



# **A Survey on Material Management and Billing System Using Android**

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**ABSTRACT:** Automobile spare parts Management System is completely automated and fully integrated with Automobile dealer shop. The software is best suited for two wheelers; three wheelers; four wheelers spare parts management in Automobile spare parts shop. The modules covered in this project are login, product management, product registration, customer management, customer registrations, sales details, and merchant/dealer registrations, notification message when the stock goes below count, stock maintenance and reports. We provide three logins; first one is cashier - for normal purchase and billing. Supervisor - Can maintain and view stock information. Admin - Can add new products, and also can purchase the products. Similarly an android application also contains login for owner, it contains menu list that is previous purchase list. Purchase of new products can happen via system and also android app. Price details and stock details of the Spare parts are managed in this software. The customer details are entered to call the customer for further purchase of spare parts. The customer name, address, phone number and E-mail id details are managed in this module. These details can be entered and edited by the admin/owner. Main advantages of the system are, it sends automatic notification to the owner through android applications. In Modification process, we are going to automatic maintenance of stock and inventory control system. Automatic notification is generated to the owner in case of attaining minimum reorder quantity level for any product. Purchase of new products can happen via system and also android applications are the main advantage of this software.

**KEYWORDS:** Spare parts management, System availability, Product Management, Sales Management, Customer Management.

## **I. INTRODUCTION**

In manufacturing industry that owns a large number of equipment, managing the spare parts properly is a challenging task. Usually, spare parts are two main groups: one is fast moving and another one is slow moving parts. Fast moving spares are required often, and slow moving spares are required rarely. The admin find it difficult to keep track of the spare parts used. The objective of this project is to send the notification message to the owner. In particular, the system should do the following things: (a) keep record of the spare parts which is required; (b) keep record of the spare parts which is received and used in the past; (c) scheduling major maintenance services; (d) keep record of spare parts dealers; (e) expecting future demand for fast moving spare parts based on previous consumptions etc. Inventory Management system is a continuous process of supervising and controlling of ordering, storage and use of materials that a company will use in production of the items. Keeping the inventory control level too high will lead to idle capital reposition without any utilization and too little will result with costly intervention. The best inventory policy should manage the ordering level and capital investment at opt time. Visualizing and redesigning a best inventory strategic policy is very big challenging task for an organization. A good inventory strategy enlightens the admin to take better inventory control management decisions. An inventory control for spare parts decides and manages about when to fill the items and how much it should be filled. A good inventory policy answers the following questions:



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1. How much to order?
2. When to order?

These questions are the biggest challenge thrown to the top level management, because if it is not answered well the organization may end up with unnecessary loss of capital. These two questions are relatively affected by many costs. There is a wide scope of improving the storage management principles if the same is adapted with product inventory control principles which was already bench marked.

## II. LITERATURE SURVEY

### 1. THE SPARE PART MANAGEMENT SYSTEM (SPMS) FOR THEPROFOUND HERITAGE SDN BHD: A CASE STUDY ON THE EOQ TECHNIQUE

The inventory management is an important part of the supply chain management, which protects the schedule for the production or for the maintenance towards any type of disturbance. This research which is emphasized on the development of the Spare Part Management System (SPMS) for the Profound Heritage Sdn Bhd (PHSB), which is currently adopting the manual Kadex method. This automatic maintenance software use the Economic Order Quantity (EOQ) in the periodic review to control the inventory. And the software was done using the Microsoft Visual Studio 2012.

### 2. FRAMEWORK FOR SPARE PARTSLOGISTICS - ARTICLE IN THE CALIFORNIA MANAGEMENT REVIEW · JUNE 2012

Strategically aligned and efficiently implemented spare parts logistics can able to differentiate a business from its competitors, lower costs, increase revenues, and thus help firms generate greater value for the customers and ultimately increase profits. Based on multiple case studies with the manufacturers in the machine and plant construction industry, study suggests that an efficient spare parts logistics strategy can be developed with the three-step models that consist of nine components. (Keywords: Distribution channels, Inventory management, Supply chain, Spare parts management, Logistics, After-sales management, Strategy, Strategic alignment) Spare parts customers have high range of expectations in terms of the delivery of service and long-time availability of spares.

## III. OBJECTIVE OF THE SPARE PARTS SYSTEM

To develop the spare parts management system from the existing system, which is a manual system, to computerized system is the main objective of this project

## IV. EXISTING SYSTEM

The existing system is not fully automated, only the accounts are automated by using the accounting software. The Customer follow-ups details are maintained in excel, which will take more time to search from the long lists, stock details are not maintained automatically through system so it is very difficult to maintain the details. As the current details is maintained through registry and excel sheet, so there is no proper reports for facilitation of the administration of the spare parts dealers shop. From the study of the existing system, the major problem of the existing system is use of the manual system. Although there are working papers to control each steps of processes, the transactions are not accurate. The quality of physical spare parts in storeroom is not equal with report number via manual system. And it is very difficult and taking more time to search the information such as level of the outstanding balance in stock. This inconsistency is major cause of shortage spare parts in storeroom when needs from production line. And cost from not running production line is seriously problems which company needs to eliminate it as first priority too. The existing system is a manual system, although some reports are printed out by using computer but still have manually tracked in paper work needs to be done. As cost of the system are increasing every year due to company expansion in new production line based on business opportunity. So the accuracy and efficiency system is required to achieve the company goal.

### DISADVANTAGES OF THE EXISTING SYSTEM

- Only accounts are systemized using accounting software.
- Lack of details, reports.
- Spare parts are maintained in excel Sheet which leads to the inaccurate information.



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- Customer details are not maintained properly which leads the follow-ups very slow.
- There is no email notification system.
- In an existing system they didn't use any alert or warning messages to owner when the stock goes below the count.

## V. PROPOSED SYSTEM

The disadvantage of the existing system will overcome by the proposed system and it records and manages the entire activities happening in the spare parts dealer shop. The reports which are generated will enhance the efficiency of the application. The service registration will alerts and completion are recorded which will be easy to maintain the service details. The proposed system concentrate on spare parts inventory transactions from starting point till ending point in each production line. This project will exclude the accounting and costing for the inventory transactions. The project does not require huge initial investment and the payback period of the project is not very long. The company needs to invest in both hardware and software which costly first year of the investment, which will be recovered in a few years. So it will be very useful for the company to change its system to be a computerized system. To fulfill and satisfy users' requirements, the writer had used many methodologies such as interviewing, observation and various types of questionnaire. Project manager and staffs of company do evaluation of the project using white box testing methodology as a tool to test the system. And making program is more user friendly, the screen design and output design concentrate more on users' requirements.

## ADVANTAGES OF THE PROPOSED SYSTEM

- Entire activities of the show room are recorded through the system.
- Customer Details is maintained are maintained in computerized manner.
- Customer database are maintained, which will be helpful for intimating the service completion details and new offers.
- Customer follow-ups details are maintained which will be an added advantage of this system.
- Faster and more accurate information on inventory
- More efficient and error-free reorder fulfillment for the customers
- Optimized stock level and increased the customer service rate.
- In a proposed system they use alert or warning messages to owner when the stock goes below the count.

## VI. PROBLEM STATEMENT

The major problem in the spares part management is the identification of the exact match. Major problem is the human error as the current details is maintained through registry and excel sheet, so there is no proper reports for facilitation of the administration of the spare parts dealers shop. From the study of the existing system, the major problem of the existing system is use of the manual system. Although there are working papers to control each steps of processes, the transactions are not accurate. The quality of physical spare parts in storeroom is not equal with report number via manual system. And it is very difficult and taking more time to search the information such as level of the outstanding balance in stock. This inconsistency is major cause of shortage spare parts in storeroom when needs from production line. And cost from not running production line is seriously problems which company needs to eliminate it as first priority too. The existing system is an full of manual system, although some reports are printed out by using computer but still have manually tracked in paper work needs to be done. As cost of the system are increasing every year due to company expansion in new production line based on business opportunity. So the accuracy and efficiency system is required to achieve the company goal.

## VII. DATABASE DESIGN

We present below the main entity types of the database design. For each entity type, we provide some of the related attributes. This information is used in order to: (a) Building an Enhanced E-R diagram by using the technique; (b) Transforming the Enhanced E-R diagram to their relational database. Identifying the primary key(s) and the foreign

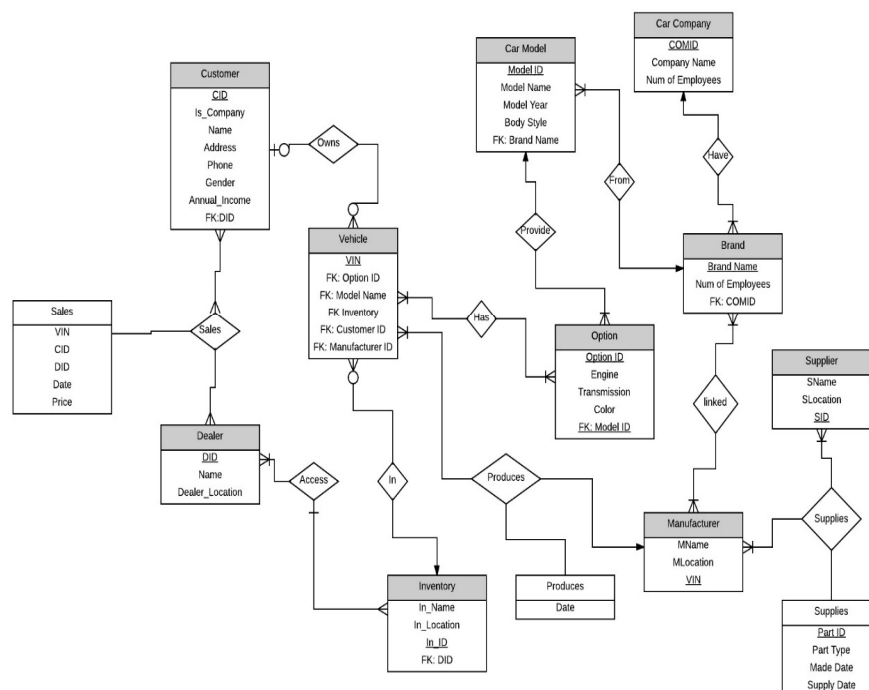
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key(s) for each relation by using the technique and drawing the relational integrality constraints; (c) for each of the relations are created, and indicated in its normal form. If the relation is not in the 3NF, it will be decompose it into 3NF relations.

- **Equipment:** The attributes mainly considered are identification number, name, description, location, purchase price, purchase date, estimated cost of an breakdown, the average man-hours required for a shutdown maintenance, expected lifetime, etc.
- **Maintenance:** The attributes mainly used are identification number, name, types (shutdown or breakdown), description of the product, total man-hours required, etc.
- **Vendor:** The attributes mainly used are identification number of the product, name, address and telephone number of the contact person, etc.
- **Spare part:** The attributes mainly used are identification number, name, type (slow or fast moving spare part), purchase date, expected lifetime, inventory level, unit cost, company name which produces the component as well as the name and telephone number of the contact person, etc.



## Database Design for Spare Parts Management System

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## VIII. HARDWARE, SOFTWARE SPECIFICATIONS

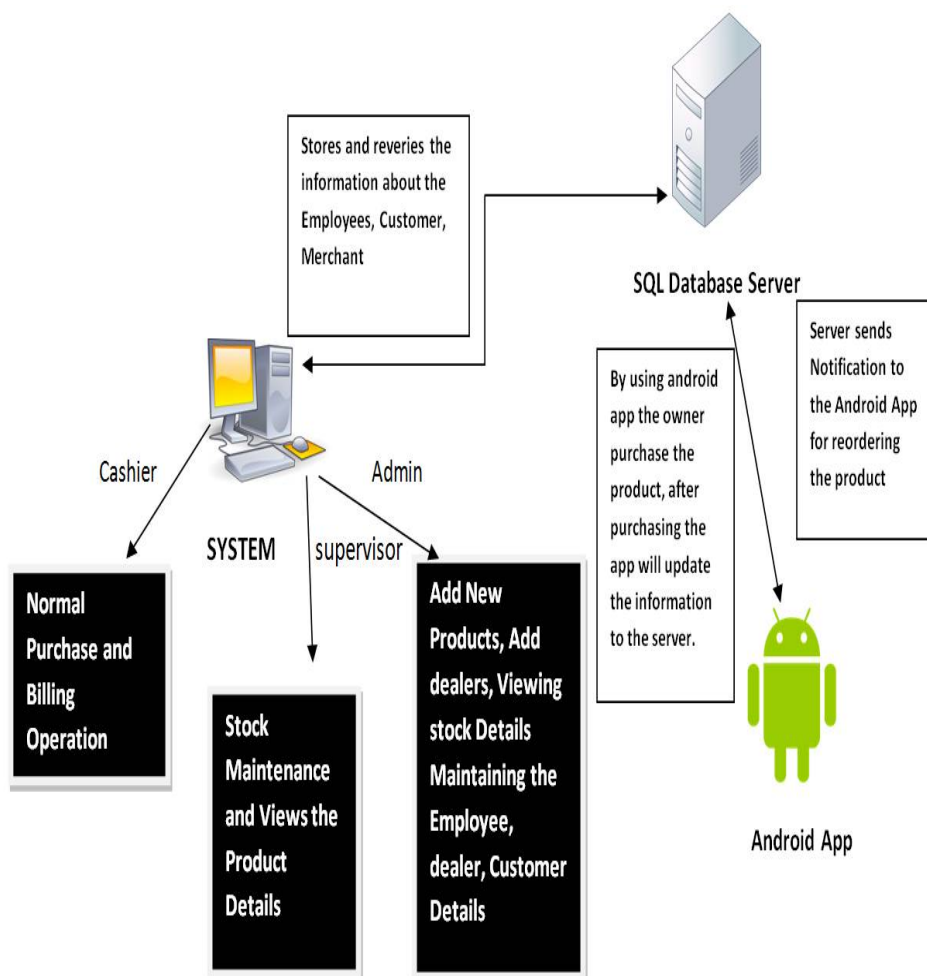
### A. SOFTWARE:

- Platform : Windows Xp /7/8
- Domain : Android
- Technology : java JDK1.7
- Front End : Java-JDK1.7, Android-sdk and Eclipse, Apache tomcat
- Back End : MYSQL

### B. HARDWARE:

- RAM : 2GB or above
- Processor : Intel Core i3/i5/i7
- Hard Disk : 500GB

## IX. SYSTEM ARCHITECTURE DIAGRAM



The modules covered in this project are login, product management, product registration, customer management, customer registrations, sales details, and merchant/dealer registrations, notification message when the stock goes below count, stock maintenance and reports. We provide three logins; first one is

- Cashier - for normal purchase and billing.



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- Supervisor - Can maintain and view stock information.
- Admin - Can add new products, and also can purchase the products.

Similarly an android application also contains login for owner, it contains menu list that is previous purchase list. Purchase of new products can happen via system and also android app. Price details and stock details of the Spare parts are managed in this software. The customer details are entered to call the customer for further purchase of spare parts. The customer name, address, phone number E-mail id details are managed in this module. These details can be entered and edited by the admin/owner. Main advantages of the system are, it sends automatic notification to the owner through android applications. In Modification process, we are going to automatic maintenance of stock and inventory control system. Automatic notification is generated to the owner in case of attaining minimum reorder quantity level for any product. Purchase of new products can happen via system and also android applications are the main advantage of this software.

## X. LIST OF OPERATION OF THE SPARE PARTS

These are all the overall operations done in the software:

- Dealer Registration
- Spare Parts Registration
- Purchase history
- Overall Inventory control
- The Login Operation
- We provide three logins; first one is Cashier - for normal purchase and billing.
- Supervisor - Can maintain and view stock information.
- Admin - Can add new products, and also can purchase the products.
- The Billing System.

## X. OPTIMIZED CONTROL SYSTEM

To develop smooth function it is essential to develop a suitable inventory control by using optimization of spare parts cost is achieved in a systematic way. The fast moving and slow moving items are concerned, the following procedure can be taken into consideration various cost elements.

While managing the spare-parts inventory, basically there are four cost elements must be considered:-

1. Cost of the spare part materials
  2. Cost of ordering materials
  3. Cost of storage materials
  4. Cost of stock-out.
- The cost of storage includes following things:
    1. Rent for the storing spare parts materials
    2. Depreciation on the storage and handling the facilities
    3. Handling the charges
    4. Salary for the stores staff and clerks
    5. Taxes for the product
    6. Insurance for the product
    7. Costs of the stationery etc.
  - The cost of ordering includes following things:
    1. Rent for the purchase department
    2. Depreciation for the Office facilities
    3. Salaries
    4. Travel expenses of the product
    5. Incoming Inspection
    6. Entertainment & expenses.



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## XI. CONCLUSION

The Spare parts management System will be very successful if the system is computerized and integrated with other the systems. Android app is created in that individual user logins are available like login for admin, owner and supervisor. By using these applogin, product management, customer management, sales, complaints, warning message when the stock goes below 10 count, stock maintenance and reports can done. So by using that application new products Purchase happens via system and also android app. And additionally alert system is included. It is the Main advantage, because automatic notification about stocks remaining sends to the owner. So that it is very useful for owner to know their stock details frequently. It is often the case that when you have a simple, generic design, the resulting system can have the capabilities which were not specified in the original requirements. This is true with our currently proposed data inventory model. And the existing system problems have solved in this proposed system.

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