**ARBAMINCH UNIVERSITY**



**ARBAMINCH INSTITUTE OF TECHNOLOGY(AMIT)**

**Faculty of Computing and Software Engineering**

**Final Project on Poultry Farm Management System for Ethiopian Youth Entrepreneurs**

Group Members IDNo

1. Samuel Gessese……………..Ramit/1597/11
2. Thomas Eshetu……………...Ramit/1803/11
3. Eden Girumneh……………..Ramit/
4. Abush Tamene……………...Ramit/
5. Fantaye Benti……………….Ramit/768/11

Advisor Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Signature:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Submitted to: Faculty of Computing and Software Engineering, AMIT, Arbaminch University, in partial fulfillment for the requirement of the degree of bachelor science in software engineering.

Arbaminch, Ethiopia

January, 2023

# Abstract

The Poultry Farm Management System is an online tool that enables farmers manages all aspects of their poultry farms, including chicken sales, trucking, and monitoring what’s going on without having to physically visit them. This system allows farm managers and owners to examine information about their chicken farms, including sales data, invoicing, and more. This enables them to make more informed judgments about the management of their farms, as well as to enhance them.

The poultry farm management software is user-friendly and compatible with a variety of devices. It works on both computers and mobile phones. The system includes a user-friendly interface that makes finding information simple. This makes it easier for people to comprehend the information they are viewing and to make informed decisions about their farms. The system also allows users to exchange information with others, allowing them to improve their farms and make informed decisions about their operations.

# Contents

[Abstract 2](#_Toc124686194)

[Contents 2](#_Toc124686195)

[List of Tables 3](#_Toc124686196)

[List of Abbreviations 4](#_Toc124686197)

[1. Introduction 5](#_Toc124686198)

[1. Background of Arbamich University 5](#_Toc124686199)

[2. Background of the project 5](#_Toc124686200)

[3. Team Composition 6](#_Toc124686201)

[4. Tasks and Schedule 6](#_Toc124686202)

[5. Problem Statement 7](#_Toc124686203)

[6. Objectives of Project 8](#_Toc124686204)

[6.1. General Objective 8](#_Toc124686205)

[6.2. Specific Objective 8](#_Toc124686206)

[7. Scope of the Project 8](#_Toc124686207)

[8. Feasibility Analysis 9](#_Toc124686208)

[8.1. Operational Feasibility 9](#_Toc124686209)

[8.2. Technical Feasibility 9](#_Toc124686210)

[8.3. Behavioral or Political Feasibility 9](#_Toc124686211)

[8.4. Economic Feasibility 9](#_Toc124686212)

[9. Significance of the project 10](#_Toc124686213)

[10. Beneficiaries from the project 11](#_Toc124686214)

[11. Methodology 11](#_Toc124686215)

[11.1. Fact Finding Techniques 11](#_Toc124686216)

[11.2. System Analysis and Design 12](#_Toc124686217)

[11.3. Data modeling techniques 12](#_Toc124686218)

[11.4. System analysis and Design 13](#_Toc124686219)

[11.5. Development Tools 13](#_Toc124686220)

[11.5.1. Frontend Technologies 13](#_Toc124686221)

[11.5.2. Backend Technologies 14](#_Toc124686222)

[11.5.3. Documentation and Modeling Tools 16](#_Toc124686223)

[11.6. System Development Model 17](#_Toc124686224)

[11.7. Testing Procedures 17](#_Toc124686225)

[11.7.1. Black Box Testing 18](#_Toc124686226)

[11.7.2. White Box Testing 18](#_Toc124686227)

[12. Implementation (Parallel/Partial/Direct) 18](#_Toc124686228)

[13. Risks (What if Analysis?) 18](#_Toc124686229)

[14. Bibliography 18](#_Toc124686230)

# List of Tables

[Table 1: Gantt chart 7](#_Toc124441035)

[Table 2: Hardware Costs 8](#_Toc124441036)

[Table 3: Software Costs 8](#_Toc124441037)

[Table 4: Development Tools 11](#_Toc124441038)

[Table 5: Team Composition 12](#_Toc124441039)

# List of Abbreviations

**HTM……………..……….….....** Hyper Text Markup Language

**CSS……………….………..……..**Cascade Style Sheet

**PHP………………………….…..** Hypertext Preprocessor

**OOSAD………………….………..** Object Oriented System Analysis and Design

**UML……………….………..…….**Unified Modeling Language

**UX/UI……………………………….**User Interface

**AWTI……………………………….**Arba Minch Water Technology Institute

**AMIT…………………………………** Arba Minch Institute of Technology

# List of Figures

[Figure 1 Iterative model 13](#_Toc124686919)

# Introduction

Poultry Farm Management System project is a web application which is developed in PHP platform. Poultry farm management is the process of taking care of poultry birds like ducks, geese, chicken etc. in the context of feeding them with sufficient and appropriate food, water, vaccination, shade and shelter to live for a healthy environment to grow up is known as Poultry Farming (JEFFERY A.HOFFER, 2010).

A number of features in the Poultry Farm Management System assist farmers in better managing their farms than before. It enables farmers to access sales data, invoices, and other farm-related information without having to visit the farm each time they need it. Farmers can spend more time doing other things on their farms or in their companies instead of spending all of their time at the farm because they don’t have to spend as much time there each day. Farmers and managers may also access real-time data on sales, production expenses, and inventory levels for every chicken in every pen in every farm across all of its locations using the free poultry farm management software, even when they are not on the farm. This implies that farmers and managers can make educated decisions about the management of their farms, allowing them to enhance both their farms and their companies.

# Background of Arbamich University

Arba Minch University is based in South-West Ethiopia. The University was initially founded as the Arba Minch Water Technology Institute (AWTI) and it was officially inaugurated as a full -fledged university in June 2004 and started offering both undergraduate and graduate programs in the following institutes, colleges and schools:

# Background of the project

Poultry Farm Management System for Ethiopian youth entrepreneurs is a web based application for maintaining and management of the poultry farm. Poultry farming is also a kind of industry for manufacturing meat and egg. The main target for this management system is to success and easy way to run the farm.

The current system is paper based and too much time and paper are wasted due to the fact that clients go and book physically at the receptionist. The clients are registered in record book basing on the type and quantity of required products after a receipt is issued out showing the amount paid for the products, data, time and branch delivery in this case paper and time are also wasted therefore clients are getting a problem of their transport to go and book at their receptionist.

# Team Composition

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| NO | Name | ID No | Email | Responsibility |
| 1 | Thomas Eshetu | Ramit/1803/11 | [thomaseshetu1992@gmail.com](mailto:thomaseshetu1992@gmail.com) | * Project Manager * UX/UI Designer |
| 2 | Samuel Gesese | Ramit/1597/11 | [samuelgesese8@gmail.com](mailto:samuelgesese8@gmail.com) | * Programmer * Requirement Engineer |
| 3 | Eden Girumneh |  |  | * System Designer * Software Architect |
| 4 | Abush Tamene |  |  | * System Analyst * QA assurance Engineer |
| 5 | Fentaye Benti |  | [fentayebenti85@gmail.com](mailto:fentayebenti85@gmail.com) | * Data collector * Tester |
| Advisor: Instructor Mikiyas B. | | | | |

Table 5: Team Composition

# Tasks and Schedule

All the members are expected to perform each and every activity within the defined time frame to finalize the project that the project will be completed within the time frame stated. So that the system will be feasible regarding in terms of the schedule.

Schedule grows out of the basic documents that initiate a project. It uses result of the other time management process to determine the start and end of the project and its activities in order to the project on time in order to accomplish the proposed system, we will follow our time schedule that are presented below by Gantt chart.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| No | Phases | 1st  Quarter | 2nd  Quarter | 3rd  Quarter | 4th  Quarter | 5th  Quarter | 6th  Quarter |
|  |  | 4th Jan-  11th Jan | 20th Jan- 10th Feb | 11th Feb – 10th Mar | 11th Mar- 10th May | 11th May- 28th May | 29th May- 10th Jun |
| 1 | Project Proposal |  |  |  |  |  |  |
| 2 | Requirement Analysis |  |  |  |  |  |  |
| 3 | Design |  |  |  |  |  |  |
| 4 | Coding and Implementation |  |  |  |  |  |  |
| 5 | Installation and Testing |  |  |  |  |  |  |
| 6 | Project Closure |  |  |  |  |  |  |

Table 1: Gantt chart

# Problem Statement

The current system of poultry farm management system is paper based, inefficient, tiresome, hard to update, susceptible to errors and time wasting their transport to go and book at the receptionist.

* **Difficult in report generating:** we require more calculation to generate the report.
* **Manual Control:** all the calculation to generate the report is done manually so there is greater chance to get error.
* **Time consuming:** Every work is done manually so we cannot generate report in the of the session or as per requirement and it is very time consuming.
* **Lot of paper work:** existing system required lot of paper work. Loss of even single register or record led to difficult situation because all the paper are needed to generate the report.

# Objectives of Project

## General Objective

The general objective of the project is to develop poultry farm management system for Ethiopian youth entrepreneurs.

## Specific Objective

In order to attain the general objective, the following specific objectives are identified.

To realize the general objective of the project, the following specific objectives are identified.

* Gathering requirements.
* Identifying and defining of the problem that the existing system have.
* Analyzing the existing system.
* Identifying functional and nonfunctional requirements.
* Designing the proposed system
* Design and Modeling Database for the system
* Coding and testing.
* Implementation of the new system.
* Prepare the documentation and train the users.

# Scope of the Project

The system mainly keeps track on online poultry management system for Ethiopian youth entrepreneurs the system is a web based application it efforts the accomplish this PHP framework, Laravel language were used to enable the communication, linking, storing, saving and retrieving data from the database. The project also covers testing and validation of the system which ensures that the system is free from errors and performs as expected.

# Feasibility Analysis

## Operational Feasibility

Operational feasibility is a metric used to assess how successfully a proposed system addresses issues and seizes opportunities during scope definition. As a result, since our suggested system replaces the manual-based poultry farm management system, we can hopefully state that it is operationally practicable.

## Technical Feasibility

The new system is equipped with hardware, software, network infrastructure, and professional personnel. The new system is thus technically possible as a result of all these factors. We can confidently state that it is technically possible because it won't be too difficult to obtain the resources needed for both system development and maintenance.

## Behavioral or Political Feasibility

The system offers Ethiopian youth entrepreneurs a poultry farm management system that is easier to use for the administrator, the young entrepreneur, and the client. This offers a high working standard and improves communication. Since the suggested system does not conflict with Ethiopia's FDRE constitution, it is politically possible and makes a substantial contribution to the development of poultry farm management systems for young entrepreneurs in Ethiopia.

## Economic Feasibility

This stage determines the cost or value analysis. It can be software, hardware, and the people. The new proposed system will be economically feasible by determining the cost analysis of the software and hardware.

* **Hardware Costs**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Materials | Quantity | Cost per Unit (ETB) | Total Cost (ETB) |
| 1 | HP Laptop | 1 | 28,000 | 28,000 |
| 2 | Pen | 3 | 20 | 60 |
| 3 | Flash Disk | 1 | 300 | 300 |
| 4 | A4 Paper | 300 | 2 | 600 |
| 5 | Mobile Card | 5 | 50 | 250 |
| 6 | Print | 70 | 2 | 140 |
|  | Total Cost = 29,350 ETB | | | |

Table 2: Hardware Costs

* **Software Costs**

|  |  |  |
| --- | --- | --- |
| NO | Materials | Cost (ETB) |
| 1 | Windows 10 | Free of cost |
| 2 | Sublime Text | Free of cost |
| 3 | XAMPP | Free of cost |
| 4 | Edraw Max | Free of cost |
| 5 | Composer | Free of cost |
| 6 | Microsoft Office | Free of cost |
|  | Total Cost = 0 ETB | |

Table 3: Software Costs

# Significance of the project

The proposed system has lot of significance some of them are:

* **Easily Accessible:** the proposed system is web based in which data is retrieved and stored effectively and maintained efficiently. More over the graphical user interface is provided in the proposed system, which provide user to deal with the system easily.
* **Reports are easily generated:** reports are easily generated in the proposed system so user can generated the report as per the requirement monthly or in the middle of the session.
* **Very less paper work:** the proposed system required very less paper work. All the data is field into the computer immediately and report can be generated through computer.
* **Speed:** manual system is always time consuming. Because humans are employed to do necessary action to generate report and store records, it is always slow. In case of computerized system the great processing speed of the computer system will surely help in quickly performing the process.
* **Less space requirement:** in the traditional system, there is a need to maintain voluminous paper file. They occupy quit a large amount of space. Moreover, there maintenance is extremely difficult. Our system will replace paper files and store the files electrically in the computer’s hard disk or in any other electronic storage media.
* **Backup facility:** the traditional system offers no backup mechanism. Natural disasters such as flood or fire may cause paper files to lose once all. However our computerized model offers proper backup mechanism. Files stored electrically in the hard disk can back up in secondary storage devices such as floppy disk or CD-ROM.

# Beneficiaries from the project

* **Youth Entrepreneurs:** On this system, the business owner can obtain a variety of advantages, such as the ability to view reports, the state of the hens, and selling activities without physically visiting the farm.
* **Clients:** on this system the clients can order what they want on the system without going to the farm once they are registered.
* **Admin:** on this system, the admin can control different activities easily for instance user management, order management, point of sale, inventory management and so on.

# Methodology

## Fact Finding Techniques

* **Interview**

An interview is a conversation between two or more people where questions are asked by the interview to client facts or statements from the interviewee. The team used interviews as the primary data collection technique because youth entrepreneurs working on poultry farm give detailed information regarding with different tasks that are worked on poultry farm this help us to change the manual system to the automated one.

* **Written Documents**

to understand the existing system, we will collect more information by referring internet, documents and other reading materials about the general information of the poultry farm management system. It helps us to design and organize our project.

## System Analysis and Design

We have used Object Oriented System Analysis and Design (OOSAD) using Unified

Modeling Language (UML).Because of the following reasons:

* These techniques enable to reduce the communication gap between user and designers.
* These techniques enable designers to model the real world accurately.
* These techniques have usability features (it allows to use codes repeatedly on other system).
* Easier maintenance.
* Ease of reuse of object components from previously designed systems
* No separation between data and process unlike that of structured analysis metrology that treats data and process on the data separately.
* Ease of modification and extensibility of object-oriented models
* Ease of understanding object-oriented models due to a consistent underlying representation throughout the development process

## Data modeling techniques

This project involves Poultry Farm Management system. In order to achieve our project, an appropriate software design methodology would be chosen iterative data model.

Typically, iterative development is used in conjunction with incremental development in which a longer software development cycle is split into smaller segments that build upon each other (ROGERS, academia.edu). We choose this iterative data model because of: -

* Building and improving the product step by step.
* Can get the reliable user feedback.
* Less time is spent on documenting and more time is given for designing.
* Can only create a high-level design of the application before we actually begin to build.
* It goes to forward and backward.
* Used to add new feature on the system.
* Reuse concepts of inheritance.

The phases which come under the iterative data model method are as follows:

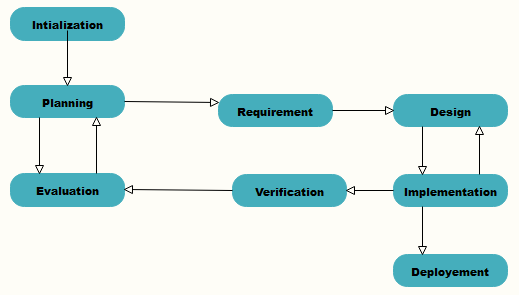


Figure 1 Iterative model

## System analysis and Design

After gathering different information from stakeholders, the project team has analyzed requirements by using Unified Modeling Language models like use case diagram, sequence diagram and class diagram. Since: -

* UML is a modeling language widely used to visualize the object-oriented designs.
* UML makes it easy to visualize the software design.
* UML diagrams can be easily decoded and converted into most of the popular object-oriented programming languages.

## Development Tools

A software development tool is a program or applications that Software Developers use to design, debug, maintain, or otherwise maintain other programs and applications. The term applies typically to nearly simple programs, which can be connected coincidentally to perform a task, much as one might use multiple control tools fix a physical object (JEFFERY A.HOFFER, 2010).

To improve the project implementation we utilize these following tools:

### Frontend Technologies

**1. HTML**

HTML stands for Hyper Text Markup Language. HTML is a language for defining the building of Web pages. We use HTML because it grants authors the means to,

* Distribute online documents with tables, lists, photos, titles, topic, etc.
* Improve online data via hypertext links, at the click of a button.
* Design schemes for operating activities with foreign services, for use in exploring for data, presenting licenses, ordering products, etc.
* Include covers-sheets, video clips, sound clips, and other applications immediately in their reports.

**2. CSS**

CSS is the language for describing the performance of Web pages, including appearances, layout design, and fonts. It enables one to adjust the presentation to various types of devices, such as big screens, small screens, or printers. CSS is confident of HTML and can be used with any XML-based markup language. The division of HTML from CSS performs it more comfortable to establish sites, receive style sheets pages, and original pages to different conditions. That is committed to as the division of construction from a presentation (Willis).

**3. JavaScript**

JavaScript is the world’s most successful web-based programming language. It is the language for HTML, for the web, for servers, PCs, laptops, tablets, phones, and more. JavaScript is a Scripting Language. We choice to use Java Script because of the following features:

* JavaScript is programming code that can be implanted into HTML pages.
* All modern web browsers can perform JavaScript code.
* JavaScript is clear to learn

### Backend Technologies

**1. Laravel PHP Framework**

Laravel is open source PHP web framework developed and maintained by Taylor Otwell as an attempt to provide a more advanced alternative to the CodeIngiter framework. (W3School, 2020)

We chose that frame work because of the following reasons:

* **MVC support and Object-Oriented Approach**:-The first and best advantage of using the laravel Framework is it allows Model, View, and Controller based architectural pattern and it has an expressive beautiful syntax which makes it object-oriented.
* **Built-in Authentication and Authorization:-**laravel provides an out-of-the-box configuration for the for the Authentication and Authorization System. That is, just few artisan commands your application will be equipped with secure Authentication and Authorization.
* **Packaging System:-**A packaging system deals with the multiple support software or libraries that help the web application to automate the process. Laravel uses a composer as a dependency manager, which manages all the information needed to manage packages. Packages are a great way to accelerate development is to provide the functionality we need out of the box. Image, Laravel Debug bar and Laravel IDE helper are some of the best Laravel packages.
* **Multiple File System:-**Laravel also has a built-in support for the cloud storage system such as Amazon S3 and Rack space Cloud Storage and of course for local storage. It's amazingly simple to switch between these storage options as the API remains the same for each system. One can use all three systems in one application to serve files from multiple locations like in a distributed environment.
* **Artisan Console:-**Laravel has its own command line interface called as Artisan. Common uses of Artisan include publishing package assets, managing database migrations, seeding and generating boilerplate code for new controllers, models, and migrations. This feature frees the developer from creating proper code skeletons. One can extend the functionality and capabilities of Artisan by implementing new custom commands.
* **Eloquent ORM:-**The Eloquent ORM is Laravel's built-in ORM implementation. Laravel has the best Object-relational Mapper as compared to the other frameworks out there. This Object-relational mapping allows you to interact with your database objects and database relationships using expressive syntax.
* **Templating engine:-**Laravel comes with the inbuilt template engine known as Blade Template Engine. Blade templating engine combines one or more templates with a data model to produce resulting views, doing that by transpiring the templates into cached PHP code for improved performance. Blade also provides a set of its own control structures such as conditional statements and loops, which are internally mapped to their PHP counterparts.
* **Task Scheduling:-**Scheduler, introduced in Laravel 5.0, is an addition to the Artisan command-line utility that allows programmatic scheduling of periodically executed tasks. Internally, scheduler relies on the cron daemon to run a single Artisan job that, in turn, executes the configured tasks.
* **Events and Broadcasting:-**Laravel has a concept named broadcasting which is useful in the modern web application to implement real-time data, showing live feeds,etc. Broadcasting allows you to share same event name between your server-side and client-side, so you will able to pull real-time data from the application.
* **Testing:-**When it comes to the testing of the application Laravel by default provides the unit test for the application, which itself contains tests that detect and prevent regressions in the framework. Integration of PHP unit such as a testing framework is very easy in Laravel application. In addition to that unit tests can be run through the provided artisan command-line utility.

**2.** **MySQL Database**

A MySQL database is a hosting database that is used to store website information like blog posts or user report. A MySQL database is the usual general type of relational database on the web today. That is partly because it is free but also very important. In basic terms, a MySQL database is intelligent about saving any data that you want. It will let you quickly store and retrieve information and website visitors can practice it at one time (Willis).

We like MySQL because it is the most suitable database for us for some reasons. Those reasons will be given below.

* MySQL is a database server.
* It is ideal for both small and large application.
* MySQL Supports standard SQL.
* It is free to download and use.
* It compiles on some platforms.

### Documentation and Modeling Tools

|  |  |
| --- | --- |
| Activities | Tools/Programs |
| Project platform | PHP framework |
| Programming language used | Laravel language |
| Database server | MYSQL |
| Web Server | Apache |
| Browser | Chrome |
| Editor | Sublime text, visual studio |
| Documentation | MS Word |
| User Training | MS Power point |
| Varied Technologies | As per technical requirement in future |

Table 4: Development Tools

## System Development Model

The team plan to use the object-oriented system analysis and design Development Methodology for the development of the system among the different methodologies. Because it is better way to construct, manage and assemble objects that are implemented in our system. (JEFFERY A.HOFFER, 2010)

We used OOSAD because of the following important features:

* **Increase reusability**: - the object oriented provides opportunities for reuse of Employee information easily updating or modifying them.
* **Extensibility: -**when you to need to add new feature to Employee evaluation system you only need to make changes in one part of the applicable class.
* **Improved quality**: -Employee evaluation system provides a simple and easily manageable way to evaluate the performance of each employee and evaluate them based on their performance.
* **Real-World Modeling:**  Object-oriented systems tend to model the real world in a more complete fashion than do traditional methods.
* **Reduced maintenance cost**: - Software organizations currently spend significant resources maintain operating system by developing manual documentation of our system so the object-oriented development methods help us to overcome this problem.
* **Managed complexity**: -The object-oriented methods solve our system complexity in the following way, by design our system software expectation that it will need to be modified and being able to respond quickly when our system environment changed.

## Testing Procedures

Before directly deploying this system the team will perform two types of testing procedures for its functionality and acceptance. These techniques are Black box testing and White box testing. (Nginx, 2014)

### Black Box Testing

Black box tests are used todetect software errors caused by external factors. Using this testing approach, the software applications are tested from the perspective of the end-user, which involves testers to test the user interface of a digital product (FARNHAM, 1992)t.

In this testing procedure, we will test whether the proposed system produces the various expected requirements. Here, we monitor whether the interface of the system is interacting successfully with the back code of the program. Testing helps us to know the performance of the system once it is deployed in the server. This will help us gather enough feedback to improve our system before we deploy it for usage. All features included in our software package will be observed thoroughly to see if they function as planned. We pass through unit testing, integrated testing and system testing.

### White Box Testing

White-box Testing is an approach that allows testers to examine and verify the inner workings of software systems (code, infrastructure, and integration with external systems). White box testing can uncover bugs that black box testing and other software testing methods cannot (W3School, 2020).

We use this testing type of technique by observing the internal structure of our program during the time of writing code. If the code error may occur we test using this technique.

# Implementation (Parallel/Partial/Direct)

The system is implemented by using the development tools expressed under the above development tools table and besides using the expressed hardware and software.

# Risks (What if Analysis?)

The proposed system requires an internet connection, thus a young entrepreneur working in a rural place might not use it because there aren’t adequate network and electric power facilities there.

# Bibliography

FARNHAM, D. &. (1992). *Understanding industrial relations.* London.

JEFFERY A.HOFFER, J. F. (2010). *Modern system analysis and design.*

Nginx. (2014). *Software for web serving, reverse proxying.*

*poultrymania.com*. (n.d.). Retrieved from poultrymania.com: https://poultrymania.com/

ROGERS, A. (n.d.). *academia.edu*. Retrieved from academia.edu: https://www.academia.edu/

W3School. (2020). *OfflineTutorials/www.w3schools.com/bootstrap/bootstrap\_ver.html.*

Willis, T. (n.d.). *SQL Server 2000 2nd Edition.*