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DIGITAL REVERSE LOGISTICS FOR DAMAGED GOODS

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Abstract— Reverse logistics is the process of moving goods from their point of consumption or sales for recycling disposal or reuse. This paper considers the problem of determining the numbers and locations of centralized return centers (i.e., reverse consolidation points) where returned products from retailers or end-customers were collected, sorted and consolidated into a large shipment destined for manufacturers' or distributors' repair facilities. This strategic process consist of cost, overall quality, customer service and environmental concerns. These factors consist of time benefit, transportation expenses and supply management. So we develop digital platforms for the easy update of product that are damaged/expired. After the development of digital platform tracking, analyzing process will be improved and the transportation and transaction will be done in short time.

Keywords: Reverse logistics, customer, supply management, Android.

I. INTRODUCTION

In the high competitive market, a large number of industries provide retailers return policies. To some extent, retailer's returns policies have become an important approach for industries to achieve competence. Retailers, on the other hand, are accustomed to return damaged goods and get some or even full refunds. Dealers make inventory decisions with the trade offs of maintaining competitive service levels and minimizing the inventory costs. It is very important for the dealers to keep their investment on the right amount of the right types of parts in stock. Research on returns is normally classified as reverse logistics. Most of the literature on product returns deals with end of life (EOL) products that are brought back to the producer or third party providers for the re manufacturing, recycling, or disposal. We start with an analysis of current returns policy to identify the different cost components and the cost sharing scheme between the manufacturer and dealers 2009 [4].

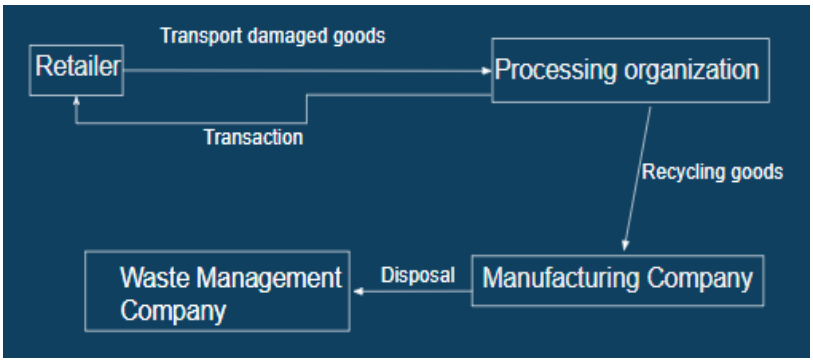
II. RETURN AND RECALL OF GOODS

Return of goods is that the customers return the products the have some faults after using normally for a short period of time (within 3 months, for example) for repair. We define recall of goods as the process that the manufacturer reclaims the seriously defective products from the retailers or customers. The main reason for recalling goods is that the products already sold have some serious faults 2009 [6].

1) Reverse supply chain for returned goods: customers themselves send the defective products that are still under warranty to testing centers, where the staffs check them to make sure whether they are really defective and don't work.

2) Reverse supply chain for recalled goods: the corporation will organize transportation that the products for recall are shipped from different customer markets to warehouses. This is the foundation for the efficient operation of supply chain. The fees for recall including both forward shipping chain. The fees for recall including both forward shipping and reverse shipping shall be paid entirely by the corporation 2010 [5].

III. ARCHITECTURE DIAGRAM



IV. ARCHITECTURE OF ANDROID

A. APPLICATION FUNDAMENTALS

Android applications are written in Java programming language. However it is important to remember that without using the standard Java Virtual Machine (JVM) android applications cannot be executed. Android is a software stack for mobile gadget that contains an operating system, also a middleware and key application. The Android SDK provide the tools and APIs which are necessary to develop application on the platform of Android technology using the java programming language 2016 [4].

B. APPLICATION FRAMEWORK

By providing an open development platform, Android propose develop the ability to build extremely abundant and innovative application. Developers are free to get benefit of the device hardware, access location information, execute background services, add notifications to the status bar, and much more. Underlying all applications is asset of services and system, including:

- A rich and extensible set of Views that can be used to develop an application, containing lists, grids, text boxes, buttons and even an embeddable web browser.
- Content Provider that allows application to access data from other applications, or to share their own data.
- A Resource Manager, providing access to non-code resources which includes localized strings, graphics and layout files.
- A Notification Manager that enable all application to display custom alerts in the status bar.
- An Activity Manager that manages the life cycle of application and provides a common navigation backstack.

V. TECHNOLOGIES USED

- **Java:-** It is a programming language expressly designed for used in the environment of the internet. It was architecture like nearby C++ language such that having the "look and feel" of the C++ language, but it is more easy to use than C++ and emphasize an object-oriented programming model. Java can be use to design a complete applications that may execute on a single computer or be distributed among servers and client in the network. It can also be used to construct a tiny application module or applet for use as part of a web page. Applets make it feasible for a web page user to interact with the page 2016 [4].
- **Android:-** Android provides a rich application framework that allows the user to produce the innovative apps and games for mobile gadgets in java language environment.
- **SQLite:-** SQLite is an in-process library that carry out a self-contented, server less, zero-configuration, transactional SQL(Structured Query Language) which is a data base engine. The code for the SQLite is in the public domain and is thus free for use for any purpose, it may be a commercial or private. SQLite is the most widely developed data base in the world with more application that we can count, including multiple high-profile projects. SQLite is an embedded SQL database engine. Unlike most other SQL database, SQLite does not have separate server process. SQLite reads and write diretly to ordinary disk file.

VI. METHODOLOGY USED

i. Android studio:- Android studio is the official IDE for the Android application development. Android Studio offers:

- Flexible gradle-based building system.
- Build variants and various apk file generation.
- Code templates to support you build common app features.
- Rich layout editor with support for drag and drop them editing Lint tools to catch performance, usability, variations capability and other problem.
- Proguard and app-signing capabilities.
- Build-in support for Google Cloud Platform, making it easy to integrate Google Cloud Messaging and Application Engine and many more 2016 [4].

ii. Android SDK: - A software development kit that permits the developers to design applications for the Android platform. The Android SDK include sample projects with some source code, development tools, an emulator and required libraries for developing the Android applications 2016 [4].

VII. EXISTING MODEL

The Reverse Logistics Method: In this method the damaged goods are collected from the retailers. After that the damaged goods are separated according to the type of goods. Each product is verified by retailers its really damaged or expired then the goods are transported from the retailers to the respective organizations. This method take more time consumption for transaction process. The damaged goods reach the respective organization with a delay.

IX. PROPOSED MODEL

In the proposed model the android application is used for transporting the damaged goods. The retailers must login the application to enter the damaged goods details. After entering the details the data is collected and stored to the organization database. In the retailers information their personal details and bank account details are stored for easy transportation and transaction. The Organization also have an application to login and check the details of the return goods. They can know the product and quantity of product that has to be returned from the retailers. Then getting the retailers bank account details they can do the online transaction for payment process.

X. FUTURE ENHANCEMENT

- It improves the scalability.
- It provides the Flexibility.
- It provides the greater customer service and higher retention levels.

XI. CONCLUSION

Reverse logistics is still a new researching field, although a lot of achievements have been made in recent years. In this project we digitalize the reverse logistics process with help of android application. According to this application the data is most important factor so we need to maintain the data properly. Transaction process is done by organization by online transaction by getting the account details of the retailer. This application consumes less time for collecting the data in a single place and for auditing data.

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