

UNIVERSITI TEKNOLOGI MARA

**IOT ENHANCED AGRICULTURE
MANAGEMENT SYSTEM**

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ABSTRACT

Agriculture is the practice of growing plants, keeping animals, and making goods like food, fibre, and other necessities for human survival. However, the traditional agriculture system is facing many problems such as facing an unpredictable pest's attack and the effects of climate change that challenging for farmers to maintain consistent production levels. To address these challenges in traditional agriculture, an IoT Enhanced Agriculture Management System was developed, integrating both software and hardware components. This project aims to develop an agriculture monitoring system using multiple sensors, an IoT system and also Arduino-UNO as a microcontroller. IoT which stands for Internet of Things is a network which connect the physical devices such as sensor and actuators with the internet so that the data and information can be exchange without human intervention. The software utilizes Arduino IDE, while the hardware comprises a DHT11 sensor, a PIR sensor, and a soil moisture sensor. A Bluetooth module, connected to the Arduino, the display of readings from the sensos on the Arduino IDE's serial monitor. This system effectively displays temperature, humidity, and soil moisture data on an LCD. A buzzer and LED are included to alert farmers of movements detected by the PIR sensor. This project represents a significant step forward in modernizing traditional agricultural practices and can be further improved by substituting the Bluetooth module with a Wi-Fi module for remote farm monitoring. The project holds potential for contributing to the evolution of traditional agricultural methods.

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CHAPTER ONE

INTRODUCTION

1.1 Research Background

The term "Internet of things" (IoT) refers to the use of technology to collaborate, communicate, and deliver real-time sensor data wirelessly for processing, as well as to provide more useful information for effective decision-making in the relevant study field. IoT is a technology that is rapidly evolving in fields such as health care, defence, industry, agriculture, and others. Its features are limitless and can be used to advance civilization and help people live better lives. To implement IoT, one needs to be familiar with the research fields, hardware, and opportunities for connecting to the internet and accessing the device.

Nearly every sector can be improved thanks to the Internet of Things (IoT). IoT in agriculture is fundamentally altering the way people think about agriculture in addition to offering solutions to frequently time-consuming and tiresome jobs. A smart farming system is an advanced agricultural technology that maximizes crop yield and minimizes waste by using sensors, automation, and data analytics. Big data, artificial intelligence, and other technologies are used to track and manage numerous aspects of farming operations, including soil moisture, temperature, humidity, and crop growth. The technology aids farmers in making appropriate decisions on pest control, fertilization, and irrigation, which can increase yields, lower costs, and improve efficiency. There are several advantages of smart farming systems. Smart agriculture systems help farmers optimize crop yields by providing real-time data on soil moisture, temperature, and other environmental factors. This information helps farmers make informed decisions about irrigation, fertilization and pest control leading to productivity. Other than that, it also can reduce costs by preventing crop losses due to pests that can destroy the crops.