

e-Commerce Return Processes and Data Analysis in Logistics

Ahmet DAGLI¹, Serap Özhan DOĞAN^{2*}

¹Ceva Ceva Logistics R&D Department İstanbul-Türkiye
Email: ahmet.dagli@cevalogistics.com - ORCID: 0009-0005-0643-8358

²İstanbul Beykent University, İstanbul-Türkiye
* Corresponding Author Email: serapdogan@beykent.edu.tr - ORCID: 0000-0001-5210-1549

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Abstract:

E-commerce data transfers within the framework of logistics; It is a process that involves the transfer of products, customers, purchase reservations, return reservations and other data from an e-commerce platform (online/web) or store to logistics platforms. In this study, one of the largest transportation companies in the world is analyzed using case study method, which is one of the qualitative research methods. The study is not built on generalization, but on understanding the situation. The fact that the portal and existing applications can work together and provide data flow has contributed positively to the quality of existing processes. The "return intake form" solution found in returns added value to the corporate identity of the company and provided customer satisfaction. With the integrated E-Archive feature, it offers solutions to customers in terms of problems and data flow. The limitations of the study are that it deals with the online applications of a company and understands the situation through this. In order to make generalizations about the researched subject, other companies operating in the same sector and using similar platforms should be examined and the scope of the study should be expanded.

1. Introduction

Information and communication technologies, especially the Internet and the World Wide Web (www), have caused changes in almost every aspect of our lives, from education to health, entertainment to communication, social life to business life, and have gained an important place in our lives [1].

Today, developments related to technology are taken seriously by businesses in many areas. Thanks to the applications that we encounter as electronic commerce and expressed as e-logistics with its special name in the field of logistics, accurate and timely information sharing and simultaneous satisfaction of customer expectations are provided and this situation affects the competitiveness level of businesses. The use of technology in the international supply chain has led logistics service providers to focus more on information technologies in storage, transportation and distribution activities and to achieve a more competitive structure in the global sense [2].

Electronic Data Interchange (EDI) can be defined as systems that are significantly used in logistics operations that provide information and document exchange with the parties of the enterprises in accordance with certain standards. At the same time, the first area of use of the EDI system was the logistics sector [3]. One of the benefits of EDI starts with the integration of businesses into the e-commerce system. In businesses that use this system efficiently, purchasing processes gain speed, transaction times are shortened, inventory management is facilitated and the quality of the services provided is increased. At the same time, it provides convenience for consumers to take quick action with suppliers and place automatic orders [4].

With the advancement of technological systems and the widespread use of the internet, companies have developed digital platforms such as web services and online portals that offer solutions for many purposes, such as internal solutions and offering them to customers. Thanks to these platforms, logistics

companies can provide customers with a fast and efficient service, which can be considered as a decisive and distinguishing factor in customers' choice of carrier. Transmission of customer orders, which is considered a key point within the framework of logistics processes, at the right time and in a way that satisfies the customer; It is extremely important to manage the delivery process with the right strategies and procedures [5].

Returns management is also very important in logistics processes for e-commerce businesses. Returns management plays a critical role in increasing customer satisfaction and minimizing potential problems. Therefore, businesses should strive to make their returns processes as fast and smooth as possible. To optimize these processes, businesses can use special logistics solutions for their returns or develop digital platforms and applications to make returns processes as simple as possible. E-commerce businesses must also take returns management into account in their logistics processes.

Logistics companies are working to create an effective returns-issue management system for their businesses. These systems use technologies such as data analysis techniques, specialized logistics solutions, digital platforms and applications in the return processes. The problem support system is of great importance to increase customer satisfaction and improve the efficiency of businesses.

An illustration of the functioning of the problem support system is presented in Figure 1.



Figure 1. Problem support system

Data transfer can be done manually, but this method is very time and effort consuming. Accordingly,

there is a high probability of error. For this reason, many e-commerce platforms provide automatic data transfer using a software interface called API (Application Programming Interface). This allows data to be synchronized and updated automatically. Integrations between the customer and the Logistics company can be referred to as logistics data transfer solutions. Logistics data transfer solutions greatly help to manage internal and external processes more efficiently.

The volume of e-commerce has been growing rapidly in our country and in the world in recent years. Due to the developing sales strategies, sellers have their products shipped from different warehouses and suppliers. For this reason, deliveries, delivery points and return points of the products to be returned are dynamically changing and multiplying in this context.

Damage or loss of some of the products during shipment will cause the delivery to turn into a return. The seller company may not accept the damage and deficiencies and may demand the cost of the product from the logistics company. Determining the return of the products to be delivered in the warehouses and branches, processing this information into the system, ensuring that the products waiting to be returned at the buyer are reflected in the system in a short time will save time and space in the operation.

2. Analysis Method and Process

The aim here is to reveal how the theoretical concepts of e-logistics and customer portal are applied in the sectoral sense, to collect, analyze and interpret the results from a systematic perspective. The company examined within the scope of the study is one of the large enterprises providing major transportation services in the world and all findings are kept confidential within the framework of corporate policies and all findings are stated without giving the name of the company.

In this study, it examined how the systematic data tracking, solutions and processes of delivery orders and return orders created from e-commerce customers to the logistics company are managed. While conducting this examination, the case analysis method, which is one of the qualitative research methods, was used.

On the basis of the results obtained in the studies, it is based on understanding the situation, not generalization.

2. Data Collection

While collecting the data, an interview was conducted with a responsible person from the project management who deals with all partial and e-commerce processes of the company. The interviews lasted 240 minutes on different days. In addition, a responsible person from the company's operational development team was interviewed to obtain information on customer satisfaction with the work done. During the interviews, interpretative and clarification questions were asked to gather information about the operation within the scope of e-commerce and returns.

The data collection process was constructed by interpreting the customer portals, staff portals and information transferred to customers on interaction and data transfers. In addition to the data, the company website, news in the press and numerical statistics were used. During the interview, information was obtained about the company's e-commerce infrastructure, return systems and solutions.

The company provides many logistics services and warehousing services operating in different sectors. It can work with different channels as B2B (Business To Business), B2C (Business To Customer) and C2C Consumer To Consumer.

3. E-Commerce Customer Data Transfer Systems of the Company

In the first step, the company offers 2 different solution methods for creating, updating and deleting purchase reservations (purchase reservation) from e-commerce customers.

The first one is the web-based TMS Customer portal that the company has created for small, medium-sized customers or customers who do not want to establish integration. The customer can access the portal with a user name and password created separately for each customer. Then, they can create purchase reservations individually and in bulk with Microsoft Excel in this portal. (Receiver address,

sender address, piece and desi information, etc.) It is possible to receive the common barcodes of the orders created by the customer through the TMS Customer portal through the system. The barcode contains the origin branch, destination branch, consignee address, order number and reference numbers, delivery note number and barcode of the carrier company belonging to the order. The data belonging to the reservation list prepared by the customer is transferred by giving approval. The data of the orders are transferred to the e-commerce purchase pool system. Since the portal can be presented to the contracted customer in a short time, this speed creates satisfaction on the customer side. According to the information obtained, this data transfer model is a frequently preferred method by customers. This is because it is easy to use and provides effective results.

The second channel provided by the company for the creation, updating, retrieval and deletion of tag information for future purchase reservations from e-commerce customers is the data transfer model using the e-commerce integration service (E-Com API) created by the company. The web user and web user password information that can provide data flow to the system are transmitted to the customer together with the system access URLs. Information about the order is received from the customer in XML or JSON format. (Receiver address, sender address, piece and desi information, etc.) Orders and updates received through the integration are transferred to the company's e-commerce purchase pool system. In this method, the customer can transmit and update their reservations to the carrier company in a faster and safer way. Label information is also received through the integration to create a common barcode.

4. Company's Data Acquisition and Management

E-commerce sellers may sometimes give the products from their warehouses to the carrier, or they may request purchases to be made from the location of their own suppliers. If the suppliers are large-scale, they label the package with a common label. In smaller suppliers, barcoding may not be done. For suppliers working with both methods, the company ensures the flow of information by documenting the purchase transaction made during the purchase with

a signed purchase form and scanning it with a mobile device in order to make purchases healthy. The signed documents are archived in the branches. The readings use Android APK (Android Package Kit) software called "IOD" developed by the company. The data of the order, which cannot be received due to various reasons, is instantly transferred to the systems.

"IOD application has been developed to realize the receipt of cargo from the supplier and delivery to the recipient in operational business processes." (Google Play Store)

- The company carries out the purchase and planning management of the purchase reservations coming from 2 channels to the e-commerce purchase pool in its internal structure with a web application called "E-commerce Portal". For access to the e-commerce portal created for company personnel, they can access the portal with the username and password created by admin users. Each user can only perform transactions belonging to the authorized branch. Orders falling into the pool are separated on this screen on the basis of branch and listed on the basis of branch for users. The operations performed by the user afterwards are listed and explained below.
- Purchase planning; The branch creates routes for purchase and the orders to be purchased from the customers booked on the route are selected. The first step of planning is done.
- Receiving plan Approval; The plan is checked and approved.
- Purchase form printing; The purchase form of the customer-based purchase reservation for the purchase reservations belonging to the plan is received as PDF. If there is a return (from the end consumer to the seller) order in the plan, a "Return Receipt Form" is issued. On the Return Receipt form, there are sections on the recipient and sender information, as well as sections indicating that the return order received was received from the consumer with or without damage. For customers who request Digital Archive, the return receipt form can be stored in the digital archive in case of any dispute between the seller and the buyer. There is also a barcode on the return purchase form for digital archive scanning.
- Purchase operations; Check-out preparations are made for the reservations that are planned and the forms are printed. Suppliers who cannot print labels are identified and barcodes are printed on the e-commerce portal purchase transfer screen for the orders belonging to the relevant supplier and given to the courier. The courier sets off for the route, collects the products, makes labeling and closes the plan by entering the reading and order status of the plan with the IOD application. The operator controls through the e-commerce portal and ensures that the data belonging to the plan is transferred to the distribution systems.
- Data reaches the company distribution application, shipment is tracked from here.

5. Problem Support System

The company uses a separate module, the "Problem Support System" (SDS), to communicate customer requests to customer service and return purchase reservations to operations teams. SDS is an application integrated with the Company's distribution program, designed to create and track "Work Orders" and manage the "Return Work Order" process when problems related to an order need to be investigated and action needs to be taken. In case of any problem in cargo supply, operators create a "Work Order" by entering "Transfer" on the cargo information. The customer service officer examines the problem and takes action, the action taken is entered into the system and the operation is directed. If the relevant cargo is not accepted by the customer for any reason, the delivery type "undeliverable/return" is entered in the distribution program. In order to reflect the recharging to the sender company and for systematic tracking, a "Baby ATF" is created, in the new ATF, the recipient information is now the address that sent the cargo in the first place.

If the cargo is delivered to the recipient and the customer later wants to return the cargo; usually marketplace companies transmit this information as a return pickup reservation via E-com API services. Customers who do not have integration forward this information as a list to customer service, and customer service uses the bulk upload feature in the SDS system to bulk upload the return purchase reservations to the system with Microsoft Excel. The

list is displayed on the SDS system, checked and approved. The purchase reservations belonging to the uploaded data are automatically transferred to the e-commerce purchase pool by the system. In the e-commerce portal, it falls on the "Purchase Planning" screen of the relevant branch screen and the branch makes the purchase by planning.

Data transfers of purchase appointments from data transfer channels and the Problem Support System to the e-commerce purchase pool and data transfers from the e-commerce portal to the distribution application are shown in Figure 2.

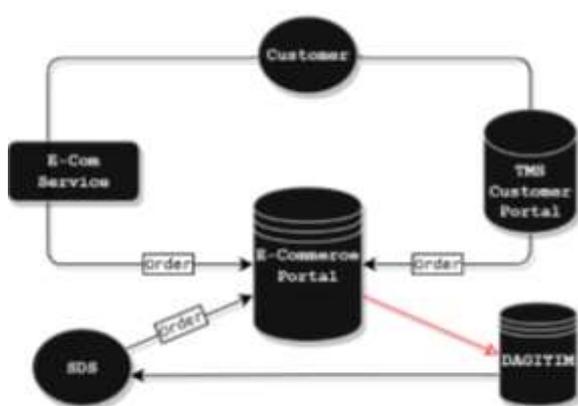


Figure 2. E-commerce Delivery and Returns Data Flow

5. Performance Evaluation

The evaluation of the company is determined by taking into account the annual occurrence percentage of purchase reservations created by e-commerce customers on the company's e-commerce portal. These rates include all channels (E-com API, TMS Customer, SDS). The company obliges all branches to make purchases in all e-commerce processes and expects branches to successfully respond to reservations.

Among the company's performance evaluation criteria, e-commerce purchase reservation numbers are evaluated with "on-time purchase performance", which is evaluated with titles such as on-time purchase, late purchase, late (still not received), and expected purchase. The Company is managed in a corporate structure based on a domestic and international organization chart. Certain regions and branches have been established in Turkey. In

addition to the "On-Time Purchase Performance", the performance of branches and regions is measured by continuously monitoring the deficits in deliveries to be made. With the performance data received from regions and branches, the company measures the delivery success rate and compares it with other regions and branches.

5. Conclusion and Recommendations

The answers received during the interviews with the company were categorized. The relevant answers are organized under headings in the article. The company is continuously improving its technological development with the improvements it has made in the past, implemented in the current process and planned for the future. In addition to the company's own internal software, it outsources in different areas and utilizes its own experience as well as different business experiences. All the distances covered globally and locally are reflected positively on operations and customer satisfaction. As mentioned in the article, e-commerce portal development brings order and speed to operations. Integrations with the customer have reduced operator error margins and made the overall performance and flow traceable. With the reports on the portal, the company has become able to respond faster to the customer.

The fact that the portal and existing applications can work together and provide data flow has contributed positively to the quality of existing processes. The "return intake form" solution found in returns added value to the corporate identity of the company and provided customer satisfaction. With the integrated E-Archive feature, it offers solutions to customers in terms of problems and data flow. The company has adapted to the rapidly developing e-commerce and contributed to continuity by providing fast solutions. Thanks to the functionality brought by different integrations and portals, it was able to carry out the data coming from different customers in different ways in a single data flow. The company's solutions increased employee performance in internal processes and enabled more transparent processes and the ability to share information simultaneously.

Case studies are studies that contribute to understanding what to focus on in future research. However, the limitations of the study are that it deals

with the online practices of a company and understands the situation through this. In order to make generalizations about the researched subject, other companies operating in the same sector and using similar platforms should be examined and the scope of the study should be expanded. This situation will bring future studies to the agenda where the results of this study will shed light after the study. In this context, considering that this study was carried out with a logistics service provider, it will be important to conduct a similar study with the companies receiving logistics services and to reveal the mutual advantages and disadvantages.

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- **Ethical approval:** The conducted research is not related to either human or animal use.
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