



SMART BLIND SHOPPING CARRIER

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I. ABSTRACTIONS

Supermarkets becoming more popular in today's consumer environment, drawing a varied range of people owing to their vast product offerings. Supermarkets provide a large variety of things, including fresh vegetables, meats, dairy, and packaged goods, as well as home essentials, making them an excellent one stop destination for completing all shopping at once. This convenience, however, is not without its drawbacks. Long lineups can make shopping experiences unpleasant, leading supermarkets to utilize techniques such as technological improvements to enhance the shopping experience—especially during peak periods when many offers are available. The billing method is typically time-consuming and hectic, requiring the inclusion of more human resources in the billing area. Furthermore, customers often have trouble operating overloaded excessive carts. Manual computations of purchases and budget comparisons until the scanning process in the invoicing area adds another degree of aggravation. To address these concerns, an extraordinarily idea encompassed with IoT and RFID scanners are implemented into shopping trolley. As clients load items into the trolley, the RFID reader automatically reads products data such as item names, prices, and weights. A speaker will declare the goods that buyers have chosen, as well as their price and weight. This information is then shown on a screen, allowing buyers to inspect goods and alter prices by rescanning. Furthermore, the trolley is design to

move, eliminating the need for customer to push it back and forth. Customers may pay with card in front of the RFID, and payment is completed in seconds. An SMS will be delivered to the customer's phone number to confirm the payment, and the payment procedure will also trigger a announcement over the speaker if the card does not have adequate a balance. When a customer is done shopping, they can easily take their cart to the payment area. This cuts down on the time-consuming physical counting process and makes shopping less tiring, especially for older customers.

II. INTRODUCTION

For the visually impaired individuals, shopping for groceries and household items can be considered a challenging and frustrating experience. They frequently need to rely on help from the store employees or other customers, which might take some time and reduce independence, Researchers, they have suggested using RFID technology to create some smart shopping systems that can help shoppers, who are blind or visually impaired, while they are out shopping to solve this problem, RFID is like a wireless communication technology that automatically identifies and tracks items using radio waves or whatever, kind of cool! It can be used for creating an environment for smart shopping where items are like marked with RFID tags that can be scanned by RFID readers to give customers

information about the item. So, blind customers who use RFID-based smart shopping systems, they can receive some real-time information about the product's location, price, and other important stuff, making their shopping experience more comfortable and accessible. This study, it's like aiming to assess the usefulness of current RFID-based smart retail systems for blind people. And then make like suggestions for prospective design and implementation changes, kind of important stuff. This study, you know, intends to offer some insights into the creation of more accessible and user-friendly solutions for visually impaired customers utilizing RFID technology by reviewing the recent research and examining the advantages and disadvantages of existing systems.

III. LITERATURE SURVEY

Shopping is considered as an essential activity in many households, which has been adversely affected ever since the COVID-19 pandemic started. In retail stores, people are crowded and panic buying, without using a social distance, and not practicing cleanliness after touching merchandise or cashiers physically. Even during a pandemic, clients can purchase more effectively and efficiently with the help of a smart shopping system that integrates RFID and mobile website technologies [1].

The study's goal is to help consumers have a better shopping experience by highlighting the accessibility of simple, contactless purchases, interesting marketing, and due to a lack of access that occurred when the Movement Control Order (MCO) was in effect, and hardware components such as the RFID reader were purchased in bulk but are extremely expensive, extra stickers, and some other items, could not be purchased and added to the system[5].

Additionally, there may be other opportunities for development in terms of other fine-grained functionalities that the developer wishes to incorporate within the system itself, due to the limitations of the PHP programming language, and time constraints. The developer intends to incorporate Beacon BLE to carry out proximity marketing and advertising as one of the future improvements. This makes it possible for anyone nearby the Beacon BLE units to receive [2].

In this papercut, the velocity of the billing procedure will be sped up by the intelligent shopping cart. The RFID equipped cart that handles the billing system. The ZigBee Module will

transmit the data wirelessly. Each team will have its own unique RFID gadget to check the RFID tags and address, yup. The consumer can view the whole product amount on an LCD screen after the merchandise has been automatically scanned [8].

In the automated billing system used in supermarkets, malls, and other establishments, this smart shopping cart plays a brand-new role. The device is also sensitive to metal and water. The RFID reader can read 50 tags per second. This was done to create an app that turns on the tram and can read tags [7].

This study project shows how a dependable, practical, and very shrewd Smart Shopping Cart is implemented, okay. A smart trolley with an LCD display, a barcode scanner, and a Raspberry Pi, you know, comprises the suggested system. The goal of this exploratory approach is to fully eliminate the tiresome shopping interactions, right, and administrative problems, and stuff. Under the actual circumstances, you know, the proposed architecture can unquestionably be applied at a business size, like for real [4].

This self-billing device is a cutting-edge technological advancement that can really assist us greatly, you know what I mean? It can help you save time and resources, all that good stuff. Programmed charging is carried out in the cart, saving the customer's time, you know what I'm saying, and reducing the crowd at the charging counter, so that's cool. Additionally, it reduces labour, which is great. Due to the use of IOT and all that, it will do so as well, I guess. There is, like, a 10:1 average waiting time for customers, which is a big distinction between the proposed and, like, the existing models and stuff [6].

Our approach to an RFID based Smart Shopping Automation Data System (SSADS) which includes an automated bill calculator is being presented to enhance the current existing system. This approach is performed by attaching RFID tags to the products or items and having an RFID reader with a touch panel display at the EXIT gate, along with other components that are crucial [3].

By using this method of shopping system, customers will be able to have full knowledge of the price of each item that is scanned in by the reader, as well as the final total cost of the items! With SSADS, the customer will save time, labour costs that are associated with shopping malls, and costs related to the products too! Voice assistants can be

included for both ordinary people and persons with disabilities, for instance! An app can be created, and net banking can be added to allow users to pay their final bills with their own funds [9].

This paper introduces, um, the uh, RFID-based smart shopping cart that, you know, enables users to, like, bypass lines at checkout counters and stuff. So, like, it's a more, um, advanced technology system than a bar code reader and stuff. Like, lets users independently scan the objects they want with RFID. And, after scanning, the item is placed to the cart and the information is displayed on the screen. So, this project produced a functioning system, with fundamental or fundamental functionality and stuff. Like, there's a straightforward web application that, uh, the users and, like, administrators use to interface with, you know, the prototype system. So, yeah, this project is going to, like, improve the, um, sale and purchase of the, uh, buying process and will, like, benefit both the customer and the, you know, seller [11].

This study's goal was to outline the suggested layout and operation of a smart commerce system based on RFID technology. This system makes use of intelligent shopping carts that customers may man oeuvre while looking for the products they want. Promotional items are also suggested, and the payment information will be calculated as the customer shops [13].

The automated shopping cart will recognize the products you put in it and add them to your bill. By using this strategy, customers can save time by skipping the lengthy queues at the check-out counters, and the store will be better supervised. The sensor on the shopping cart will also update and transmit the quantity of products to the main server, ensuring that the server is always informed of the status of each item in the store. Addition-ally, since the RFID scanner will read every item automatically rather than manually by a human, inventory management will be considerably more efficient. This research project proposes a mobile management application-enabled smart shopping system [15].

This paper utilization of Big Data, Cloud Computing, and Artificial Intelligence (AI) technologies has become widely accepted as a means of developing novel operating models for the retail sector. The new approaches to customer-focused marketing are based on the recent development of IoT technologies. This paper proposes a framework for creating smart shopping

solutions that considers internal smartphone location tracking using BLE beacons, image processing methods for creating digital maps, and internal routing methods for locating retailers in a mall [14].

A smart trolley with an LCDD display, a barcode scanner, and a Raspberry Pi comprised of the suggested system. The goal of this exploratory approach is to fully eliminate the tiresome shopping interactions and administrative problems. Under the actual circumstances, the proposed architecture can unquestionably be applied at a business size. This self-billing device is a cutting-edge technological advancement that can assist us greatly. It can surely help you save time and resources as well [3].

This approach can be used at all malls, large clothes stores, home appliance stores, etc. It prevents customers from having to wait a long queue and automatic billing is possible. Additionally, it encourages the purchase of goods in shopping centres by blind, elderly, and handicapped customers by providing information about the location of the item, its amount, price, and automatic billing, among other things. The robotic frame and servo motor that make up the trolley's arrangement enable it to navigate and display information about product availability and price based on user input [12].

This type of system also makes inventory management considerably simpler. In this work, we analyse the design criteria of a smart shopping system and develop a prototype system to evaluate functionality and to design a secure communication protocol to make the system workable to validate the viability of such a system. To the best of our knowledge, this is the first smart shopping system that has been proposed while considering the security [5].

IV. METHODOLOGY

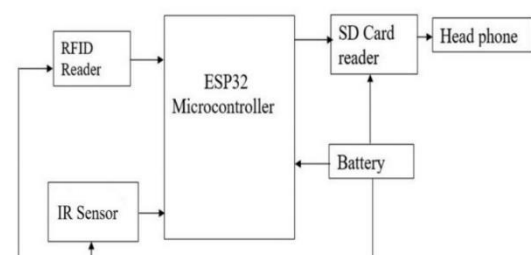


Fig.1 Smart blind shopping carrier

The focus of this study is to facilitate, like, both supermarkets and customers, you know? The proposed Architecture of this study provides, like, the hardware and software solutions that help the supermarket to improve the quality-of service issues, which is, like, super important. And, the time-consuming process of the shopping, nobody likes that, right? The retail industries invest further, like, a whole lot, in exploring the potential of these technologies for the novel services for their customers. These novel services attract, like, a huge number of customers, like seriously, and that, you know, increases revenue as well.

The innovation of the proposed study is the architecture model and services that come together to provide, erm, ecofriendly services, which is like, totally awesome and cost-effective.

The planned methodology is every product in the shopping mall will have an RFID tag on it, which contains the information like the product name, the price, manufacture date and expiry date. In shopping malls or supermarkets, the products are supplied with RFID tags rather than barcodes. The shopping trolleys include the setup containing an RFID reader, ultrasonic sensor, and SD card reader.

If client needs to buy any product, then he/she should place the product within the trolley. As soon as the product falls within the trolley, the RFID scanner read the RFID Tag placed on the product. This RFID reader is connected to the microprocessor. Microprocessor crosschecks the knowledge get from the RFID reader and data within the memory of the microchip. If the data gets a match, then the price of the product, name of product, manufacture and expiry date of the product will be announced as an audio output through headphones.

V. FLOWCHART



Fig.3 Flowchart

This flowchart shows a straightforward procedure for an RFID-based device that reads RFID tags and outputs audio.

START: The procedure begins with the system's initialization, which also includes configuring the RFID reader and audio output system. **Search for RFID Tags:** The system looks around for any potential RFID tags.

VOICE COMMAND: Here the input is given as voice command.

Send information for the next step: If the RFID tag is successfully validated, the system passes the product's information to another process for further processing or storage.

Read stored data: The system reads the RFID tag's stored data, which may include product specifications, cost information, and other pertinent data.

Provide Audio Output: The system provides audio output of the stored data, allowing users who are blind or visually challenged to hear the data even if they are unable to read it visually.

STOP: After the RFID tag has been read and the audio output has been delivered, the procedure is complete. The process is repeated as the machine moves on to scan for further RFID tags.

Overall, this flowchart shows a straightforward yet efficient method for using RFID technology to offer audio output for those who are blind or visually impaired as they shop.

VI. CONCLUSION

In this paper, we suggest a RFID-based secure smart retail system. Like, you know, security concerns are considered in relation to a smart shopping system for the first time ever and RFID is used to, like, improve the shopping experience. We meticulously outline, like, you know, the concept of the system, and then we go ahead and build, like, a prototype to, like, test its functionality. We also provide, like, performance evaluations and, like, security analysis when, you know, creating a secure communication protocol. We, like, believe that, you know, in the future, retailers will, like, totally be covered with RFID technology, and our research is, like, groundbreaking in the development of a, you know, smart shopping system.

Our future research will, focus on improving the current system, including how to, like, increase communication efficiency while, you know, keeping security features and how to, like, reduce computational overhead at the smart cart side for, you know, increased efficiency. The development of, like, intelligent shopping carts that, like, make use of RFID technology and, like, automatic product information announcement enhances, you know, the shopping experiences of customers. Modern shopping carts that, you know, use technology offer up-to-date information on products and, like, pricing while, you know, saving time and effort. The "smart shopping cart" is, like, a technical advancement that, like, aims to improve, you know, both the shopping experiences of sighted and visually impaired customers.

VII. REFERENCE

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