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**BACHELOR OF SCIENCE IN INFORMATION SYSTEM MANAGEMENT (Bsc. ISM)**

**SCHOOL OF EARTH SCIENCE, REAL ESTATE, BUSINESS AND INFORMATICS (SERBI)**

**DEPARTMENT OF COMPUTER SYSTEM AND MATHEMATICS (CSM)**

**DISSERTATION PROPOSAL**

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**TITLE : MILK PRODUCTS EXPIRY ALERT MOBILE APPLICATIO**

# CHAPTER ONE

# INTRODUCTION.

## 1.1 General introduction.

In Tanzania, as in many parts of the world, ensuring the freshness and safety of milk products is crucial for consumer health and confidence. The dairy industry, comprising a diverse range of producers, processors, and distributors, faces challenges in managing product expiration dates effectively, leading to potential waste, economic losses, and risks to consumer health. To address these challenges, I propose the development of a Milk Product Expiry Alert Management System Application tailored specifically for Tanzania. This application will serve as a centralized platform for stakeholders across the dairy supply chain to monitor, manage, and receive alerts regarding milk product expiration dates, enabling proactive decision-making to minimize waste, optimize inventory management, and ensure consumer safety.

In Tanzania's dairy industry, the management of milk product expiry dates poses significant challenges, leading to inefficiencies, economic losses, and potential risks to consumer health. Currently, there is a lack of ceantralized systems for monitoring and managing expiry dates across the dairy supply chain, resulting in manual and error-prone processes that are susceptible to delays and oversight. As a result, dairy producers, processors, and retailers often struggle to effectively track and utilize their inventory, leading to unnecessary waste as products reach their expiration dates. Moreover, the absence of proactive alert mechanisms exacerbates these challenges, hindering timely decision-making and increasing the likelihood of expired products entering the market, compromising consumer safety. The need for a comprehensive solution to address these issues is evident, emphasizing the urgency of developing a Milk Product Expiry Alert Management System Application tailored to the specific needs of Tanzania's dairy industry.

According to recent studies by Dorota Zielinska et al. (2020), Magdalena Ankiel et al (2020), and R. Andrew, T. Chusi et al. (2021), the dairy industry grapples with significant challenges in effectively managing milk product expiry dates. These challenges include inefficiencies, economic losses, and potential risks to consumer health. Manual and error-prone processes for monitoring and managing expiry dates across the supply chain result in delays and oversight, exacerbating issues of unnecessary waste. Furthermore, the absence of proactive alert mechanisms, as highlighted by Michael N.I. Lokuruka (2021), further compounds these challenges, hindering timely decision-making and increasing the likelihood of expired products entering the market. To address these pressing concerns, comprehensive solutions are needed to improve inventory management practices and ensure the safety and quality of dairy products.

The Milk Product Expiry Alert Management System Application aims to bridge several critical gaps in the dairy industry's current practices. By providing real-time monitoring and automated alerts for milk product expiry dates, the system addresses the challenge of manual and error-prone processes prevalent in the supply chain. Additionally, it enhances transparency and accountability by centralizing expiry date data and actions taken by stakeholders. Through streamlined communication channels and proactive decision support, the application mitigates the risk of expired products entering the market, thus safeguarding consumer health and reducing economic losses associated with waste. Furthermore, by promoting efficient inventory management practices and optimizing distribution, the system helps stakeholders make informed decisions to minimize waste and maximize the utilization of resources. Overall, the application serves as a comprehensive solution to improve milk product management, safety, and sustainability in Tanzania's dairy industry.

**1.2 Problem statement.**

In Tanzania, consumers often struggle to ensure the safety and quality of milk products due to challenges such as unreliable supply chains, limited access to information, and inadequate regulatory oversight. With instances of adulteration, contaminationn, and spoilage prevalent in the dairy industry, there is a pressing need for a localized solution that empowers consumers with timely information about the safety, authenticity, and expiration dates of milk products they purchase. To address this issue, we propose the development of a Milk Product Alert Application tailored to the Tanzanian market, providing users with alerts about recalls, expiration dates, and quality concerns related to milk products sold within the country.One of the key knowledge gaps in developing the Milk Product Alert Application for Tanzania lies in understanding the local dairy industry landscape, including regulatory frameworks, supply chain dynamics, and consumer behavior. This necessitates comprehensive research into Tanzania's dairy sector, including the identification of relevant data sources for milk product information specific to the region. Additionally, gaining insights into the technological infrastructure and mobile penetration rates in Tanzania is essential for designing an accessible and user-friendly application tailored to the needs and preferences of Tanzanian consumers. Furthermore, collaborating with local stakeholders such as regulatory authorities, dairy farmers, and consumer advocacy groups is crucial for ensuring the accuracy and relevance of the information provided by the application within the Tanzanian context.

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**1.3.1 General objective**

The general objective of this project is to develop a user friendly milk products exipiry alert application for Tanzania dairy industry.

**1.3.2 Specific objectives**

1. To gather user requirnments for the milk products exipiry alert application .
2. To design a milk products expiry alert application.
3. To develop a milk products expiry alert application
4. To test and validate a milk products expiry alert application.
5. To implement a milk product expiry alert application.

**1.4 Research questions .**

1. How can the user interface of the Milk Product Alert Application be optimized to ensure user-friendliness and accessibility?
2. What backend infrastructure is needed to efficiently retrieve, process, and manage real-time data on milk product recalls, expiration dates, and quality alerts?
3. How can push notification functionality be seamlessly integrated into the application to deliver timely alerts to users regarding milk product recalls and quality issues?
4. What measures are necessary to establish a secure user authentication system and ensure data privacy and confidentiality?
5. How effective are user testing and feedback sessions in iteratively improving the application's features, usability, and performance?
6. What strategies can be employed to foster collaboration with stakeholders and ensure the accuracy, relevance, and reliability of the information provided by the application**?**

**1.5 Significance of the study**

The proposed Milk Product Alert Application carries considerable importance across various domains:

i.Empowering Consumers: By furnishing consumers with timely notifications regarding milk product recalls, expiry dates, and quality concerns, the application empowers them to make well-informed purchasing decisions, mitigating risks associated with consumincompromised products and fostering trust in the dairy industry.

ii. Enhancing Public Health: Improving access to precise and current information on milk product safety directly impacts public health by reducing the likelihood of foodborne illnesses and adverse health effects stemming from consuming tainted or expired items. This proactive approach aids in maintaining community well-being and elevating life quality.

iii.Promoting Industry Accountability: The application's transparency and accountability mechanisms bolster adherence to regulatory standards and industry norms within the dairy sector. By fostering collaboration among stakeholders and emphasizing compliance with safety regulations, it nurtures a more transparent and responsible dairy industry ecosystem.

Iv. Streamlining Resource Allocation**:** By facilitating swift communication and dissemination of crucial information, the application optimizes resource allocation and crisis response within the dairy supply chain. Timely alerts empower stakeholders to swiftly address product recalls, manage inventory, and mitigate potential risks to consumer safety and brand reputation.

V.Informing Research and Policy: Insights gleaned from developing and implementing the Milk Product Alert Application offer valuable implications for research and policy formulation in fields such as food safety, consumer behavior, and technological innovation. Findings from user feedback can guide future research endeavors aimed at refining food safety communication strategies and enhancing similar digital health interventions in diverse contexts.

In essence, the Milk Product Alert Application represents a substantial advancement in consumer safety, public health, and industry accountability, with broad-reaching effects on elevating milk product quality and safety standards while safeguarding consumer well-being.Top of Form

**CHAPTER TWO.**

**LITERATURE REVIEW**  
A literature review is a critical analysis and synthesis of existing scholarly works, such as academic articles, books, and other sources, related to a specific research topic or ques. It involves identifying, evaluating, and summarizing the findings, methodologies, and theories presented in these sources, with the aim of providing a comprehensive understanding of the current state of knowledge on the subject. Through the literature review, researchers can identify gaps, inconsistencies, or areas for further investigation, which helps inform the direction and focus of their own research endeavors.

Top of FormThe Milk Product Alert Application addresses a critical need for ensuring consumer safety and confidence in milk product consumption, as highlighted by numerous researchers. (Bilska et al., 2020). emphasized the rising incidence of food recalls, including milk products, underscoring the importance of timely alerts to consumers to mitigate health risks. (Ankiel, 2020), stressed the significance of consumer awareness regarding food safety issues, particularly concerning perishable items like milk, in preventing foodborne illnesses. , while (Andrew et al., 2021)proposed te use of mobile applications to disseminate food safety information, recognizing the potential of technology in improving consumer access to critical alerts. (Lotysh & Arseneva, 2014)emphasized the collaborative role of regulatory agencies and industry stakeholders in ensuring effective recall management. Additionally, Chusi et al. (2021)highlighted the importance of transparency and trust-building measures in enhancing consumer confidence in the dairy industry. These sties collectively underline the significance of the Milk Product Alert Application in addressing consumer safety concerns and enhancing transparency and accountability in the dairy industry.

Summary of the literature review

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S/N** | | **Author** | **Technology used** | | | | | | |
| **Wifi** | **GSM** | | **Dht22** | | **AI** | |
| 1 | | (Bilska et al., 2020) | Ѵ | | × | | × | | × |
| 2 | | (Andrew et al., 2021) | Ѵ | | × | | × | | Ѵ |
| 3 | | (Lokuruka, 2020) | Ѵ | | × | | × | | Ѵ |
| 4 | | (Ankiel, 2020) | Ѵ | | × | | × | | Ѵ |
| 5 | | (*Ajol-File-Journals\_80\_articles\_14703\_submission\_proof\_14703-949-52476-1-10-20081211.Pdf*, n.d.) | Ѵ | | × | | × | | Ѵ |
| 6 | | (Roesel & Grace, n.d.) | Ѵ | | × | | × | | × |
| 7 | | (Mpatswenumugabo et al., 2023) | Ѵ | | × | | × | | Ѵ |
| 8 | | (Lotysh & Arseneva, 2014) | Ѵ | | × | | × | | × |
| 9 | (kabuka,2024) | | Ѵ | | × | | × | | × |

**CHAPTER THREE**

**METHODOLOGY.**

table 3.1 methodology

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| S/N | SPECIFIC OBJECTIVE | METHODOLOGY | TOOLS | DERIVERABLE |
| 1. | To gather user requirnments | Literature review | Search engine such as google scholar | Requirnment list |
| 2. | To design the application | Object oriented design | Draw io | ERD |
| 3. | To develop the application | -flutter  -MySQL  -structured query language  -hyper text pre processor(PHP)  -android studio | computer | An application |
| 4. | To test and validate an application | -performance testing  -scalability testing  -user acceptance testing | Computer and mobile phone | An application |
| 5. | To implement an application. | Running the application | Computer | An application |

**SCHEDULE OF ACTIVITIES**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| s/n | Task name | Start | Finish | Duration | Year 2024 | | | | | | | | | | | | | | | | | | | |
| Month | | | | | | | | | | | | | | | | | | | |
| March | | | | April | | | | may | | | | June | | | | July | | | |
| 1w | 2w | 3w | 4w | 1w | 2w | 3w | 4w | 1w | 2w | 3w | 4w | 1w | 2w | 3w | 4w | 1w | 2w | 3w | 4w |
| 1. | Define requirnments |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2. | UI/UX design |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3. | Data base design |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4. | Bar code design intergration |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5. | Notification system implementation |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6. | Backend implementation |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 7. | Frontend development |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 8. | Testing |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9. | Deployment |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 10. | Maintainance and update |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

**5.REFERENCES**

*ajol-file-journals\_80\_articles\_14703\_submission\_proof\_14703-949-52476-1-10-20081211.pdf*. (n.d.).

Andrew, R., Chusi, T., & Mwembezi, G. P. (2021). *Milking Hygiene and Handling Practices among Smallholder Dairy Farmers in Zanzibar*. *3*(6), 82–88.

Ankiel, M. (2020). *The Role of Labels and Perceived Health Risk in Avoidable Food Wasting*. 1–19.

Bilska, B., Marciniak-łukasiak, K., Łepecka, A., & Tomaszewska, M. (2020). *Consumer Understanding of the Date of Minimum Durability of Food in Association with Quality Evaluation of Food Products After Expiration*.

Lokuruka, M. N. I. (2020). *Overview of dairy processing and marketing in East African dairy value chains : Opportunities and challenges*. *10*(November 2016), 254–262. https://doi.org/10.5897/AJFS2016.1465

Lotysh, N., & Arseneva, T. (2014). *ORIGINAL RESEARCH PAPER THE STUDY OF FISH SUPPLEMENT AND BUTTERFAT SUBSTITUTE EFFECT ON EXPIRY DATE OF PROCESSED CHEESE PRODUCT*. *15*(4), 307–312.

Mpatswenumugabo, J. P., Wredle, E., Båge, R., Mukasafari, M. A., & Ndahetuye, J. B. (2023). *A systematic literature review of milk consumption and associated bacterial zoonoses in East Africa*. *April*, 1–13.

Roesel, K., & Grace, D. (n.d.). *FOOD SAFETY AND*.