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Rabbitry System: Smart Rabbit Breeding Monitoring System

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ABSTRACT

Previously in rabbit farming activities, data for a species type, weight, amount and type of nutritional diet, number of doses of vaccine taken, duration the frequency with which the parent rabbits were bred as well as the expected period the rabbits matured and ready for sale as broiler rabbits was taken and manage manually and needs to be recorded in detail for each rabbit individually. Usually, these data were recorded by using a logbook and the probability of getting some errors while recording the data is very high because of the large number of rabbits need to be monitored as well as the factor of loss or damage of the logbook itself. Therefore, this mobile application called Rabbitry System was developed as a smart farming management system that can be operated via smart phone or tablet. As a cloud-based computer system, all personal data relating to rabbits and/or farming operations may be saved, monitored, managed, and facilitated more systematically and efficiently in a single database platform. This information was transformed into QR codes, which may be accessed from anywhere. Furthermore, this invention may boost the effectiveness of livestock output while also increasing our local farmer revenue to an optimal level.

Keywords: Rabbit; farming; logbook; mobile application; QR code

INTRODUCTION

Rabbit farming is a field that has a lot of good business potential if it is developed properly [1-4]. The main potential of the rabbit industry is to create an agro bine, as indicated by its ability to multiply whether cultivated on a small scale or commercially; and it is expected to compete with other animal husbandries such as broiler chickens, goats, and other farm animals that readily available in the local market [5]. However, the productivity of rabbit farming is still at a low level due to most of the breeders still carrying out some monitoring activities and their rabbit breeding management manually.

Currently, all data for a species type, weight, amount and type of nutritional diet, number of doses of vaccine taken, duration the frequency with which the parent rabbits were bred as well as the expected period the rabbits matured and ready for sale as broiler rabbits was taken and manage manually and needs to be recorded in detail for each rabbit individually. In addition, usually these rabbits are raised in 30 to 50 small cages where for each cage can only accommodate 2 to 3 rabbits [6,7].

Furthermore, these data are often recorded in a logbook, and the probability of making a mistake while recording data is considerable because of the huge number of rabbits need to monitor as well as the possibility of loss or damage to the logbook due to effect of bad weather,

missing the logbook or any consequences.

Therefore, there are three main objectives need to fulfil for solving all the problems mentioned before. Firstly, to create low-cost mobile applications that may be controlled through smartphone or tablet for monitoring work and rabbit breeding management. Secondly, to record and gather all rabbit-related data in a more systematic and efficient manner on a single platform or database. Finally, to increase the effectiveness of livestock productivity while also increasing farmer revenue to the maximum.

Completely, a new systematic and effective method of monitoring and management was developed to simplify the activities of farming by using mobile applications integrated with cloud computing called as Rabbitry System. With this system, all personal data relating to rabbits can be recorded and saved in one database platform on the internet in a more organised, systematic, and secure manner using this mobile application. Next, this is the simple flow of how the system works. Firstly, the farmers will open this Rabbitry System mobile apps via their smartphone or tablet. Next, the farmers will scan the QR code label for each cage using Rabbitry System mobile apps, one QR code will represents 1 or 3 rabbits from the same species, birthday, and parents. This QR code scanning will bring the farmers to the main database system. Then all data from their rabbits will be key in using this mobile apps. Lastly, once all the data was successfully key in and save, there were stored in main data base as a cloud computing system and all information stored can be access from everywhere. Besides, this data base also has its own simple security system for safety and monitoring purposed.

In addition, several outputs and impacts were projected as a result of this invention, which prompted us to create this system. Primarily, it can maximize farm production by integrating traditional livestock practises (manual) with cutting-edge technological applications. Secondly, it also can contribute to accommodating and balancing demand for meat-based product supply now; previously, the user was only reliant on the product meat-based poultry and cows. Finally, it can open interest and create opportunities new jobs in the agricultural business to the younger generation (graduates) especially involving Internet of Thing (IOT) for smart farming[8,9].

INNOVATION DEVELOPMENT

This Rabbitry System mobile application was created by first creating a simple database foundation in Microsoft Excel. This Microsoft Excel spreadsheet was created based on the sorts of data that must be collected from the rabbit, such as species type, weight, amount and type of nutritious diet, number of vaccination doses administered, and so on. This Microsoft Excel spreadsheet will then be uploaded to the Open as Apps Website, a free online platform where it may be converted into a mobile application. The next procedures are to convert the Microsoft Excel spreadsheet into a QR code, print, laminate, and label the rabbit cage. Scan the QR code with a smartphone or tablet to access the Microsoft Excel spreadsheet, which is already stored in the website's cloud storage. As a result, all data changes made using this mobile application will be immediately stored in a Microsoft Excel file. Because it is low-cost and simple to run, this innovation may have a significant influence on the expansion of our agricultural industry.

ARNAB DAILY

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B I U A

B2 =IFERROR(IF(B1="**",**(INDIRECT(B1&"F1")&" kg"),**))

	A	B	C	D	E	F	G	H	I	J	K
1	Tag No	A1-17				Status	Induk			Buck	
2	Weight	3.3 kg (15/12/20)				Total Mating	3	FALSE		Doe	
3	Umur	1 year 6 month 11 day				Total Birth		FALSE		1	
4	Date of Birth	10/06/2020				Total Live		TRUE		NUMBER	
5	Sex	Doe				Total Death				0	
6	Breed	NZW				Total Quantity	1			1	
7	Parent	FJ & Rabbitry								2	
8										3	
9	Date/Time	Activity	B	L	D	Remarks	Visible			4	
10	15/12/2020 09:59:00	Mate with A1-01				Palpate on 29/12/2020	TRUE			5	
11	15/12/2020 09:00:00	Mate with A1-01	0	0	0	Palpate on 29/12/2020	TRUE			6	
12	29/12/2020 09:00:00	Palpate Failed	0	0	0	0	TRUE			7	
13	06/01/2021 18:00:00	Oligovit Injection	0	0	0	0	TRUE			8	
14	13/01/2021 11:03:00	Mate with A2-02	0	0	0	Palpate on 27/01/2021	TRUE			9	
15	20/01/2021 10:33:00	Oligovit Injection	0	0	0	0	TRUE			10	
16	27/01/2021 09:00:00	Palpate Success	0	0	0	Basket on 02/02/2021	TRUE			11	
17	17/02/2021 09:00:00	Oligovit Injection	0	0	0	0	TRUE			12	
18							FALSE			13	
19							FALSE			14	
20							FALSE			15	
21							FALSE			16	
22							FALSE			17	
23							FALSE			18	

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Figure 1: A basic database framework by using Microsoft Excel spreadsheet.

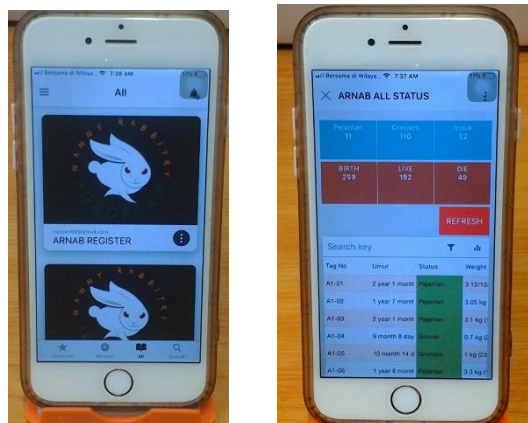


Figure 2: View of Rabbitry System mobile application via smartphone.

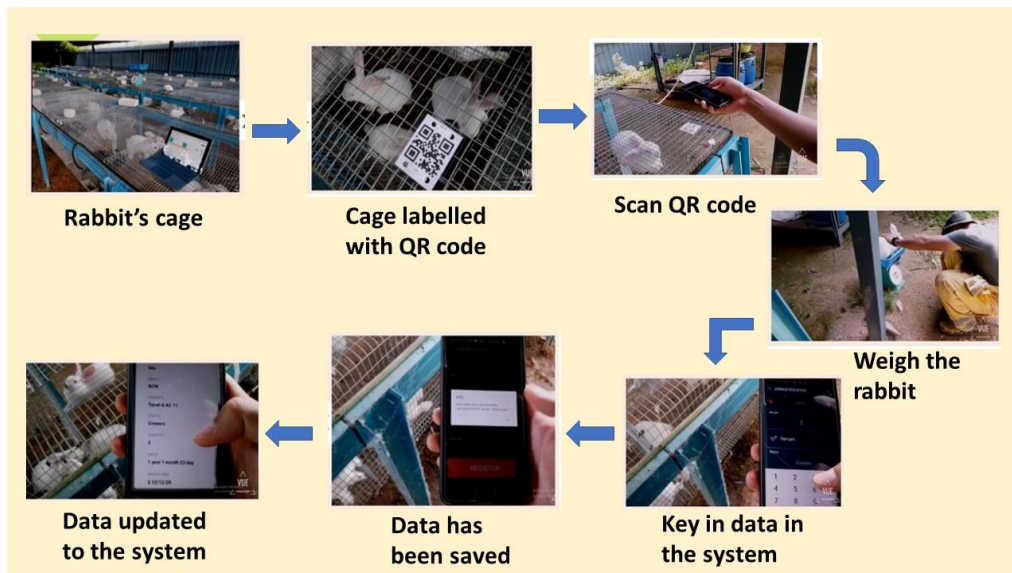


Figure 3: Workflow of Rabbitry System mobile application.

COMMERCIAL POTENTIAL

The development of this Rabbitry System mobile application will help target communities. Farmers, for example, might boost agricultural output by combining traditional livestock practises with modern technological applications. Furthermore, this approach can contribute to a more balanced demand for rabbit meat-based product supply, while traditionally consumers relied solely on product meat-based birds and cows.

Finally, it can pique the interest of the younger generation (graduates) and create new job opportunities in the agricultural business, particularly involving Internet of Things (IOT) for smart farming, thereby lowering the rate of unemployment among the younger population, particularly graduates, by cultivating an interest in modern farming as a career opportunity alternative. Furthermore, this technology has already received Intellectual Property Recognition (IPR), and the next stage is to develop modules and kits for smart agricultural operations.

CONCLUSION

Finally, a low-cost mobile application for monitoring work and rabbit breeding management that can be operated by smartphone or tablet was successfully built. The Open as Apps website allows for the systematic recording and monitoring of all data. Now, the efficacy of livestock production has grown and may be able to maximize farmer revenue in the future. In the future, this technology might be integrated with an accounting program to automatically compute and estimate farmers' sales and profit.

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