of change. This is a factor affecting productivity and quality ratio with structural differences (Morledge, Knight, & Grada, 2009).

On the other hand, climatic conditions and environmental conditions have a great impact in project logistics. Especially when it becomes important in construction projects, it gains a separate place. JIT (Just In Time, which reduces costs), as well as productivity advantages that are used extensively in other sectors, are not effective in terms of sustainability in project logistics and transportation (Sullivan, Barthorpe, & Robbins, 2010).

The challenges of climate and environmental conditions may depend on the condition of the material, especially in project logistics, but it may make the methods of storage and handling difficult. This differentiates the operational process from other sectors logistics activities. Electronic, oxidation-free, cracking or fracture likely to affect the environmental factor (Chemical-containing materials) is the leading group.

The structural differences in project logistics and transport can extend or shorten the list in terms of project site time and variable costs. This situation varies from project to project.

### **4. Project Logistics Interior Operation Activity: Area Logistics**

Area logistics is the management of the physical flow of the project area. Planning, organizing, directing materials to related departments and controlling stages in the project

area are of interest. The handling system, safety equipment, material acceptance and quality control include inventory management activities (Da Silva & Cardoso, 1999). Field logistics can be studied under three main headings. These; Material acceptance and control, handling and inventory management is possible to say (Cebeci & Güner, 2015).

#### **4.1. Material acceptance and quality control**

In the project area, counting and quality control of the materials for construction or intermediate production (eg machines used in galvanized sheet bending) is performed. In this process, purchase clause must be taken into consideration. The number and nature of the materials coming to the project area is important. In the quality control phase, any negative or qualitative factor should be purchased and returned to the upper units. If this process cannot sustain a health process, the time period devoted to the production or intermediate production period may increase.

Prior to material admission, the site of unloading, protection conditions (branding, stretching, etc.) should be determined and managed. One of the most important elements is to be in contact with the supplier and the supplier. In spite of these rules, carrier vehicles are waiting in the project areas or in regions close to these areas. Or the opposite material does not come within the agreed period of time. This situation has criminal penalties (CPA & SFC, 2005). According to the countries in progress of the project, criminal sanctions may vary.

#### **4.2. Handling**

Handling means moving and moving things with mechanics or manpower. As a logistics activity, it is called the loading and unloading process between the final points or the modes of transportation (Güner & Çoşkun, 2012). Handling can be done with forklift, trans pallet or manpower in low tonnage materials. In the case of large tonnage materials, manite, conveyor, crane etc. which can lift in terms of tonnage. can be provided with tools.

There are two types of handling in terms of space logistics. The first one is to unload the project area to the previously agreed area. The second one is to send the material to the region where the material will be used again in the project area (Cebeci & Güner, 2015).

#### **4.3. Inventory management**

Inventory management is important in project logistics. It is particularly complex in the construction sector, which has a significant place in the process from rough construction to fine work. The reason for this is the excess of material items and the variety of the same material type. It is easy to block complexity. This complexity will be eliminated in the case of stock counts, input outputs, location delivery and tracking of stock data for closed



warehouse and open field warehouses. However, when the factors such as intensive and job-building begin to occur, some personnel do not use this method.

Another inventory method is the user-managed (VMI) system. This system approach follows the stock quantities of the warehouse or manufacturer. When the stock amount falls to a certain level, the order pass is brought to the agenda (Wood & Murphy, 2008).

## 5. Conclusion

Project logistics and transportation vary in the logistics service area of many sectors. It has been observed that different feasibility studies should be made in sectoral sectors, from the mode of transport and transportation to logistics processes and from mode to inventory processes. This work is different from working in other sectoral areas, field studies are also different. In the field of transport, changes in transportation, form and duration are observed.

Site storage and inventory management in the project area is not a non-circulation model. However, it is possible to see some changes.

It has been determined that there should be an option in terms of environmental conditions and climatic conditions. It is in the foreground that preparation, planning and implementation should be done. In such cases, it may cause great harm to the environment and human factor if it is acted out illegally. While this damage is within the application area or the material is in the unloading and route areas, the three main, activities can be negatively affected.

Uncertainty of start and end dates of the project in the field of project logistics and transportation, Production time of materials, exchange differences affect the healthy processing of logistics processes. Therefore, the constraints in logistics project and transportation are large. SWOT analysis of the dangers criteria should be taken into consideration.

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