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Android application for dairy farming

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ABSTRACT

Dairying is also a major source of livelihood for approximately 80 percent of small and marginal farmers in India (typically owning one to three milk-producing animals) who contribute approximately 70 percent to the total milk production. India has the world's largest livestock population 58 percent of buffaloes and 15 percent of cattle. Owing to this huge bovine stock, though India has managed to attain 1st position in milk production, the full potential of Indian milk herd remains unattained. The milk productivity of India's livestock is less than half (48%) of the global average: 987 kg per lactation compared to the global average of 2,038 kg per lactation. There is a need to raise the milk yield in order to enhance the per capita availability of milk and to meet the increasing demand. The financial effect of animal health problems is familiar, however, it's devastating impact on the income of farmers' and well-being is generally minimized.

Keywords— *Android Application, Dairying, React JS, QR-Code, Bar-Code*

1. INTRODUCTION

Use of mobile phones is drastically increased more than a desktop computer or a laptop computer. Nowadays, in every domain whether it is banking sector, healthcare sector, medical sector or insurance sector, the clients want their applications to be mobile-enabled. Mobile application development [1] is the process by which application software is developed for small handheld devices such as smartphones, tablets, etc. With the highest market share, Android is the dominant mobile application today. The whole Android ecosystem underwent various improvements.

Android Studio is an IDE [2] designed and developed specifically for Android Application development. Many companies are investing huge money in android application development. When compared with other operating system the Android operating system has been updated an incredible number of times resulting in a web-based service which is remarkably different from the original version of this mobile operating system. Android Studio is now a default IDE to develop android application.

The financial effect of animal health problem is familiar, however its devasting impact on income of farmers' and well-being is generally minimized. Our System is a technology-powered organization specialized in Veterinary and dairy extension services. For making dairy a sustainable and profitable venture, it helps to equip dairy farmers to take care of their animals through better nutrition, management, fodder, feed, and preventive healthcare. Our System provides Integrated Proactive livestock Management at very affordable price. We achieve our objective through monthly proactive visit and close monitoring of each cattle using hi-end Technology. Through us our marginal farmer will have access to essential health tips to keep the animals healthy. Our System provides a website where the End-user can create QR code and Bar code. The End-User can then use these Bar code or QR code for trademark of any product. End-users can use this for quick access to their identity. The Bar code follows the UPC bar code standard that consists of 12 digits which store enough numerical information about the economy.

2. RELATED WORK

In the presently existing system, the dairy industry in India is a significant contributor (12% of GDP) to the national economy. Secondly, less number of quantity and skill of farm labour. Also, the environmental consequences of intensive dairy farming. Lastly, the manual process of milk purchase and sales which makes the process slow and even farmers face losses due to inaccurate manual billing and the time taken for the same.

Vijayalakshmi S. Sitaramaswamy J. and John De Boer (1995)66 [3] in their remarks on developmental efforts for animal production systems in India started with organized milk procurement, processing, and marketing. Most rural areas around Bangalore and Kolar districts of Karnataka state are covered by an organized dairy development program. Parallel to this organized sector, the unorganized (informal) dairy sector also functions with different strategies. This study compared the cost of procurement/distribution of the organized and informal sectors of the dairy industry in districts like Bangalore and Kolar regions. To reduce losses in the organized sector and assist producers who are not able to participate in the formal sector, control points in the existing system were identified and analyzed.

Ray and Sunil (2000) 67 [4] conducted a study in Jaipur city reported that local milkmen supply fresh raw milk at the doorsteps or to the vendor who in turn supplies it to households. The prices varied from Rs.13-20 per litre for cow's milk depending on the adulteration of milk with water and the category of customer. The price generally realized by small

farmers from the local vendor was about Rs.10-12 per liter, whereas they got only about Rs.9-10 from the cooperatives. Some middlemen also deployed daily wage workers to collect milk by using bicycles, jeep or camel cart to collect milk from the doorstep and take it to different selling points in nearby major cities.

Bhowmilk (2006) 70 [5] opined that the Cost and returns from milk production were estimated separately for local and crossbred cattle. The gross cost of maintenance was worked out as the sum of fixed and variable costs items. The net cost was arrived at by deducing the value of dung from gross cost per milk cattle per day was divided by the average milk yield per day of the respective breed. The net return was calculated by deducting the gross cost from gross return.

3. PROBLEM DEFINITION AND OBJECTIVE

3.1 Problem Definition

Our Dairy Farming Android App keeps the end users (Customers and also Farmers) up to date with the current prices of Dairy Products. The App shows essential tips for keeping their Poultry and Farming animals healthy. The App also consists of a QR code scanner which will return the Details of a particular farmer of who's the QR code are scanned. The App shall consist of a Feedback page for further improvements and bug or error report. The feedback will redirect to mail client and pushed to Email of Team Agronomy. This also consists of a website for Generating QR CODES and BARCODES.

3.2 Objective

To develop digital system poultry farming which will help the End-user (The society or the society Person who buys the milk from farmers) and the Farmers (people who sell the milk generated from their calves). And keep them updated with the current price of Milk, Cream, Cheese and all other Dairy Products.

4. IMPLEMENTATION AND TESTING

4.1 React JS

React is an open source JavaScript library for building User Interface. Two important points to be remembered while defining React is that React [6] is JavaScript Library and is not a framework and secondly it focuses only on user interface and not on other aspects of application like routing or HTTP requests. It is responsible for building rich user interface. React is a project created and maintained by "Facebook", where a company like "Facebook" uses React in its own products and invests money and resources to keep projects alive. React has become popular among programmers and developers and is also one of the most skill set used by the companies in today's world. In this paper, React has been used to develop a web page to generate QR-code and Bar-code.

4.2 Modules

4.2.1 Price Updater: In this price updater module the price of the dairy products get an update from an API (Price Searcher). This API updates the price of the products based on the stock market and updates the price in the application.

4.2.2 Animal's Health: In this, the farmer will get essential tips for keeping their poultry animals and farming animals healthy. It also has the current situation of the animals in the poultry and huts.

4.2.3 QR-code and Bar-code Scanner: The App also consists of a QR code scanner which will return the Details of a particular farmer of who's the QR code is scanned.

4.2.4 Contact Us: The App shall consist of a Feedback page for further improvements & bug or error report. The feedback will be pushed to Email of Team.

4.3 Testing

QR-code and Bar-code Generator Test Case

Table 1: Test Cases

S. No.	Input Variables	Expected Results	Actual Results	Test Case Pass/Fail
1.	QR Code Generator, Description Name:ABC >Address: Vodgaon Contact No.:9123456780 Foreground colour:#989898 Background colour:#dab3b1 Quality: High Output format: PNG	The QR Code should be generated as an when we go on inserting input variables.	The QR Code should be successfully generated.	Pass
2.	Bar Code Generator, Enter a valid UPC Standard barcode value: 652810119337	The Bar Code Should be generated and saved/downloaded. After clicking on Generate Bar Code, save as SVG.	Bar Code Successfully Generated And Saved/Downloaded.	Pass

GUI and Functional Testing Test Cases

Table 2: Test Cases

1.	On Click/On Load	Whether the API values are properly retrieved and displayed	Successfully Retrieved and displayed	Pass
2.	On Click/On load	Whether the pie is fetching the appropriate values and displaying the values in pie.	Successfully fetching the values and displaying.	Pass
3.	On Click/On Load	When clicking on Navigation Bars/Tabs, whether its opening appropriate page	Successfully Opening the pages.	Pass
4.	On Scroll	Whether the scroll view is working	Working	Pass
5.	On Click	When clicking on scan, the app should access the camera of device and open	Successfully accessing the device's camera.	Pass
6.	On load	After Scanning the Bar Code/QR Code, should light display the results of scan	Successfully displaying the scan results	Pass
7.	On Click	On clicking the volume up button, whether the flash	Flash light On/Off successful	Pass
8.	Contact Us Page, Insert, Subject:Feedback Query:App is pretty Good Send mail	Whether the page is redirecting to Mail client	Successfully Redirecting	Pass

5. RESULTS AND ANALYSIS

Following are the screenshots of the Dairy Farming Android Application.

Fig. 1: Splash Screen

Fig. 2: Pie Chart with Price

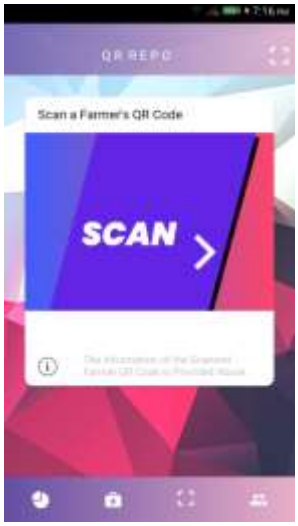

Fig. 3: QR and Bar Code Scanner

Fig. 4: Scanning a QR-code and Bar-code

Fig. 5: Website Home Page and QR-code Generator Page

Fig. 6: Result of Scanned QR-code

Fig. 7: Result of scanned Bar-code

6. APPLICATIONS AND ADVANTAGES

6.1 Applications

- The application does retrieve the current real-life pricing of the dairy products using a price search API which is a paid API from the RapidAPI repository.
- The application also suggests quintessential information for taking care of the animals, also referred to as tips in the second page of the dairy farming application.

- The application allows the end-user to scan bar code and QR code for retrieving and displaying farmer's information.
- Using the Concoct website, the farmer can generate his/her own unique barcode and QR code for storing reference information.

6.2 Advantages

- Keeps the Farmer updated.
- Display's the current price of Dairy Products (Not just the specific product but also, sub-products of that product).
- Gives essential animal health care tips for Farmer.
- User-friendly user interface for farmers.
- Features a Bar code and QR code scanner for displaying farmer's information.
- Features a reference of the user-friendly website that generates the barcode and QR code.
- The application provides ease of access to current prices for the farmer's using a trusted API service.

7. CONCLUSION

The purpose of this dairy application is to give the end-user the current price of respective products. The App views Essential health care tips to keep the poultry animals healthy. The App also features a scanner where the End-user can scan Bar code and QR code. This page has an extension that is the website to create/generate a QR code as well as Bar code. The application can easily be understood by the users as it is simple and attractive. Since we are using React JS framework which is highly reliable. Hence, it's strongly recommended to use the application.

8. FUTURE SCOPE

- This application may be expanded to poultry farming.
- The fodder purchase order can be made automatically as soon stock reaches a minimum value.
- Veterinary doctor's helpline in the nearby area can be provided.
- Farmers who install the application will be able to post the animal's details that he wants to sell that can be viewed by other farmers and make a purchase from him.

9. REFERENCES

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