

THE GAP: CHALLENGES OF USING MULTIBRAND SENSORS IN MEDIUM AND SMALL-SCALE DAIRY FARMS

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Abstract. *Sensor technology in dairy farming has revolutionized animal management by increasing productivity, health monitoring, and overall farm efficiency. However, integrating sensor data from multiple devices and brands poses considerable challenges. This article delves into the major challenges that dairy farmers encounter when using various sensor technologies, such as data compatibility, interoperability, standardization, data security, and data management problems. It also covers prospective solutions, such as standardizing data, harmonization efforts, and enhanced data integration approaches. Addressing the aforementioned challenges is a cornerstone for fully harnessing the potential of sensor technology in the dairy industry..*

Keywords: precision technologies; dairy farms; sensors; standardization; data

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1. Introduction

Dairy farming has long been an essential component of agriculture, providing a critical source of nutrition and livelihood for millions of people worldwide [23]. However, as the demands on food production continue to grow, the dairy industry is under increasing pressure to enhance productivity, sustainability, and animal welfare [1,11,15,17,28].

In this context, the adoption of sensor technology has emerged as a transformative force, offering unprecedented opportunities to improve operational efficiency and decision-making processes, particularly for small and medium dairy farms. These

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