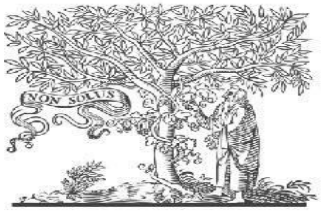
International Journal for Innovative Engineering and Management Research
PEER REVIEWED OPEN ACCESS INTERNATIONAL JOURNAL
www.ijiemr.org

COPY RIGHT



ELSEVIER SSRN

Link : https://ijiemr.org/downloads/Volume-12/Issue-04

10.48047/IJIEMR/V12/ISSUE04/188

Title Application of QR code in Inventory Management of a Manufacturing Industry

Pages: 1458-1465

Paper Authors
Dr. K. V. L. Somasekhar, B. Hruthik Kumar, G. Sai Praneeth, D. Srinadh, B. Anand, M. Karthik Reddy

USE THIS BARCODE TO ACCESS YOUR ONLINE PAPER

To Secure Your Paper As Per UGC Guidelines We Are Providing A Electronic Bar Code

International Journal for Innovative Engineering and Management Research
PEER REVIEWED OPEN ACCESS INTERNATIONAL JOURNAL
www.ijiemr.org

Application of QR code in Inventory Management of a Manufacturing Industry

Dr. K. V. L. Somasekhar, Professor, Department of MECH,
Vasireddy Venkatadri Institute of Technology, Nambur, Guntur Dt., Andhra Pradesh.
B. Hruthik Kumar, G. Sai Praneeth, D. Srinadh, B. Anand, M. Karthik Reddy
UG Students, Department of MECH,
Vasireddy Venkatadri Institute of Technology, Nambur, Guntur Dt., Andhra Pradesh.
E-Mail ID: hruthik2811@gmail.com (Corresponding Author)

Abstract

In order to track and manage inventory efficiently, we publish and bury a barcode on every product but still we do face a couple of problems. Barcodes are long in length and enthrall much of the space. So, it makes it difficult to place it on those products that are minimum in size. In the terrain where inventory is managed, our product may be subject to wear and tear. Any minute damage to the barcode placed on the product will render it non-operational. A barcode can be read from left to right only. Still, it cannot be scanned, if placed on a product upside down. There is a limit to the characters you can render in a barcode. As we cannot add more than 20-25 characters to manage inventory more efficiently, the best result is QR Code technology. QR Codes are better way to manage inventory. In the proposed system we are developing a QR code inventory management. Through this the managers will know the status of inventory and can cover the levels from time to time. This will ensure that spare is always available in stores and eliminates the delay in process of indenting/ordering and eventually saves the cost.

Key Words: Inventory management system, QR codes (Quick Response), Spare parts, Minimize errors.

1. Introduction

Inventory management refers to the process of storing, using, ordering and dealing a company's inventory. This includes the management of raw materials, spares, and finished products, as well as storing and processing of such items. Inventory management is the process of managing inventories from raw materials to finished products. Inventory management tries to efficiently streamline inventories to avoid both gluts and shortages. Two major methods for inventory management are materials requirement planning (MRP) and just-in-time (JIT). QR Codes were primarily developed in 1994 by Japanese automaker Toyota to track vehicles during car manufacturing. Barcodes are one-dimensional, which means they can only

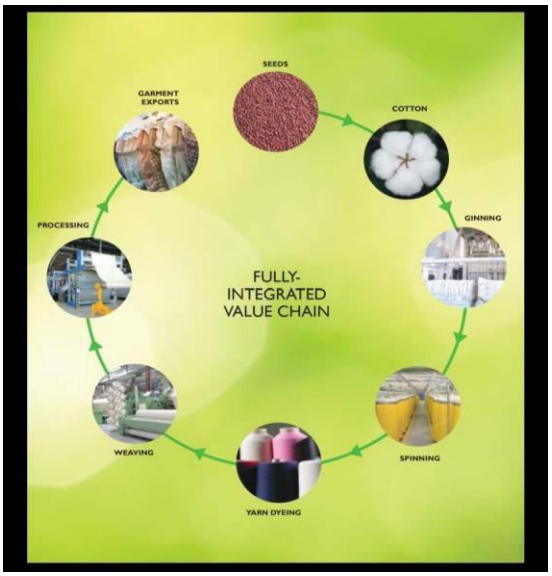
hold information in the horizontal dimension. Inventory management these days has far surpassed what was demanded in the 90s—and thus barcodes don't serve presently. Before any of these technologies was, cashiers and administrators tracked inventory manually, which was extremely slow. While barcodes were used vastly for inventory tracking purposes, they were still inefficient for mass product inventory management since they do not have the ability to store large data and lacks flexibility. With complex global manufacturing and logistics systems, QR Codes for inventory handed the capability to hold more comprehensive information, than the bar codes, for these systems to serve properly. A QR Code inventory management was developed for effective and easy inventory management. QR Codes were originally developed to justify large inventory management systems, because of their ability to hold more information than barcodes. Their use today can be setup across many logistics and warehousing systems for managing large product capacities.

Company profile

NSL TEXTILES
Cotton to Clothing

NSL Textiles Ltd, a part of multi-dimensional NSL Group, is one of the largest and fully integrated Textile Companies in the country, equipped with state-of-art machinery and promoted with the concept of "Cotton to Clothing" having its manufacturing operations spread over 5 locals and furnishing largest employment in Textile sector with 7000 pools in the State of Andhra Pradesh.

Flow chart of completely integrated value chain



Spare parts of the spinning machinery

International Journal for Innovative Engineering and Management Research
PEER REVIEWED OPEN ACCESS INTERNATIONAL JOURNAL
www.ijiemr.org

H.3300.67.01 Ceramic insert - Nozzle ceramic smooth D14
H.3300.67.02 Ceramic insert - Nozzle ceramic 4 grooves D14
H.3300.67.03 Ceramic insert - Nozzle ceramic 8 grooves D14
H.3300.67.03 Ceramic insert - Nozzle ceramic spiral D14
H.3300.67.04 Metal insert - Nozzle ceramic smooth D17
H.3300.67.05 Metal insert - Nozzle ceramic 4 grooves D17
H.3300.67.06 Metal insert - Nozzle ceramic 8 grooves D17
H.3300.67.07 Metal insert - Nozzle ceramic spiral D17
H.3300.67.08 Metal nozzle smooth D17
H.3300.67.09 Metal nozzle 4 grooves D17
H.3300.67.10 Metal nozzle 8 grooves D17
H.3300.67.10 Metal nozzle 16K boron AF 17 (screw)
H.3300.67.11 Nozzle ceramic smooth AF17
H.3300.67.12 Nozzle ceramic 4 grooves AF17
H.3300.67.13 Nozzle ceramic 8 grooves AF17
H.3300.67.14 Nozzle ceramic sprial AF17
H.3300.67.15 Nozzle ceramic smooth AF22
H.3300.67.16 Nozzle ceramic 4 grooves AF22
H.3300.67.17 Nozzle ceramic 8 grooves AF22
H.3300.67.18 Nozzle ceramic spiral AF22

H.3300.75.1 Cleaner f. tube and nozzle

H.225.04.5 Bearing f. winding a. delivery shaft

H.225.50.5 Ball bearing 30/55 x 28

H.210.19.1 Bearing f. delivery shaft

H.210.19.2 Bearing GLE 25

H.215.01.1 Bearing f. opening roller shaft

H.225.05.6 Coupling cpl.

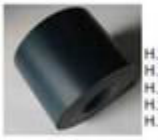
H.210.06.5 Clutch f. delivery shaft cpl.

H.220.69.5 Holder f. rotorbearing

H.220.57.5 Adjusting bush

H.220.53.1 Flat belt 20x53.550 10S
H.220.53.2 Flat belt 20x58.450 11S
H.220.53.3 Flat belt 20x63.350 12S
H.220.53.4 Flat belt 20x68.230 13S
H.220.53.5 Flat belt 20x73.125 14S

H.220.54.1 Flat belt 10x53.250 10S
H.220.54.2 Flat belt 10x58.150 11S
H.220.54.3 Flat belt 10x63.000 12S
H.220.54.4 Flat blet 10x67.900 13S
H.220.54.5 Flat belt 10x72.760 14S



H.200.41.1 Conveyor belt 100x51.700 10S
H.200.41.2 Conveyor belt 100x56.675 11S
H.200.41.3 Conveyor belt 100x61.630 12S
H.200.41.4 Conveyor belt 100x66.550 13S
H.200.41.5 Conveyor belt 100x71.525 14S

H.200.23.1 Conveyor belt 140x53.850 10S
H.200.23.2 Conveyor belt 140x58.800 11S
H.200.23.3 Conveyor belt 140x63.800 12S
H.200.23.4 Conveyor belt 140x68.750 13S
H.200.23.5 Conveyor belt 140x73.700 14S

H.205.42.1 Yarn guide tube soft twist R1
H.205.42.2 Yarn guide tube soft twist R20

H.205.42.4 Yarn guide tube R1
H.205.42.5 Yarn guide tube R20

H.205.73.1 End piece f. yarn guide tube

H.225.73.1 Winding roller cyl. cpl.

H.1300.13.1 Rubber ring

H.2700.31.1 Transfer tail plate cyl. D54

H.2700.38.1 Package plate cyl. D54

H.2700.37.1 Bearing f. transfer / package plate

International Journal for Innovative Engineering and Management Research
PEER REVIEWED OPEN ACCESS INTERNATIONAL JOURNAL
www.ijiemr.org

QR Code

A QR code is an alternate generation of barcodes which contains data which can be scanned by using scanning devices or cell phones to get the information. In the case of QR codes can contain data like alphabets, numerical and numbers, alphanumeric characters and bytes. These above data types are restated or converted into a unique two-dimensional arrangement of squares. When a QR scanner data contained in the squares and gives the user the data 's original form.

Utmost smartphones have built-in QR scanners, which are sometimes build in the camera. A QR scanner is simply a way to capture QR codes. Some tablets, similar as the Apple iPad, have QR readers build into their cameras. Some older devices may bear a particular app to read QR codes – these apps are readily available on the Apple App Store and Google Play.

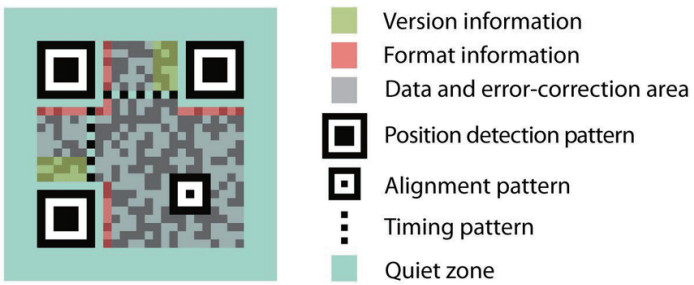
A standard QR code is identifiable predicated on six components:

Quiet Zone - This is the empty white border around the outside of a QR code. Without this border, a QR reader will not be able to determine what is and is not contained within the QR code (due to interference from outside elements).

Finder pattern - QR codes generally contain three black squares in the bottom left, top left, and top right corners. These squares tell a QR reader that it is looking at a QR code and where the outside boundaries of the code taradiddle.

Alignment pattern - This is another smaller square contained nearly the nethermost right corner. It ensures that the QR code can be read, indeed if it's disposed or at an angle.

Timing pattern - This is an L-shaped line that runs between the three squares in the finder pattern. The timing pattern helps the reader identify individual squares within the whole code and makes it possible for a damaged QR code to be read.



Problem definition

The literal meaning of the "Inventory" is a stock of resources. Every initiative need inventory for the smooth running of its activities. Inventory Management has been practiced by many industries to increase their work productivity of item flow. Nowadays, small and medium industrialists still practice inventory management using traditional methods such as paper bases, spreadsheets, etc. Although they are living in the period of technology. Still, the physical process is carried out on large scale. The use of paper and human power to maintain such inventory is trained over the period and throughout the globe. Due to such practices, a huge amount of paper waste, lack of maintenance records, and communication gap is caused. So, the need for a virtual and high-tech inventory management system has occurred which can overawed all the problems by utilizing the better use of technology.

Proposed system

The Inventory Management System is a real- time inventory database able of connecting multiple stores. This can be used to track the inventory of a single store, or to manage the delivery of stock between several branches of a larger ballot. still, the system simply records deals and restocking data and provides warning of low stock at any position through dispatch at a specified interval.

The thing is to reduce the stress of shadowing rather than to holder all store conservation. farther features may correspond of the capability to produce reports of deals, but again the explanation is left to the operation. In addition, since theft does sometimes do, the system provides results for attesting the store inventory and for correcting stock amounts. product unit use inventory operation system to reduce their transport costs. The system is used to track products and corridor as they're transported from a dealer to a stockroom, between lockers, and eventually to a retail position or directly to a client. inventory operation system is used for colourful purposes, including

- Maintaining and recording the information between too important and too little inventory in company.
- Keep track of supplies as it's transported between different locales.
- Recording products information in a storehouse or other position.
- Having record of Picking, packing, and dealing products from a storehouse.
- Reduction of product fustiness and decay. Avoiding the eschewal-of- stock situations.

To overcome the downsides and limitations of the being system, this inventory operation System software is proposed. It's a more effective web operation developed using Java.

This operation is more effective for stock data operation; the data is more secured and can be penetrated fluently.

Modules of the project

1. Start
2. Use will show dashboard of our application
3. After the user can add products/delete using QR code according to need and maintain products.
4. After the user can add products/delete using QR code according to need and maintain her products.
5. Also, user can view our previous stored inventory list and Track our products on the spot.
6. After all Products Related data is stored in a database for further use.
7. Stop.

System Architecture

A System Architecture is the conceptual model that denies the structure, behaviour, and more views of a system, and architecture description is a formal description and representation of a system, organized in a way that supports reasoning about the structures and Assistant architecture can comprise system components, the extremely visible properties of those components, the relationship i.e., the behaviour between them. It can provide a platform in which systems can be procured, and systems developed, that will work together to implement the overall system.

This proposed system consists of the following parts:

Scanning QR Code: Opening the QR Code Scanner, scans the QR Code which is attached to each item and after the QR Code is scanned the item related information will be shown on the screen which contains the product description, Serial No of the product, date of installation, previous maintenance record and updated record.

Update: After scanning the QR Code, the authorized user will get complete detail of the product. In future, if any maintenance occurs that record can be updated through the same app interface using the Update option.

Result and Analysis

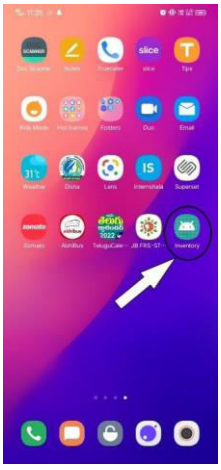


Fig 1

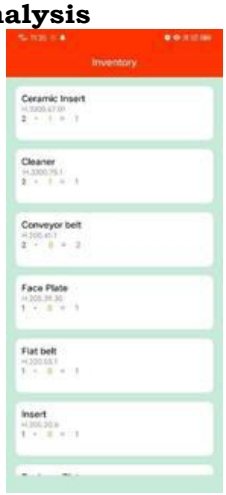


Fig 2

In figure 1 icon of our application. In figure 2 the home page where we can see the list of the spare parts and their number.

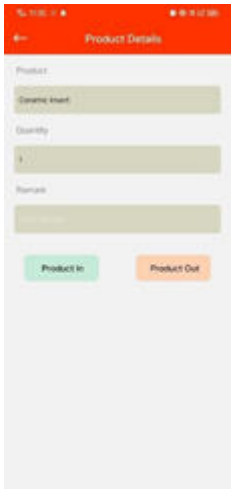


Fig 3

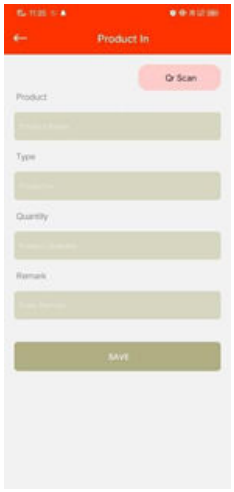


Fig 4

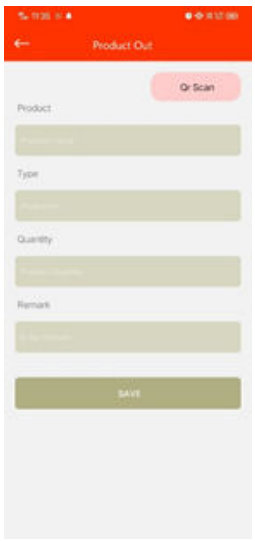


Fig 5

In figure 3 product details page where the details of the product can be seen.

In figure 4 product in details of the spare part.

In figure 5 product out details of the spare part.

Conclusion

The purpose of this study was to identify efficient flexibility to deal with Modern Inventory management. Based on the research conducted, that Digitalization was indeed necessary for convenient and immaculate management of Inventory in Contemporary forms. We can conclude that "A QR Code Technology for Centralized Inventory management system" will contribute towards digital and go green movements. This project includes the most versatile smart QR code technology which increases the reliability of the project. The system developed by us will be able to help the inventory management authorities to centralize their inventory process. The amount of manpower needed in the past has decreased because of the centralized inventory management system.

As a result of digitization, technology replaces the manual ways of keeping records. We conclude that the proposed system brings effective improvements as well as enhances the productivity of the current system.

References

1. Dolinsky, Anton. "Inventory Management History Part Four". Almaty Systems. Retrieved August 17, 2010.
2. http://www.almyta.com/Inventory_Management_History_4.asp
3. Milind Amrurkar, Dr.Anup Palsokar, Asst.Prof. Pankaj Raibagkar "QR Code

based Stock Management System" - Journal: International Research journal of Engineering and Technology (IRJET).

4. Lockard, Robert (29 November 2010). "3 Advantages of Using Inventory Management Software". Inventory System Software Blog. Retrieved 23 November 2012.https://inventorysystemsoftware.wordpress.com/2010/11/29/3-advantages-inventory- management-software/

5. P.G. Matsebatlela and K. Mpofu, "Inventory Management Framework to Minimize Supply and Demand Mismatch on a Manufacturing Organization", International Federation of Automatic Control, Vol.3, No.48, Mar 2015, pp-260-265.