



PROCUREMENT OF RAW MATERIAL USING NFC

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ABSTRACT

Shopping or Purchasing of products or raw material in Industry is the act of procurement of the goods and services, that a company needs to operate and/or manufacturing the products. Raw Material is one of the important or we can say essential factor of production process. The importance of raw material to efficient operation of a manufacturing organization cannot be over emphasized, in that the availability of the raw material in the right quality and quantity will determine to a reasonable extent; the availability of material, along with quality and quantity must be the expected resultant output. Purchasing or procurement is the key elements for efficient material management and production. It is a initial step or a initial request made by the store keeper or a specific department for the purchase of specific material/product. It needs to inform the purchasing department about the requirement to purchase a material, to fix the responsibility of the department making the procurement requisition. Shopping of this material does not end with the selection of a source and contract agreement because the process isn't complete until the required product/service is received and meets the requirements for quality, quality and cost delivery and service. Purchasing continues through product delivery. In proposed solution in these paper, we are simplifying this entire process of shopping material with help of our application by using NFC technology and QR code.

Keywords—NFC-near field communication, M-commerce, QRcode.

INTRODUCTION

Mobile devices which support the development of wireless networks have spread throughout the world. Mobile commerce applications have become the most popular and widely used application for mobile device users who want establish the business, startups and financial transactions easily and securely, anytime and anywhere.

The project concept or idea that we are proposing is a shopping system at Industry level with the help of NFC cards, shopping of the raw material is a critical process in any Industry. A company purchases raw materials, sub-components and support services that all are essential to the production process. There is tremendous value in developing a purchasing process that is tailored to a business specific needs and that obtains components and services from outside sources in an effective, efficient and timely manner. In this traditional model, purchasing was seen as essentially a clerical function. It was focused on getting the right quantity and quality of goods to the right place at the right time at a decent cost. Analysts indicate that suppliers receive some benefits in the emerging purchasing dynamic as well. Reduced paperwork, lower overhead, faster payment, long-term agreements that lead to more accurate business forecasts, access to new designs, and input into future materials and product needs have all been cited as gains.

Current available systems are traditional systems of retail which have some disadvantages in themselves, as in traditional shopping of material process in industries involved several steps—requisition,



soliciting bids, purchase order, shipping, invoice, and payment—that have come to be increasingly regarded as unacceptably slow, expensive, and labor intensive. Each transaction generated its own paper trail, and the same process had to be followed whether the item being purchased was a box of paper clips or a new bulldozer. The prototype application's aim is to remove as many inconsistencies as possible from these systems and to make a this process which is consumer friendly and high performing. Using proposed solution this entire process could be simplified and made more user-friendly.

II. RELATED WORK

In the traditional system, purchasing was seen as essentially a clerical function. To increase the efficiency in purchasing of raw material we are using NFC technology. We compared papers “An ABC-Analysis and JIT purchasing Implementation for Optimization of Non-Active Raw Materials in Inventory Management: A Case Study” [6] and “M-Commerce using NFC Tags system [4]” with the existing system. “An ABC- Analysis and JIT purchasing Implementation for Optimization of Non-Active Raw Materials in Inventory Management: A Case Study” [6], this paper focused on operations management in order to achieve inventory optimization that starts form purchasing requisition, tenders or quotations, purchase order, receiving and inspecting material, checking and passing of bills for payment. From this we are taking concept of stock management and analysis of inventory management system. We using JIT approach for purchasing raw material, Just- in-time (JIT) are an inventory strategy companies employ to increase efficiency and decrease waste by receiving goods only as they are needed in the production process, thereby reducing inventory costs.

The research paper that we have referred named “M-Commerce using NFC Tags system” [4], this paper represent that the user will do the entire shopping process with the help of their Android mobile phones with a software application. The user use to tap the NFC Tag of the products, which are to be purchased. The products whose NFC tags were tapped (read) will be stored in a shopping list/cart with the help of mobile application. Users could able to perform addition, subtraction of quantity of product as well as deletion of the product from the cart. We are using this scenario for maintaining procurement of raw materials using NFC tags.

By comparing both papers we are using NFC technology to implement the system in smart way of procurement using NFC tags. That will reduce the paper work and speedup the process of purchasing. [3] discussed about Intelligent Sensor Network for Vehicle Maintenance System. Modern automobiles are no longer mere mechanical devices; they are pervasively monitored through various sensor networks & using integrated circuits and microprocessor based design and control techniques while this transformation has driven major advancements in efficiency and safety. In the existing system the stress was given on the safety of the vehicle, modification in the physical structure of the vehicle but the proposed system introduces essential concept in the field of automobile industry. It is an interfacing of the advanced technologies like Embedded Systems and the Automobile world. This “Intelligent Sensor Network for Vehicle Maintenance System” is best suitable for vehicle security as well as for vehicle's maintenance. Further it also supports advanced feature of GSM module interfacing. Through this concept in case of any emergency or accident the system will automatically sense and records the different parameters like LPG gas level, Engine Temperature, present speed and etc. so that at the time of investigation this parameters may play important role to find out the possible reasons of the accident. Further, in case of accident & in case of stealing of vehicle GSM module will send SMS to the Police, insurance company as well as to the family members.

III. PROPOSED SYSTEM

In proposed system the procurement of raw material will be performed using android application. At retailer shop each and every product is attached with a NFC Tag. This NFC tag holds a unique number. These tags are scanned via android smart phone (NFC reader/writer).

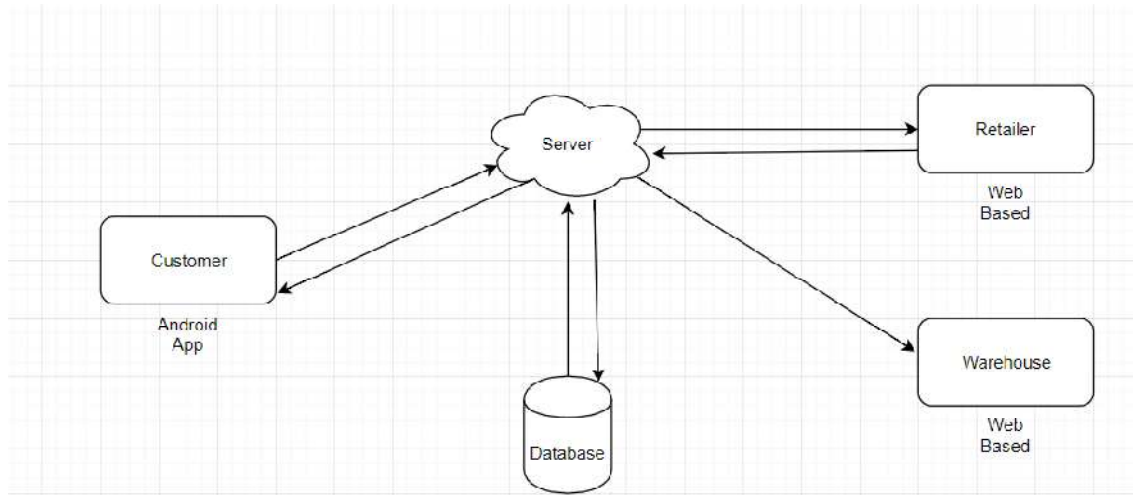


Figure 1: System Architecture

The customer will interact via an android application to the system. This application interacts with the server by web service. At the retailer shop retailer and warehouse persons will use system through the web application. Retailer can add/remove employees or product data. Retailer can maintain product history of customer to estimate product sale statistics and analysis. When customer makes the order of the product automatically stock status updated. The retailer has all the access to the system. The retailer will maintain database of product including all the detailed formation about product, also all the warehouse employee login details. Retailer can also add the warehouse employee account and also can check product history at any instance of time, to make product sale statistics and analysis. Retailer can also check for warehouse's working details such as which product has delivered to which customer. The Retailer can also add details of the customer.

[A] Scenario 1

In Scenario 1, at retailer shop actual product displayed with the NFC tags. Customer tap to NFC tags of the products to buy the products. Customer can also select the quantity in addition he can check the product availability. After the purchasing process he can proceed further to complete shopping simultaneously automatically bill is generated on his/her App with unique ID and that data is store on Retailer's database. Generated list is passed directly to the Warehouse portal with unique ID and give the acknowledgement to retailer. This unique ID is matched with the Customer's ID. The ID is checked at warehouse portal and delivers the product.

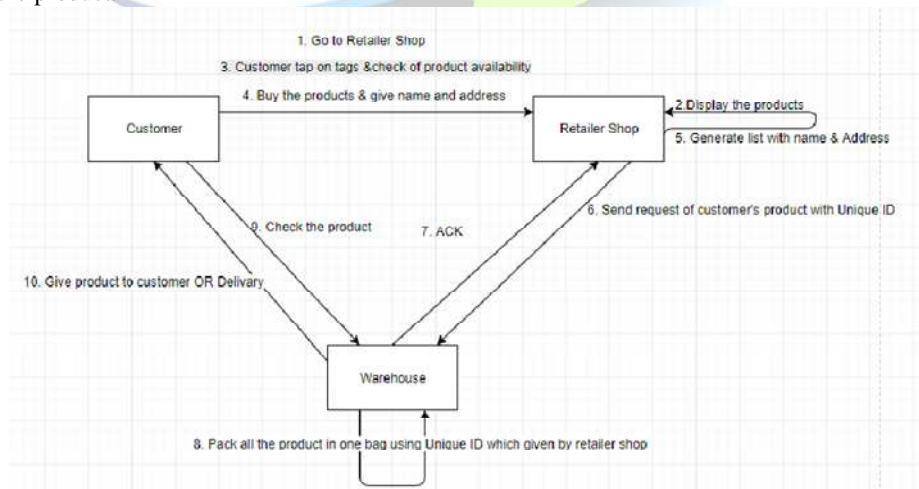


Figure 2: System's Process flow for Scenario 1



[B] Scenario 2

In Scenario 2, At Industry's product exhibitions, company's use to distribute brochure of newly launch products or existing products, so these kinds of brochures can be also use for purchasing purpose in smart way by giving QR code with each of product picture in brochure. If customer wants to buy the product then he can simply check details on brochure and scan the QR code using the application. As QR code get scanned product information is displayed on application and he can proceed further with purchasing process. At retailer's side bill is generated with the list of products and this list is passed to Warehouse with customer's unique ID. Then warehouse provides acknowledgement to retailer shop. If customer wants to check the products then customer can check the products at shop.

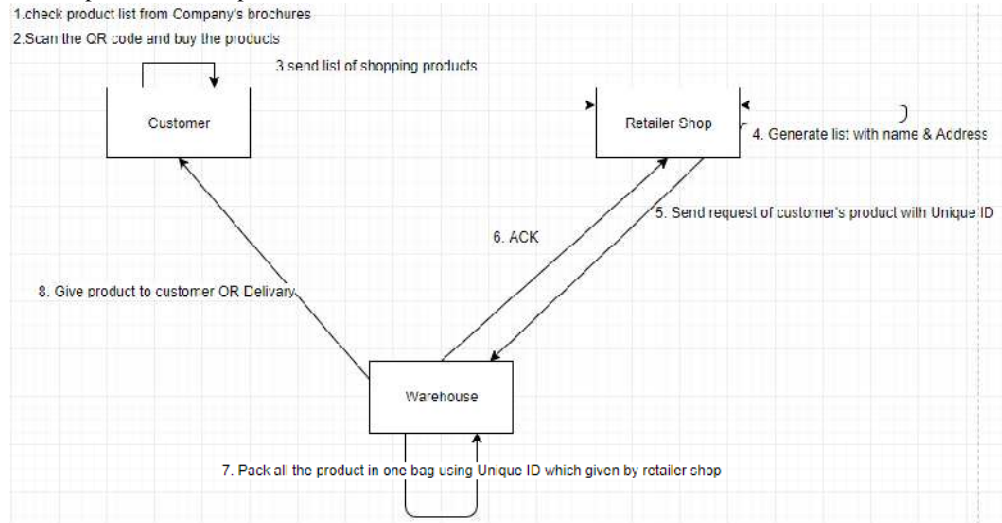


Figure 3: System's Process flow for Scenario 2

[C] Scenario 3

In Scenario 3, Regular customer will be having the NFC tags of the product at their industry itself, which are given by retailer shop to being regular and trusted customer. So now customer can make order with NFC tags or QR code that given to customer from his/her place or industry only. Customer gives order and list is generated and that list is passed to the retailer. Retailer checks the request and sends the order to warehouse with generated bill. If customer wants to check the quality/quantity of products then he can cross check products at shop and take it with generated bill.

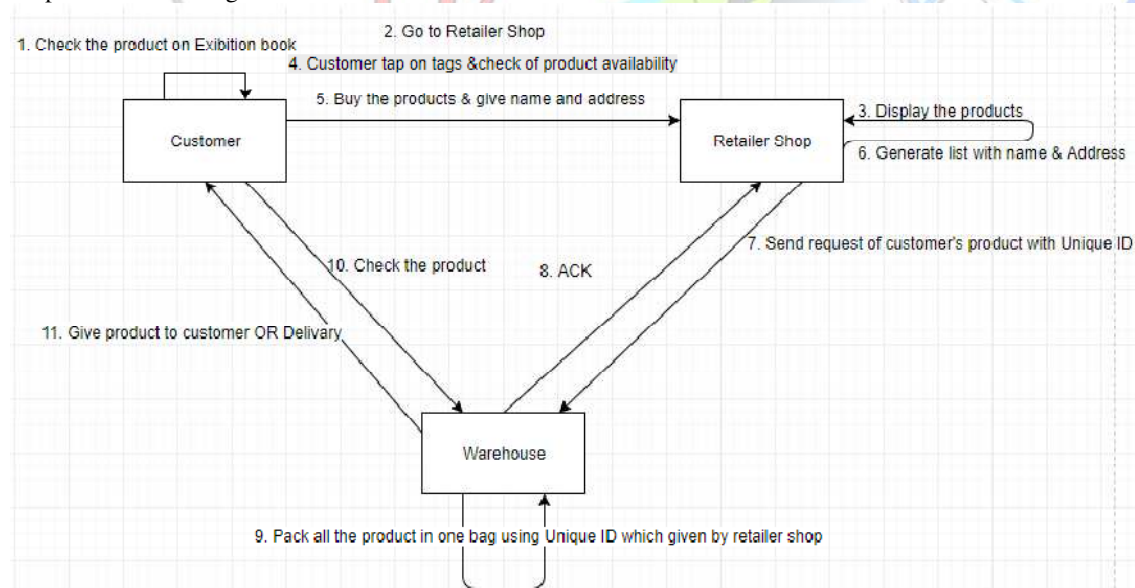




Figure 4: System's Process flow for Scenario 3

IV. FUNCTIONAL REQUIREMENT

The main purpose of functional requirements is to define all the activities or operations that take place in the system.

- Customer can place their orders and maintain order history with application.
- The System holds all the details of all the employees who are working in the organization.
- It holds the details of all the warehouse which are part of our organization.
- It holds the details of all Product Stocks held in the warehouse of the company.
- Whenever a product entry is entered then accordingly the stock number will be automatically updated.

V. SYSTEM REQUIREMENTS

Hardware Requirements:

- 1 GB RAM
- 200 GB HDD
- Intel 1.66 GHz Processor Pentium 4
- NFC supported smart phone.

Software Requirements:

- Windows 7,8
- Visual Studio 2010
- Android Studio

VI. CONCLUSION

The proposed project concept or idea represents the use of NFC technology for procurement of raw material for the industry. Thus, the time required to purchase/shopping and billing will be reduced as the user can purchase the products directly from his Android NFC enabled Mobile. Application created a prototype that shaped the future still remains much to do development and improvement of existing models. Shopping and NFC applications NFC Retailer's shop process is created as a model with NFC technology that allows users to perform the shopping process and verification of expenditure. NFC based shopping is created as a model with the use of NFC technology that allows industrial users/departments heads of production to perform the purchasing process of raw material and verification of expenditure and all history of raw material purchased. Applications created with ease of understanding and the design can be created and tailored to the shopping process to make it more effective and user friendly. Thus making it easier convenient for the industry to make the orders of the raw material as well as at retailer to serve flexible and smart way of shopping the products.

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