TRENDYOL DFD REVİEW

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KEYWORDS

E-Commercial , DFD (Data Flow Diagram), Payment System , Order Management , Verification , Dataset

ABSTRACT

In this article, we examined the data flows in Trendyol, an online shopping application. While doing this, we used DFDs. Thanks to DFDs, we saw with graphics how the application user, the vendors in the application and the system work and how they communicate with each other. The DFDs we create continue from the user's entry into the system to the delivery of the product to the seller's hand, until the seller enters the product into the system and sells the product. As a result of this article, we realized the importance of DFDs in understanding the functioning of the system. By visualizing the system, we made an abstract algorithm more understandable. We found that a project developer who uses DFDs will find it easier to see possible deficiencies in the project and will have more information about the requirements of the project.

INTRODUCTION

DFDs allow us to model data flows in systems. Thanks to a DFD to be created for IT employees before installing the system, we can evaluate elements such as the system's general flow requirements and deficiencies. DFDs are divided into levels according to the detail and expansion of data flow tracking. In this article, we will talk about the DFDs of this trendyol system.

LITERATURE REVIEW

In this article, Wulandari, Wati and Widiantoro, Albertus Dwi Yoga (2017) Design Data Flow Diagram to Support User Experience It is stated that developers must go through various stages when creating applications and one of them is DFD (Data Flow Diagram). The

dfd is drawn explaining the process from the beginning to the end of the application. While writing our own article, there were situations that overlapped with this article.

In the article Design of E-commerce Information System on Web-based Online Shopping, E S Soegoto and A Suripto (2018) discuss the design of the E-commerce Information System on a web-based online shopping site. It is stated that this business has just joined the e-commerce world and web-based e-commerce is the media of choice to promote the business and make a larger profit than expected. The methods used in this study are the development of the prototype system and the structured system approach, and tools such as flow map tools, context diagrams, data flow diagrams, data dictionary and table relationships were used. The information system of the online shopping site included in this design will facilitate data processing, accounting and media campaigns for managers in the Echtalia store, while making it easier for consumers to choose products.

M Syafrizal states in the article AMIK Indonesia (2021) Web-Based SME Online Marketing System (E-Commerce) that Data Flow Diagram (DFD) is used during the design of web-based SME Online Marketing System (E-Commerce). DFD shows the flow of data between various components of the system and visualizes how the system works and how data is processed.

FINDINGS AND RESULTS

a. DFD Level 0 :

Trendyol is an e-commerce system. This system aims to provide its users with an easy and non-tiring shopping experience. Users can easily and reliably purchase products that they cannot find immediately in any category or environment through Trendyol. For this reason, Trendyol is currently the largest online shopping application in Turkey.

Trendyol application consists of three basic sources: customer, seller and trendyol system.

In a DFD we will create for the Trendyol application, we will show the connections between the transactions between these resources and the flows of the transactions that occur when a customer places an order from the system, as components. It basically consists of six main components in a zero-level system.

In the first component, Customer Registration / Log In, the customer must register to the system or log in to the system with the profile he has already created. In this component, if the user has no registration, my site connects to the customer database and saves the newly entered user information in the customer database, but if he is already a registered user, it checks the user's profile from the database and allows him to enter his profile. Trendyol

system also has access to the customer database, thus making tracking and security of users registered in the system easier.
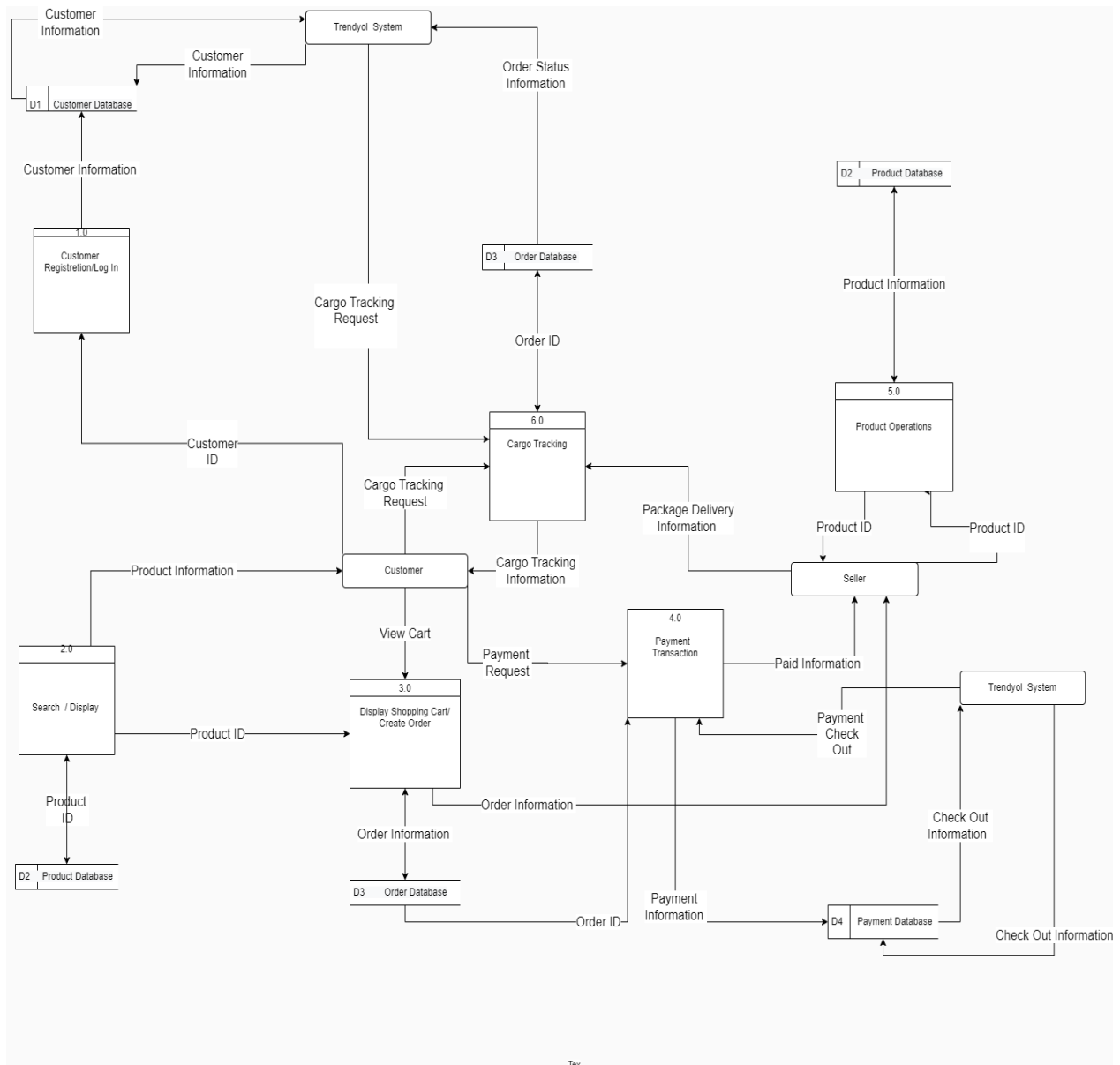
The second component, Serch and Display, is based on the user searching for the product he wants among the products in the system and displaying this product. Trendyol displays its products according to user search from the product database, and the user can choose the product he wants from these displayed products.

Our third component, Display Shopping Cart / Create Order, allows the customer to add the desired product to the cart defined in his/her name in his/her password in order to purchase the product he/she wants from these products displayed in the product database in the second component. The products added to the cart are added to the order database on his/her behalf.

The fourth component, Payment Transact, initiates the transaction in this component by creating a payment request for the products in the customer's cart. In the continuation of the transaction, the user enters the payment information required for the payment transaction. This information and the status of the payment transaction are stored in the payment database. After the payment is made, this information reaches the seller. Trendyol system checks the payment transactions from the payment database, and if the payment is made successfully and the product is delivered to the customer, the fee goes to the seller's account.

In the fifth component, Product Operation, product transactions are carried out on the seller's side. The information entered by the seller into the system is recorded in the product database and later, users can benefit from the product information when they search for a product.

In the sixth component, Cargo Tracking, customers can track the product they ordered with the product tracking requests they send to this process. Likewise, sellers can track the products they send with the requests they send to this process. The products delivered to the cargo update their information in the order database and from there, Trendyol checks the tracking of the produt and carries out the payment transfer.

Customer Information

Trendyol System

Customer Information

D1 Customer Database

Customer Information

1.0
Customer Registretion/Log In

Order Status Information

D3 Order Database

Cargo Tracking Request

Order ID

Customer ID

6.0
Cargo Tracking

D2 Product Database

Product Information

5.0
Product Operations

Cargo Tracking Request

Product Information

Customer

Cargo Tracking Information

Package Delivery Information

Product ID

Product ID

View Cart

Payment Request

4.0
Payment Transaction

Seller

Paid Information

2.0
Search / Display

3.0
Display Shopping Cart/ Create Order

Product ID

Trendyol System

Payment Check Out

Check Out Information

Product ID

Order Information

Product ID

Order Information

D2 Product Database

D3 Order Database

Order ID

Payment Information

D4 Payment Database

Check Out Information

Tex

b. DFD Level 1:

This DFD is a visual map that shows how the data flows of a very comprehensive e-commerce platform that manages customer information, product information, order and payment transactions, cargo tracking information, supplier information and transactions. This DFD shows the flow chart of Trendyol. Trendyol is Turkey's first decacorn company, an e-commerce site. This DFD, unlike DFD Level 0, has been processed in much more depth and detail and its scope has been expanded. The sub-processes of each process are examined and the connections (flows) are arranged accordingly.

The main components of this DFD consist of six main operations: customer registration/log in, search/display, create order, payment transaction, product operations, cargo tracking. DFD Level 1 consists of a total of 19 processes with sub-transactions.

The first main process, customer registration/log in (1.0), allows the customer to register if he is not registered in the system, and to log in to the system if he is a registered user. Enter registration information (1.1), which is the sub-operation of this process, registers the new user into the system by entering information. The information of these users is recorded in the customer database. Additionally, Trendyol is connected to this customer database. Trendyol can retrieve information from the database and save information. The Verify credentials (1.2) operation verifies the user's credentials. This process includes the system's security and user authentication protocols. This process ensures that customer information is securely stored in the database. The customer database has a connection to processes 1.1 and 1.2. Sends login confirmation to the Enter registration information (1.1) process. Sends verification result to Verify credentials (1.2) process. Enter registration information (1.1) and Verify credentials (1.2) operations send customer information to the customer database. And this information is recorded and stored securely, and can be accessed by Trendyol when requested.

In the main Search /Display (2.0) process, the customer searches for and displays the desired product. In the Enter Search Criteria (2.1) sub-process, the customer enters the product he wants in accordance with the search criteria. He can easily reach the product he wants by typing the words that best suit the search criteria. This improves the user experience and enables him to find the right product. The customer reaches the product he wants and can view the information of this product. This product information comes from the product database. The product database is linked to Enter Search Criteria (2.1). Stock updates in the product database are made by suppliers. The correct product is found from the product database by going to the Enter Search Criteria (2.1) process and the product item information is sent back to the Enter Search Criteria (2.1) process. And the customer displays the correct product. The product ID information goes from the Search /Display (2.0) process to the Display Shopping cart/Create Order (3.0) process and the next main process is passed.

Display Shopping cart/Create Order (3.0) In the main process, the customer displays the product cart and creates the order using the user interface. Add product to shopping cart (3.1) and Remove product to shopping cart (3.2) sub-operations are the operations used by the customer when creating his cart. . The Add product to shopping cart (3.1) operation adds a product to the cart. Remove product to shopping cart (3.2) deletes the product from the cart. Add product to shopping cart (3.1) and Remove product to shopping cart (3.2) operations have connections with the order database. Order database keeps order basket information. Accessing this database via subprocesses (3.1) and (3.2) It sends and receives information to this database. Order ID information goes from the order database to Payment Transaction (4.0) and the next main process is passed.

In the Payment Transaction (4.0) main transaction, a payment request is received from the customer and the transaction begins. This main transaction has 2 sub-processes: Entering Payment Information (4.1) and Payment Confirmation (4.2). Transaction request information is received in the Entering Payment Information (4.1) sub-process and the customer enters the payment information. This information is recorded and stored in the payment database, subject to the customer's approval. In this section, the security and privacy of users' data is very important. In the Payment Confirmation (4.2) sub-process, it is understood whether the payment has been made or not and this information goes to the payment database. Payment database holds payment information. Trendyol System has access to the payment database. With this access, it checks the payment. Payment check out information goes from Trendyol System to Payment Confirmation (4.2). Payment information is sent to the seller from the Payment Transaction (4.0) transaction and the next main transaction is started.

Product Operations (5.0) covers product-related operations. This operation includes works that are the responsibility of the seller. The efficiency of product operations and inventory management are very important and these issues are the subject of the (5.0) process. Product ID information goes from the seller to the product operations (4.0) process and can come at the same time. It consists of Stock Update (5.1), Packaging Product (5.2) and Update order status (5.3) sub-processes. In the Stock Update (5.1) process, the seller can add or remove new products to their stocks and update their stocks according to the purchases made. This process has access to the product database. Changes made in stocks are recorded and updated in the product database, that is, product information goes to the product database from stock update (5.1). According to the product ID information received in the Packaging Product (5.2) process, the seller packages the products ordered by the customer. And he ships it. Update order status (5.3) The seller informs the customer about the current status of the product he purchased. For example, the information that the order has been received, the order is being prepared and the order has been shipped is shared with the customer. This is very important for customer satisfaction. It also increases the trust in the Trendyol system and the seller. At the same time, this information goes to the order database and is recorded and stored there. With the package delivery information sent from the seller to the cargo tracking process, the next main process is completed.

Cargo tracking (6.0) is responsible for cargo information and tracking. In addition, information from the cargo tracking process is shared with the seller, the customer and the Trendyol system. Cargo tracking system is very important for customer satisfaction. In this process, updating the cargo status, tracking the location of the cargo, and notifying the customer are performed. In other words, it consists of Update cargo status (6.1), Track cargo location (6.2) and Send notification to customer (6.3) sub-operations. In the Update cargo status (6.1) sub-process, it obtains the cargo information from the main transaction and learns the current status of the cargo. And it shares this status with the order database and updates the status of the cargo. Order database receives information from Update cargo status (6.1), Track cargo location (6.2) and Send notification to customer (6.3) sub-processes and sends information optionally. Additionally, Trendyol system is connected to the order database. In the Track cargo location (6.2) sub-process, the location of the customer's cargo is tracked.

Information about where the cargo left and which store, where it will go and where it is now is tracked. This information is updated in every new situation and is recorded and stored in the order database and updated when necessary. The Send notification to customer (6.3) subprocess is about sending messages informing the customer about his cargo. The customer is informed about the estimated time when the cargo will arrive, where it is now, and the status of the cargo. Thus, the customer can always follow the events. This DFD ends with the cargo reaching the customer and receiving feedback from the customer.
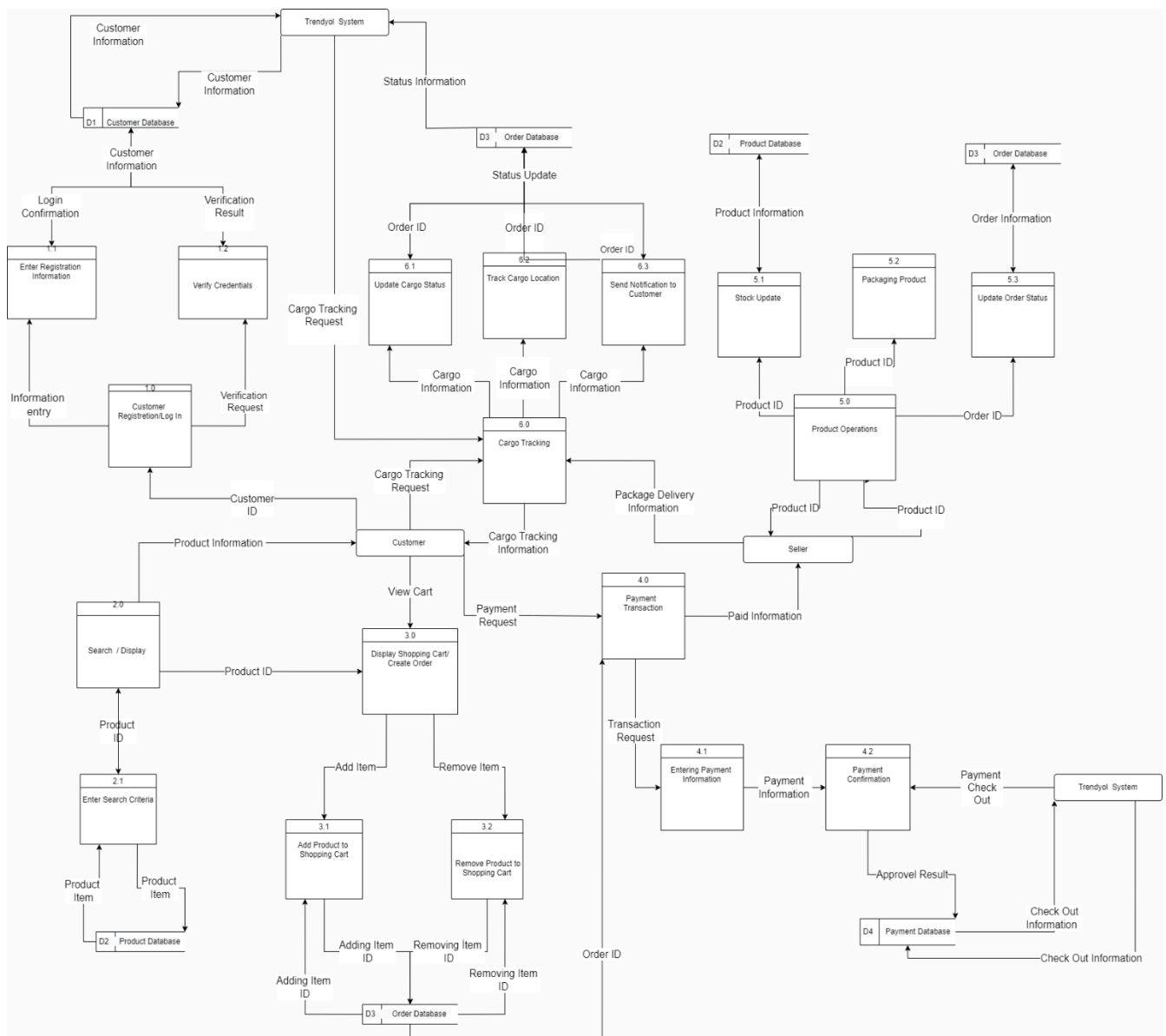
DISCUSSION

Although we have specified the general data flow that an online sales company can basically follow in the Trendyol data flow diagram we created, the data flow diagram followed by system and user security databases and payment transactions in large online shopping companies may differ and various flows and components can be added for system security, providing private and confidential information on the basis of this system. Therefore, the DFDs we created may be incomplete and inadequate in this context. In addition, people with different knowledge can be added to the system where banks and cup transactions are also considered, but that part is still carried out through the procedures between companies and banks, as we mentioned above.

CONCLUSION

In general, thanks to the DFD we have created, we can monitor the data flow of an online shopping system, such as Trendyol, and obtain information about it. Trendyol is a very broad and large platform compared to an online shopping platform. It has a great power in the online market thanks to its wide product range and the customer profile it has gained in this way.

REFERENCES

Wulandari, W., & Widiantoro, A. D. Y. (2017). Design data flow diagram for supporting the user experience in applications. Design data flow diagram for supporting the user experience in applications, 25(2), 14-20.

Soegoto, E. S., & Suripto, A. (2018, August). Design of E-commerce Information System on Web-based Online Shopping. In IOP Conference Series: Materials Science and Engineering (Vol. 407, No. 1, p. 012008). IOP Publishing.

Syafrizal, M. (2021). Web-Based SME Online Marketing System (E-Commerce). International Journal Software Engineering and Computer Science (IJSECS), 1(2), 75-79.

Hidayat, A. T., Dewantara, A. M. D., & Saifullah, S. (2020). The development of website on management information system for e-commerce and services. Jurnal Sisfokom (Sistem Informasi dan Komputer), 9(3), 380-386.

Li, Q., & Chen, Y. L. (2009). Data flow diagram. In Modeling and Analysis of Enterprise and Information Systems (pp. 85-97). Springer, Berlin, Heidelberg.

Soegoto, E. S., & Suripto, A. (2018, August). Design of E-commerce Information System on Web-based Online Shopping. In IOP Conference Series: Materials Science and Engineering (Vol. 407, No. 1, p. 012008). IOP Publishing.

Davis, W. S. (2019). Data flow diagrams. In The Information System Consultant's Handbook (pp. 175-188). CRC Press.

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