DESIGN AND IMPLEMENTATION OF COMPUTERIZED LIVESTOCK PRODUCTION SYSTEM IN MODERN FARMING

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CERTIFICATION

I hereby certify that this project work was carried out under my supervision by **FAPOHUNDA BLESSING OMOLOLA, MATRIC NO: 2015070501205** in the department of computer studies, The polytechnic, Ibadan.

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MR. G.G.O EGBEDOKUN DATE

SUPERVISOR

DEDICATION

This project is dedicated to all the visionary farmers and agricultural innovators who tirelessly strive to modernize farming practices through technology. To those who believe in the power of innovation to enhance livestock production, improve efficiency, and ensure sustainable agricultural practices for future generations.

Special appreciation goes to my family, mentors, and peers for their unwavering support, encouragement, and guidance throughout this journey. This work stands as a testament to the endless possibilities that arise when technology meets agriculture.

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ABSTRACT

In modern farming, livestock production plays a pivotal role in food security and economic growth. However, traditional methods of managing livestock production are often inefficient and prone to errors, leading to challenges in optimizing productivity and ensuring animal welfare. This project presents the design and implementation of a computerized livestock production system aimed at improving the efficiency, accuracy, and overall management of livestock operations.

The proposed system leverages modern technology to automate key aspects of livestock management, including record-keeping, health monitoring, feeding schedules, breeding management, and resource allocation. By integrating data analytics and real-time monitoring, the system enables farm managers to make informed decisions that enhance productivity and sustainability.

The design methodology includes the analysis of existing livestock production challenges, system design specifications, software development, and testing. The implementation phase involved deploying the system in a real-world farming environment to assess its effectiveness. The results demonstrate that the computerized system significantly reduces manual labor, minimizes errors, and optimizes livestock management processes.

This project highlights the potential of technology in revolutionizing livestock production in modern farming, contributing to enhanced efficiency, better animal welfare, and increased profitability for farmers.

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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Throughout history, livestock have been kept for a variety of purposes, with the almost exclusive focus on food use of livestock in modern agricultural systems being a relatively recent development. But, in many developing countries, livestock are still a critical support to the livelihoods of people who live in or near poverty, and it is here that the non-food uses of livestock, such as source of fertilizer (manure), draught power and insurance assets for natural and other emergencies, remain predominant. Livestock, or symbols of them, also play an important role in religious and cultural lives (Steinfeld, 2010).

countries, small mixed farming systems) and in yields per animal (in industrialized countries). Livestock production is practiced in many different forms. Like agriculture, as a whole, two rather disparate systems exist side by side. In another case, livestock are kept in traditional production systems in support of livelihoods and household food security; other case commercially intensive livestock production and associated food chains support the global food supply system. The latter provides jobs and income to producers and others in the processing, distribution, and marketing chains and in associated support systems.

Sere & Steinfeld (1996) distinguish at the highest level the two groups of farming systems: those solely based on animal production, where less than 10% of the total value comes from non-livestock farming activities, and those where livestock rearing is associated with cropping in mixed farming systems, with more than 10 % of total value of production coming from non-livestock farming activities. Livestock productions are determined by the physical (climate, soils, and infrastructure) and the biological environment (plant biomass production and livestock species composition), byeconomic and social conditions (prices, population pressure and markets, human skills, and access to technology and other services), and by policies (on land tenure, trade and subsidies). These conditions, together, generate the so-called production systems, that is, production units (herds, farms) with similar structure and environments –that can be expected to produce similar production functions (Cees da Haan, 2010).

In today's world, livestock management has moved from the old managed mobile grazing systems towards a more advanced system. Mobility has contracted due to increase in other businesses and the use of land for a whole lot of other things. The sector today is characterized by a large number of small herds used for subsistence, and a much lower number of large commercially viable herds. Broadly, the major problem remains that a system that can better manage livestock would really be worthwhile; it is based on this that the researcher looks forward to the research topic **Computerized Livestock Management Information System.**

1.2 Statement of the Problem

Livestock play an important role in feeding the people and more so the nation's economy. Over the past years, considerable changes have taken place in populations of livestock and the composition of livestock holdings, as well as in the management strategies, as a result of population growth and land use intensification. The problems includes the different social, economic, environmental and political constraints to livestock production systems.

1.3 Justification of the Study

This research work will play a huge role in the lives of individuals, organisations and the economy of the nation at large through the production of food, raw materials, employment and the growth of the gross domestic product (GDP) of the nation called Nigeria.

Thus, this will also go a long way to curb the nomadic movement that has caused massacre of millions of souls across the nation and also slow down or totally wipe out the importation of livestock products like frozen fish, chicken, beef, turkey etc. The involvement of young educated people can also not be over emphasized as they will be needed to operate, repair, maintain and install needed software in the computer, which is to be used by both livestock farm owner, managers and/or staff of Holars Concept.

Finally, this research work poses the ability to challenge both the old and young, educated and uneducated, rich or poor etc to go into agriculture and related fields for good.

1.4 Aim and Objectives of the Study

The aim of the study is to design and implement a computerized livestock management information system in modern pig farming for Holars Concept.

The objectives are as follows:

a) To design a computerized livestock management information system

b) To keep managers, staff and the entire organization abreast of happenings throughout the production units.

c) To combat fatigue in the process, which is caused by stressing out individuals in the farm

To facilitate a proper management of time and forecasting the production process from day one to sales point

1.5 Scope of the Study

This study covers livestock management information system, fusing information technology with agriculture to enable such computerized system make light the burden of man in a tedious profession like livestock production.

1.6 Methodology

In the development of any project, a very important requirement is the gathering of data for the project. It uses the following method to gather the necessary and required data for development.

Interview Method: This has to do with carrying out one to one interview with those involved, particularly the Lecturers and students so as to know their opinion as regard to the existing system.

Observation Method: This involves self-observation from the research to understand the current system and identify the short coming of the system in order to design the new system.

1.6 Definition of Terms

Livestock: Livestock are domesticated animals raised in an agricultural setting to produce labor and commodities such as meat, eggs, milk, fur, leather, and wool. The term is sometimes used to refer solely to those that are bred for consumption, while other times it refers only to farmed ruminants, such as cattle and goats.

Computerization: This is the process whereby computer is applied in carrying out the activities of an organization.

Database design: The process of creating a design that will support emprise mission statement and mission required database e system.

Confine System: This is type of management system that does not interact with the system’s environment. The pigs under this system are controlled they are not expose to the environment; their feeding and all management are controlled by a prison or persons.

Database: A collection of interrelated data stared with controlled redundancy to serve one or more application.

Farm: Farm is an area of land and its buildings, used for growing crops and rearing animals.

Information: Information is a data that has been evaluated. It is a processed data.

System: This is a group or collection of functional parts of sub systems which work harmoniously or together to achieve a goal.

Information system: A systematic way of organizing the handling of information, from information gathering to information retrieval and use.

Management: The process of procuring, allocating, combing and utilizing or organizational resources expressed usually as 3ms (men, materials and money) through planning organizing directing and controlling activities of work of the organization member to reach certain stated objectives.

Management Information System: is an integrated and holistic reporting network system in an organization that provides planning and controlling information for effective decision making.

Mobility: This ability of information to move from one point to another, from one person to another easily and timely.

Open System: This system that interacts with its environments. The pigs reared in this system are always exposed to the environment, its feeding and every other thing about the management is not controlled

System: It is a collection of interrelated and interdependent procedures that are joined together to perform an activity or a task.

Software: The programs that control the computer operation the system programme controls the hardware component of computer which application program controls task performed by computer.

CHAPTER TWO

LITERATURE REVIEW

2.0 The Importance of Livestock in Countries' Economy

Livestock development is projected in coming decades to become the world‘s most important Agricultural subsector in terms of value added and land use. Global meat demand is projected to increase from 209 million tons in 1997 to 327 million tons in 2020, while global milk consumption is projected to increase from 422 million tons to 648 million tons over thesame period. This increase in demand is expected to exert undue pressure on natural resources worldwide, possibly crowd out the poor, endanger global food security, thwart animal welfare and ensure further degradation of the land and erosion of biodiversity (World Bank, 2000).

The Livestock sector plays a vital role in the economies of many developing countries. It provides food or more specifically animal protein in human diets, income, employment and possibly foreign exchange. For low income producers, livestock also serve as a store of wealth; provide draught power and organic fertiliser for crop production and a means of transport. Consumption of livestock and livestock products in developing countries, though starting from a low base, is growing rapidly (Sere and Steinfeld, 1996).

The way livestock are kept and milk and meat are produced will be key factors in the future health of the planet. Animal agriculture is one of the most important components of global agriculture, and livestock are one of the main users of the natural resource base: livestock use 3.4 billion hectares of grazing land and livestock production from about one-quarter of the world's croplands. In total, livestock make use of more than two-thirds of the world's surface under agriculture, and one-third of the total global land area; livestock raising is the sole source of livelihood for at least 20 million pastoral families, and an important, often the main, source of income for at least 200 million smallholder farmer families in Asia, Africa and Latin America. Livestock provide the power to cultivate at least 320 million hectares of land, or one-quarter of the total global cropped area (FAO, 1994).

This would, otherwise, have to be cultivated by hand tools resulting in harsh drudgery, especially for women, or by tractor power with an inevitable drain on foreign exchange. Livestock provide the plant nutrients for large areas of cropland. For example, estimates carried out in Jensen and de Wit‘s study (1996) shows that, for the tropical irrigated areas, manure provides nutrients of an estimated value of US$ 800 million per year. Finally, livestock are an important asset for investment and insurance for hundreds of millions of rural poor in situations where banks are often too remote and the banking systems too unreliable for safeguarding any savings a smallholder might accumulate.

Livestock play an important role in mountain economies. Overall livestock contribute 36-47 % of the total agriculture income in the mountains and hills of Nepal. In Tibet, they account for more than 50 % of the total gross production value of agriculture (Tashi and Partap, 2000).

Livestock play an equally important role in the agricultural economy of the African highlands. In Ethiopia, animals and their products account for 30 % of agricultural GDP and 12 % of the total GDP excluding the value of draught and manure (Sileshi and Tegegne, 2000)

The income–generating functions of livestock vary from livestock being the main cash crop, as in smallholder dairy systems, to the occasional chicken or goat sold to cover sporadic or emergency expenses. The range and the amount of products sold depend on the different systems, but they can vary from meat to manure, eggs to fibre, milk to work. Livestock are critical in maintaining soil fertility. They allow land-use intensification though the concentration of nutrients and the acceleration of nutrient cycling. In the majority of mountain areas, chemical fertilizers are still unavailable or beyond farmers means. In such cases manure serves as the fertilizer, but significant amounts of nutrients are often lost as the result of poor collection and storage methods for manure and exposure of livestock excreta (Tulachan, 2000; Dijkman, 2000).

Hodgson and White (1999) define the importance of pastoral agriculture to the New Zealand economy, and an overview of livestock systems and their distribution, followed by a more detailed appraisal of individual systems. Dairy product sales more, even though dairy cattle account for only 28 % of the total stock units farmed. They described the main pastoral systems as they exist in New Zealand to cover the major historical milestones in their development.

2.1 Livestock Research and Development Issues

Agricultural research previously focused on improving animal and crop productivity independently. In the 70s and 80s, it was recognized that crop and livestock interact and must be considered jointly to optimize overall farm performance (Kaufmann & Mohamed Saleem, 2000).

Mountain areas are characterized by some specific features that distinguish them from the plains. They include limited accessibility, a high degree of biophysical and social fragility, marginality, and diversity and specific niche opportunities-including human adaptation mechanisms. These mountain specificities and their implications for livestock production systems need to be taken into consideration when addressing livestock issues in mountain areas, in particular the potential for development (Jodha, 2000; Tulachan, 2000).

The main challenges to livestock research and development, however, result not from these specificities, but from shortcomings in government policies related to institutional and environmental undertakings to market economic technological changes. Successful development of the livestock sector, particularly market oriented livestock production systems, require that everyone involved is aware of mountain specificities, gender issues and marginality of farms and livestock farming (ibid.).

The complexity and heterogeneity of different agro-ecological zones need to be recognized and taken into consideration when formulating policies. This is the prime obstacle to the transfer of technologies from one region to another. It is also important to recognize that diversified and inter- linked resource- based activities are a key attribute of sustainable production systems in mountain areas that research has an important role to play in ensuring the continued success of such systems (Jodha, 2000).

If all these constraints are taken into account during the initial design of research programme, there is considerable potential for increasing the sustainability of crop-livestock productivity and household income (Leon-Velarde and Quiroz, 2000).

Notwithstanding improved accessibility and market links, the dependence of livestock on local resources will continue to be an important factor. Hence conservation and efficient use of these resources, including such things as recycling and reprocessing need to be an integral part of the management of livestock production systems. It can play an important role in ensuring the efficient use of scarce resources, the quality of animals, and the most effective composition of animal holdings (Staal and Jabbar, 2000).

Zarate (2000) argues that research and development programs should be directed towards encouraging and empowering local people to retain their unique genetic livestock resources in these ecologically fragile, but globally important mountainous environments.

Sileshi and Tegegne (2000) describe three broad themes important for future research in the African highlands; sustainability of the crop-livestock production system, which include improvement of feed resources, animal traction, nutrient cycling and management, health management at the farm level and options for diversification of animal power; improvement of market–oriented smallholder production, which include development of a feeding package, appropriate breeding schemes and recording systems, efficient processing and handling methods, health management and delivery services, health standards for export of meat and animals, policy adjustment and marketing, and conservation and utilization of animal and forage genetic resources, which includes characterization and evaluation of genetic resources and selection of animals for resistance to diseases.

Singh (2007) explains that the best approach to improving milk production in smallholder dairies is thought to be through reducing the actual numbers of animals whilst improving the quality of the remaining animals and of the feed supply. The major challenge is to increase production whilst avoiding environmental and natural resource degradation. Mixed crop-livestock production systems are means of generating employment.

2.2Trends and Management Strategies in Mixed Livestock-crop Production Systems

Over the past years, considerable changes have taken place in populations of livestock and the composition of livestock holding, as well as in management strategies, as a result of population growth and land-use intensification. In mixed farming systems in mountains, there has been a decline in the populations of goat and sheep and an increase in the populations of cattle and horses, indicating a growing importance of cattle and horses in the livestock economy (Tulachan, 2000).

In the mountains, accessibility and development of road networks have played a crucial role in the development of smallholder dairies as an integral part of mountain farming systems. There has been a considerable shift in the management strategies of smallholder dairy farmers; from extensive grazing to intensive stall feeding, from use of public land to use of private land for growing fodder and forage crops, and from feeding crop-residues to increase the use of purchased feeds. There is a growing trend in Himachal Pradesh towards keeping cross-bred cows for milk production-reflecting a shift from low-producing indigenous animals to dairy animals with higher milk yields (Tulachan, 2000).

Analysis of the livestock production trends in high –pressure areas across Kenya and Ethiopia indicate that there is an increasing trend towards smallholder crop-livestock production. Smallholder dairies have flourished better in Kenya partly as a result of the differences in the types of animals raised in the two countries. In Kenya, dairy development has been based on the use of cross-bred animals, whereas in Ethiopia the numbers of these animals are negligible (Dijkman, 2000).

According to Tashi and Partap (2000), an interesting trend is emerging in livestock production systems in Tibet, especially in the lower altitude areas, with a transition from animal husbandry based on rangelands to a mixed crop-livestock system, from the extensive traditional system to an intensified system. Commercialized livestock production is increasing as a result of both state and private investment.

2.3 Technological and Institutional Issues

Before introducing new technologies, it is important to predict the impact on the economy and the environment. Despite an array of scientific innovations, science and technology have had little impact on livestock development or improvement in developing countries. Sound policy backing is crucial for the dissemination of technology. Having policies to promote credit is a key element for adaptation of improvement technologies. Credit must be made available to farmers so that they can make use of new technologies. In Africa, some technologies, like the introduction of cross breeds, have brought households additional income. In Kenya, a recent study shows that farmers with crossbred cows had an additional income of 50 dollars per cow per month without the need for additional labour. There was no significant increase in household milk consumption, however. When evaluating the net benefit of new technologies like this, improved nutrition of the household should be considered (Hugo and Mares, 2000)

Zapata (1997) explains two productive technologies aimed at increasing farm production; a conventional and new approach. The conventional technical approach tries to increase milk yields using imported concentrates, improved breeds such as Holstein, and vast amounts of chemical fertilizers. This approach has drawbacks, such as the need for large amounts of capital, dependency on imported inputs, and deterioration of the environment. The new approach is an integrated and environmentally-friendly technology. It uses crossbred cattleand pigs to produce energy and earthworms for composting solid wastes, which combined with the effluent from the bio digesters, to provide organic fertilizer. Some of the numerous advantages of this technology are a feed supply for cattle and pigs, food for humans, pest-free and healthy pastures, natural regeneration of fragile areas, maintenance of soil fertility, a supply of biogas for cooking and the availability of high quality fertilizer. The heterogeneity of mountain regions in terms of factors like altitude, climate, soils, quality and quantity of feed resources, and ethnic background poses a great challenge to the transfer of technologies like this from one region to another.

2.4 Livestock Diversity

Livestock diversity depends on the condition of the area; climate, landscape and forage species. There is insignificant number of specialized beef breed cows in Kyrgyzstan, and the beef industry is based on calves produced by dairy cows. Beef cattle productivity at the farm level is usually measured by some measure of growth, such as average daily weight gain or carcass weight at slaughter. But in Kyrgyzstan, there are 4,435 thousand hectare summer pastures possible to breed beef cattle. A Study on crossbreeding local Ala-Too breed with Aberdeenangus confirmed this hypothesis; abilities and genetically potential of cross-bred (Nogoev, 2008). Minezawa (2002) focuses on cattle genetic resources in Japan; and explains that the beef cattle can be classified into two categories, indigenous and non-indigenous cattle. The former includes 1,700,000 Japanese beef cattle, named Wagyu, and the latter involves 461,000 non-indigenous dairy cattle and 663,000 corresponding crossbred animal.

Wagyu includes four breeds, Japanese Black (93.9%), Japanese Brown (4.2%), Japanese Poll (trace), and Japanese Shorthorn cattle (1.0%). However, exotic cattle breeds contribute most milk production and more than 99% of the dairy cattle are Holsteins. Production from the two genuine Japanese native cattle is in trace proportions.

Prioritizing livestock breeds for conservation needs to incorporate both genetic and non-genetic aspects important for the survival of the breeds. Gizaw (2008) applied a maximum-utility-strategy to prioritize 14 traditional Ethiopian sheep breeds based on their threat status, contributions to farmer livelihoods (current breed merits) and contributions to genetic diversity. Contributions of the breeds to genetic diversity were quantified using marker-estimated kinship approaches. Non-genetic aspects included threats (e.g. Low population size, low preferences by farmers) and current merits (economic, ecological and cultural merits). Threat analysis identified eight of the 14 breeds as threatened. The analysis of current merits shows that sub-alpine and arid-lowland breeds contribute most to farmer livelihoods in comparison to other breeds. Their results balanced the trade-offs between conserving breeds as insurance against future uncertainties and current sustainable utilization. The ranking of breeds provided a basis for conservation strategies for Ethiopian sheep and contributes to a regional or global conservation plan.

A study conducted in the Andean Valley, Bolivia, in which breeding groups held under different ecological, socio-economic conditions were compared, show the clear superiority of pure-bred, local animals in harsh environments, crossbreeds in improved environments, and pure-bred exotics under conditions of intensive feeding and husbandry. Crossbred and pure-bred animals are not available to most farmers in mountainous areas, however. The results show that local genetic resources play an important role in producing optimised breeding stock (Zarate, 2000).

Dairy farming is important and has tremendous potential in developing the economy of a country. In developing countries, dairy farming is predominantly a smallholder mixed crop-livestock farming operation. Many Third World countries have taken steps to develop dairy sector under the cooperative system so that rural poor farmers can have access to necessary services for dairy development(Zarate, 2000).

Ghosh (2003) focuses on analysing the role of cooperatives in dairy development and its impacts on rural income generation in Bangladesh. His study examines the milk-marketing channel in Bangladesh as a whole, evaluates the economic efficiency of dairy farming under the cooperative and non-cooperative systems, and measures the extent of the income earned by dairy farmers under cooperatives and non-cooperatives in different regions.

According to Singh (2007), dairy development could help to generate large amount of income for small and medium farmers who are the most target group in any development program. Dairy contributes significantly in the improvement of rural livelihoods by providing food, income, energy for household purpose, and improved health and sanitation. In mountain areas, smallholder dairy farming has been gaining importance. There is emerging trend towards the introduction of new dairy livestock species for better milk yields.

Singh (1999) examines the operation of dairy cooperatives in Himachal Pradesh, and outlines the factors determining their successes and failures. These cooperatives were introduced as a management strategy for milk producers and were intended to act as reliable market outlets for milk producers and as regular suppliers of milk at reasonable prices to consumers. The failures resulted from inefficient management and the problem of vested interests, with people using the cooperatives as a way of gaining power and prestige.

Kenya is one of the few success stories for smallholder dairy development on the African continent. The success mainly resulted from the introduction of exotic and crossbred cattle by Europeans. A profit analysis of the adoption of dairy cattle in the Kenyan highlands indicated those household and local area characteristics, availability of veterinarians, the agro-climate, and formal markets are the important factors affecting the successful adoption of crossbred cattle. The distance by road to an urban centre also has a significant impact (Staal and Jabbar,2000).

Zapata (1999) examines the systems of dairy production practiced in two areas of the Andean region of Colombia; located in the central range of the mountains. Specialized dairy is the common system in Colombia. The most popular breed of cattle is Holstein. Feeding is based on pasture; lactating cows are supplemented with concentrate. This popular system called pigs-pasture-milk‖, pigs are penned in a high part of the farm, their manure is used as fertilizer to increase grass production, and the grass is fed to the cattle.

Most dairy producers utilizing Management Intensive Grazing (MIG) were former confinement or non-intensive pasture operations while the others started their operation with MIG. Which farms are candidates for success following a switch? What changes in labour, cost of production, and herd health might be expected? These and other questions were investigated by examining 29 MIG dairy farms in Michigan (Taylor, 2009).

These farms experienced similar milk production levels per cow, reduced feed and hired labour cost significantly, reduced the acres of row crops grown, and experienced improved herd health resulting in much lower herd health costs. Those farms did not build farm acres, but rather grew cattle numbers and improved management of pasture forage. Research work remains to be done that will more accurately measure the true economic progress and further find management techniques that prove successful for MIG farms (Taylor, 2009).

2.5 Production Forage Resources and Natural Resource Management Issues

In the winter months, livestock are fed on stored feed accumulated during the growing season. These feeds include a large component of crop residues as well as green fodders, such as Lucerne that are grown specifically for livestock. A component of winter nutrition also comes from winter pastures and other arid range plants found in winter pasturing areas close to the villages. During the summer, nutritional inputs to livestock are largely derived fromsummer pastures including temperate alpine pastures made up of grasses, forbs and shrubs. Seasonal measurements of feed use and livestock performance highlight the seasonal dynamics of transhumance system and emphasize the findings of previous studies, which have pointed to a substantial shortage of winter fodder as being important constraint within system. Two fodders are extensively cultivated in Kyrgyzstan, Lucerne (Medicago sativa) and Sainfoin (Onobrychis viciifolia). Hay is a very important winter feed. In the absence of concentrates, it is all that is available to many livestock owners. Hay comes from two sources; natural meadows, which are traditionally seen as a community resource, and sown and irrigated forage, which is the property of the individual farm or farmer. Cereal straw is saved for fodder.

2.5.1 Feeds and Feeding Systems

With most feeds eaten by ruminants, the Growth Energy (GE) values reflects that of carbohydrates such as cellulose (17.6 MJ/kg); it increases with increasing concentrations of protein (about 24 MJ/kg) and fat (about 39 MJ/kg), but decreases as its ash content rises which may be due to either a change in the natural mineral content of the feed or to contamination with soil or other extraneous inorganic material. Mitchell (1974) reports that the range of MJ/kg DM for white clover, ryegrass and cocksfoot cut from Tasmanian pastures at various times throughout the year, and values for temperate pastures herbages in New Zealand gave other results; which content of value depends on where the grass grown.

M/D of forages (for fresh temperate grasses and legumes, except lucerne), compound feeding stuffs – in meal or pelleted form, may contain a wide variety of ingredients, including feeds of vegetable, animal or marine origin with high protein and silage can be expected, that will differ from different places and countries in several respects. For example, plant maturation often proceeds more rapidly in Australia making it more difficult to time harvest so that the forage is in a young, highly digestible condition. The DM of European and North American maize silages often contain more than 50 % of cob and there may be up to 50 % grain, but there may be less in the Australian product because of differences in growing conditions and plant cultivars (CSIRO, 1990).

2.5.1.1 Grains.

There is variation in the energy value of Australian oats. It is likely to be low when owing to moisture stress in the plant during growth; the grain has a high proportion of hull which is of very low digestibility. Briggs et al. (1956) give 2.3-2.6 kg /per week of wheat, or maize, or barley, or sorghum to sheep in a drought feeding experiment, and give 3 kg of oats to similar sheep on the assumption, which grain had a lower energy value. After 20 weeks of feeding, the liveweight of the sheep had plateaued and those given oats were 1-3 kg heavier than those given the other grains. This result gives support, that in practical drought feeding of cattle and sheep the ME of all cereal grains is same. When animals are given oats in circumstances other than drought feeding, account should be taken of the variability in its M/D.

There appears to be negligible loss of whole grain in the faeces of sheep, but when cattle are fed whole grain, they may excrete substantial amounts. Some may be reingested by coprophagy, which probably accounted for the small difference in performance observed by Southcott and McClymont (1960) among drought-fed cattle given whole wheat and those given crushed wheat, but any excretion, in effect, reduces M/D. The loss appears to be less when cattle are given roughage, which appears to affect a reduction in the time the grain is retained in the rumen. It appears from these results that when rations for cattle containing whole grain are being established, it may be advisable initially to discount their ME value, except with maize, to allow for faecal loss. Cotton seed, milk and milk substitutes, fodder trees and shrubs (browse) feeds are considered particular regionally; they are not commonused feeds.

The digestibility in vivo of forage is lower when it is ground then when in long or chopped form, but the practical consequences are probably small in animals fed for maintenance. Any reduction in M/D is at least counterbalanced by an increase in the net efficiency of use of the ME for growth and fattening and probably for lactation (Greenhalgh and Wainman, 1972).

The digestibility of a feed decreases with increasing level of intake, the greatest effect being found with concentrate feeds and ground forages. Mould et al. (1983b) find that when hay was ground and fed with rolled barley, contributing two-thirds of diet DM, the hay DM digestibility could be reduced. The reduction in hay digestibility was less when it was given in chopped form, and when the barley was whole rather than rolled the reductions were about 0.12 for ground hay and about 0.05 for chopped hay. Poppi et al. (1981) found that conversely cattle digest poorer quality feeds more than do sheep; because cattle retained fibrous material in the rumen for longer period.Goats also appear to digest fibrous to a greater extent than sheep.

2.5.1.2 Age.

Graham (1980) find that feed digestibility appears to increase with age in sheep, but this effect has not been identified with cattle and he concludes that because of energy losses in methane and urine tend to be less earlier ages, so that ME/DE is higher than in adults, ME values of feeds determined in adult sheep can be used to calculate rations for growing ruminants, at least for the same feeding level.

2.6 RELATED WORKS

2.6.1 GARCIA, M. (2017) DEVELOPED AN INNOVATIVE DECISION SUPPORT SYSTEM

Garcia, M. (2017) developed a pioneering decision support system for livestock farming that leverages advanced machine learning algorithms to enhance farm management and productivity. This system focuses on predicting disease outbreaks and optimizing feed distribution, both essential for maintaining healthy livestock and efficient farm operations.

Prediction of Disease Outbreaks: The system analyzes large datasets from sources like historical health records, environmental conditions, and real-time sensor data to identify early signs of disease. By detecting subtle changes in animal behavior or feeding patterns, it provides real-time alerts, allowing farmers to take prompt action and reduce the risk of large-scale outbreaks.

Optimization of Feed Distribution: Efficient feed management is critical for cost control and livestock productivity. The system analyzes data related to animal health, growth rates, and environmental factors to recommend optimal feeding strategies. It adjusts feeding schedules in real-time based on changing needs, ensuring proper nutrition, reducing waste, and minimizing costs.

Integration and Benefits: Garcia's system is user-friendly and integrates seamlessly with existing farm practices, featuring a centralized dashboard for real-time data, alerts, and recommendations. The system enhances farm efficiency and productivity, reduces veterinary costs, supports sustainable practices, and promotes environmental sustainability by optimizing feed distribution.

In summary, Garcia's innovative decision support system improves livestock health, farm efficiency, and sustainability, empowering farmers with real-time, data-driven insights.

2.6.2 SMITH, J. (2021) DEVELOPED AN INTEGRATED FARM MANAGEMENT SYSTEM DESIGNED TO MONITOR AND OPTIMIZE LIVESTOCK HEALTH AND PRODUCTIVITY.

This system employs advanced technologies to provide comprehensive oversight of farm operations, ensuring the well-being of livestock and enhancing overall productivity.

The system collects and analyzes data from various sources, including animal health records, environmental conditions, and real-time sensor data. By leveraging this information, it offers insights into animal behavior, growth rates, and potential health issues. Farmers receive real-time alerts and recommendations, enabling them to take proactive measures to address any concerns promptly.

Additionally, the system optimizes resource allocation by analyzing feeding patterns, water usage, and other critical factors. This targeted approach ensures that each animal receives the appropriate care and nutrition, promoting healthy growth and maximizing productivity.

Smith's integrated farm management system is user-friendly and designed to seamlessly integrate with existing farm practices. It features a centralized dashboard that provides a comprehensive overview of farm operations, allowing farmers to make informed decisions quickly. This innovation not only improves livestock health and productivity but also supports sustainable farming practices by optimizing resource use and minimizing waste.

2.6.3 KUMAR, S. (2020) DEVELOPED AN AUTOMATED LIVESTOCK MONITORING SYSTEM UTILIZING WIRELESS SENSOR NETWORKS TO ENHANCE ANIMAL WELFARE AND FARM PRODUCTIVITY.

This system employs advanced sensors to continuously collect data on various parameters, including animal activity, health metrics, and environmental conditions.

By analyzing this real-time data, the system provides valuable insights into animal behavior and well-being. It detects early signs of health issues or stress, allowing farmers to intervene promptly and ensure the animals receive timely care. This proactive approach helps in maintaining optimal health conditions and preventing potential outbreaks.

Moreover, the system optimizes farm productivity by streamlining resource management. It tracks feeding patterns, water consumption, and other critical factors, enabling precise adjustments to improve efficiency. This targeted management ensures that each animal receives the appropriate nutrition and care, fostering healthy growth and maximizing output.

Kumar’s system is designed for ease of integration into existing farm operations, featuring a centralized dashboard that offers a comprehensive view of livestock status and farm activities. This innovation not only enhances animal welfare but also boosts farm productivity by leveraging real-time data and automation to support informed decision-making and efficient resource use.

2.3 Current Method in Use

The current livestock management method relies on manual record-keeping, leading to inefficiencies, data loss, and delayed decision-making, highlighting the need for an automated and centralized system.

2.4 Approach to be Used in this Study

This study will adopt a systems development life cycle (SDLC) approach, focusing on designing and implementing a Computerized Livestock Management Information System. The approach includes gathering requirements through interviews and observation, analyzing existing manual processes, designing a user-friendly system interface, developing the software, and testing it to ensure it meets the needs of farm managers. Data collection methods will include both qualitative and quantitative techniques to assess the current challenges and measure the system's effectiveness post-implementation. The final system will be evaluated for performance, accuracy, and ease of use.

CHAPTER THREE

SYSTEM INVESTIGATION AND ANALYSIS

3.0 Background Information

Research comprises defining and redefining problems, formulating hypothesis or suggested solutions; collecting, organizing and evaluating data; making deductions and reaching conclusions; and at last carefully testing the conclusions to determine whether they fit the formulating hypothesis. It is the manipulation of things, concepts or symbols for the purpose of generalizing to extend, correct or verify knowledge, whether that knowledge aids in construction of theory or in the practice of an art.

Research methodology explains the overarching theoretical and philosophical frameworks which guide the research. This highlights that there is a clear difference between the two, Research methodologies are the overarching frameworks that we use for research. Research methods are the techniques that we use. Different methodologies employ different methods.

Finally, Researchers also need to understand the assumptions underlying various techniques and they need to know the criteria by which they can decide that certain techniques and procedures will be applicable to certain problems and others will not. All this means that it is necessary for the researcher to design his methodology for his problem as the same may differ from problem to problem. For example, an architect, who designs a building, has to consciously evaluate the basis of his decisions, i.e., he has to evaluate why and on what basis he selects particular size, number and location of doors, windows and ventilators, uses particular materials and not others and the like. Similarly, in research the scientist has to expose the research decisions to evaluation before they are implemented. He has to specify very clearly and precisely what decisions he selects and why he selects them so that they can be evaluated by others also.

3.2 Operation of the existing operation

The operation of an existing system in the context of a Computerized Livestock Management Information System typically involves the manual processes currently in place for managing livestock records and activities. In a traditional setup, record-keeping is done manually, often leading to inefficiencies such as data loss, difficulty in accessing historical records, and errors due to human factors. These processes include tracking animal health records, breeding schedules, feed management, and financial transactions related to livestock sales and expenses.

The current system may involve physical ledgers, spreadsheets, or basic databases that are not integrated, making it challenging to maintain consistent and up-to-date records. Data entry is typically time-consuming, and the lack of automation means that any analysis or reporting must be done manually, which can lead to delays in decision-making. Additionally, the lack of real-time data access makes it difficult to monitor livestock conditions or respond quickly to issues such as disease outbreaks.

Overall, the existing system's limitations hinder effective livestock management, highlighting the need for a computerized system that can streamline these processes, improve data accuracy, and provide timely insights for better decision-making.

3.3 Analysis of findings

a. Output from the System

The existing manual livestock management system primarily produces outputs such as physical reports, logs, and records of livestock activities, including health records, breeding schedules, and financial transactions. These outputs are typically paper-based or maintained in basic digital formats like spreadsheets, which are not easily accessible or shareable. The quality of these outputs is often compromised due to human errors, incomplete data, and the time-consuming nature of manual processes.

b. Inputs to the System

Inputs to the current system include data related to livestock identification (such as tags or ear numbers), health records (vaccinations, treatments), breeding schedules, feed quantities, and financial data (expenses, sales). These inputs are usually manually collected by farm staff and entered into physical ledgers or simple digital tools. The accuracy of these inputs can be affected by the method of data collection, reliance on memory, and the absence of standardized procedures.

c. Processing Activities Carried Out by the System

Processing activities in the existing system involve the manual entry, updating, and retrieval of livestock data. This includes recording daily activities, tracking the health and breeding status of animals, calculating feed requirements, and generating basic reports. Processing is labor-intensive and prone to errors, as it relies heavily on human intervention without automation or integration across different record-keeping areas.

d. Administration / Management of the System

The management of the existing system is decentralized and typically lacks formal procedures or oversight mechanisms. Record-keeping is often the responsibility of individual farm workers or managers, leading to inconsistent practices and data storage methods. The absence of a centralized management system makes it difficult to enforce standards, monitor data integrity, or ensure timely updates.

e. Controls Used by the System

Controls within the current system are minimal and primarily involve basic checks by individuals responsible for record-keeping. There are few formal procedures to prevent data entry errors, data loss, or unauthorized access. The lack of automated alerts or reminders for critical activities (like vaccinations or breeding) further weakens the system's control mechanisms, increasing the risk of missed activities or incomplete records.

f. How Data and Information are Stored by the System

Data and information in the existing system are typically stored in physical ledgers, notebooks, or basic digital formats like spreadsheets. These storage methods are prone to damage, loss, and data fragmentation. There is usually no centralized database or backup system in place, making it difficult to retrieve historical data or conduct comprehensive analyses.

3.4 PROBLEMS IDENTIFIED FROM THE ANALYSIS

The analysis of the existing manual livestock management system has identified several key problems:

1. Inaccurate and Incomplete Data

Due to the manual nature of data entry and collection, there is a high risk of errors, such as missing information, incorrect entries, and inconsistencies. This can lead to unreliable records and inaccurate reporting.

2. Time-Consuming Processes: The manual processing of livestock data, including recording, updating, and generating reports, is labor-intensive and time-consuming. This delays critical decision-making and reduces overall efficiency.

3. Decentralized and Inconsistent Management

Record-keeping responsibilities are often decentralized, with different individuals maintaining separate records. This lack of standardization and central management results in inconsistent practices and data fragmentation.

4. Limited Controls and Monitoring

The current system has minimal controls to prevent errors, data loss, or unauthorized access. There are no automated alerts for important activities, increasing the likelihood of missed or delayed actions, such as vaccinations or breeding.

5. Vulnerability to Data Loss

Data is stored in physical ledgers or basic digital formats without proper backup or recovery systems. This makes the records vulnerable to physical damage, loss, or accidental deletion, leading to potential data loss.

3.5 SUGGESTED SOLUTIONS TO PROBLEMS IDENTIFIED

Automation and Centralization: Implement a computerized system that automates data entry, processing, and reporting. Centralize all livestock data in a single, secure database that can be easily accessed and updated.

Standardization of Procedures: Develop standardized data collection and entry procedures to ensure consistency and accuracy across all records.

Enhanced Controls: Introduce automated controls, such as validation checks during data entry, automated alerts for critical activities, and access controls to prevent unauthorized changes to records.

Data Backup and Recovery: Implement regular data backup procedures and ensure that there is a reliable recovery system in place to protect against data loss.

Real-time Data Access: Enable real-time access to livestock data for managers and other stakeholders, facilitating timely decision-making and improved responsiveness to issues.

Training and Support: Provide training to farm staff on using the computerized system effectively and ensure ongoing support to address any challenges they may encounter.

CHAPTER FOUR

SYSTEM DEVELOPMENT

4.1 SYSTEM DESIGN

System design and specification is very important in every software development. At this stage, the developer puts every factor into consideration while making his design. In the course of the design, the system has to be designed in a way that there will be a close relationship between the inputs and outputs. Also, the design format must be made in a way that it will be acceptable to the end users.

4.1.1 OUTPUT DESIGN

This is the information to be consumed by the user, which can be stored for later use or printed on paper.

a. REPORTS TO BE GENERATED

In computerize livestock production system for modern farming, the following report can be generated to aid monitoring and decision making:

i. Manage Category Management Report

ii. Manage Company List Report

iii. Manage Product List Report

iv. Invoice

v. B/w Date Report

vi. Sales Report

b. SCREEN FORMS OF REPORT

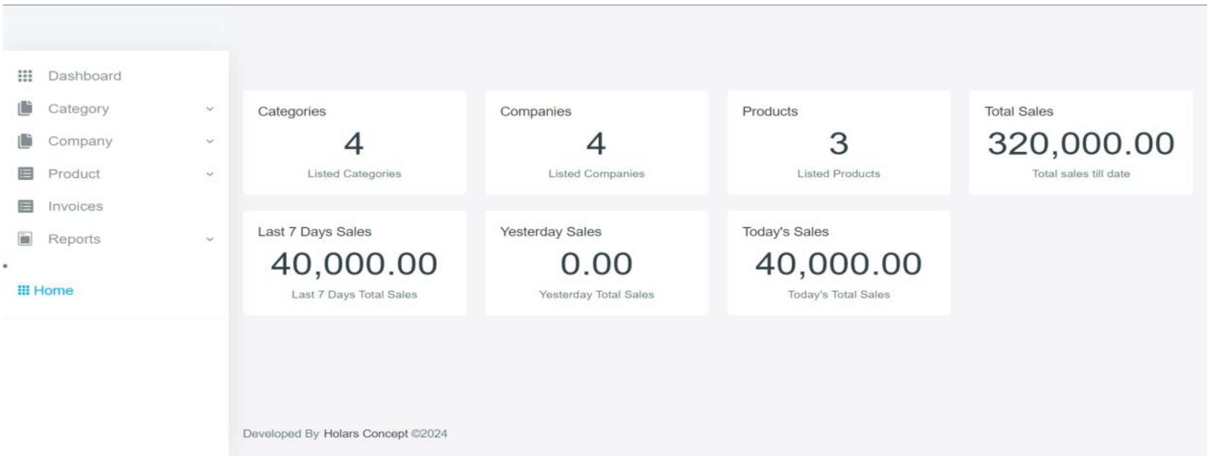

Fig. 4.3: Admin Dashboard

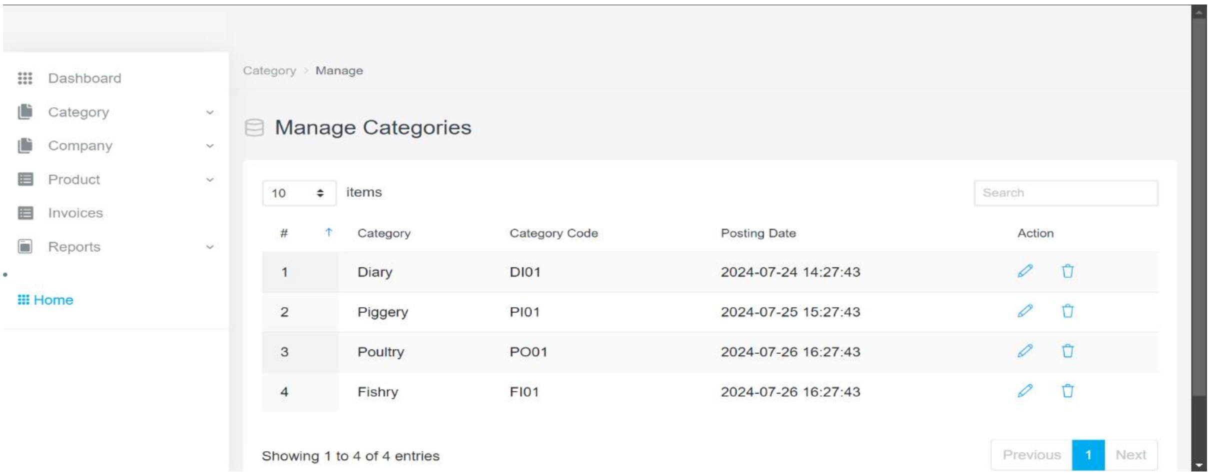

Fig. 4.4: Manage Category

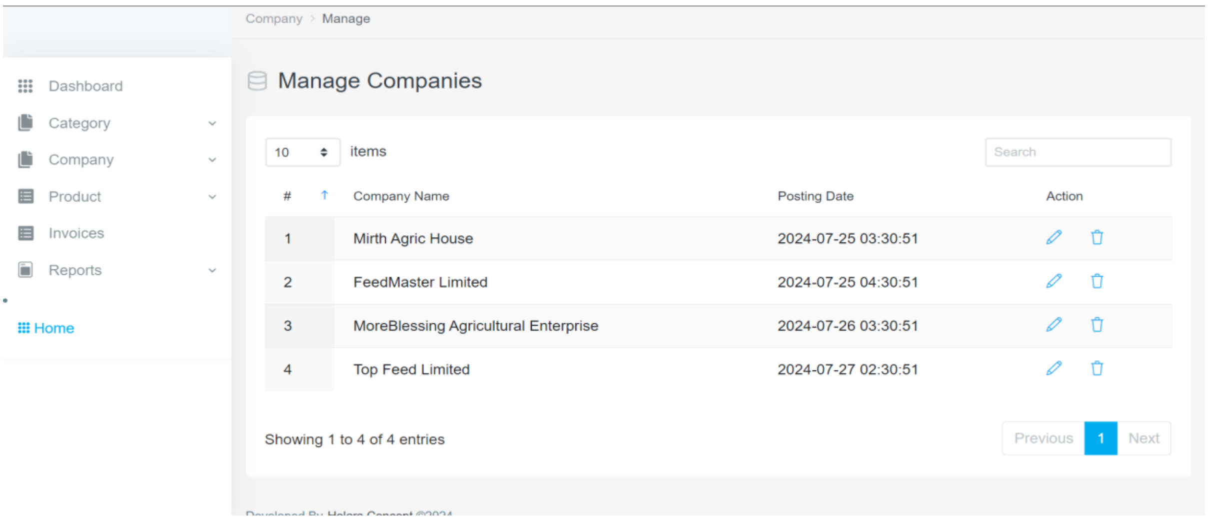

Fig. 4.5: Manage Company Lists

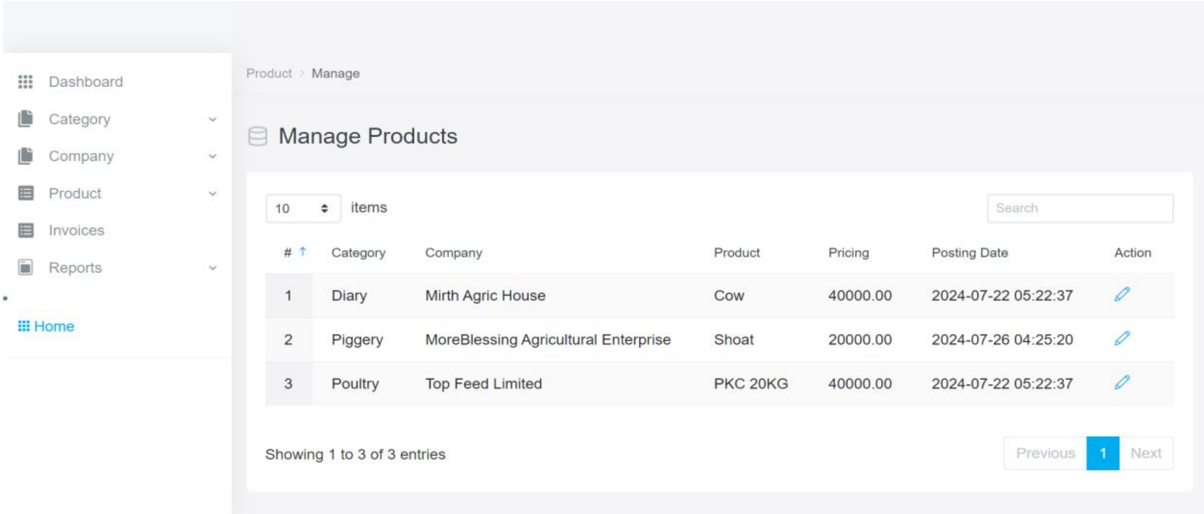

Fig. 4.6: Manage Product List

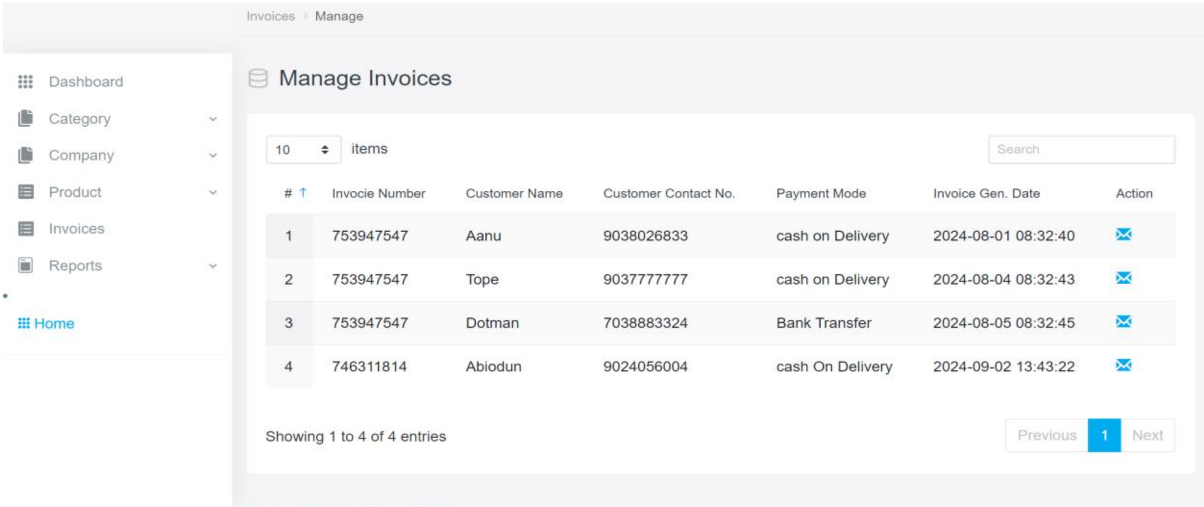

Fig 4.7: Invoice Report

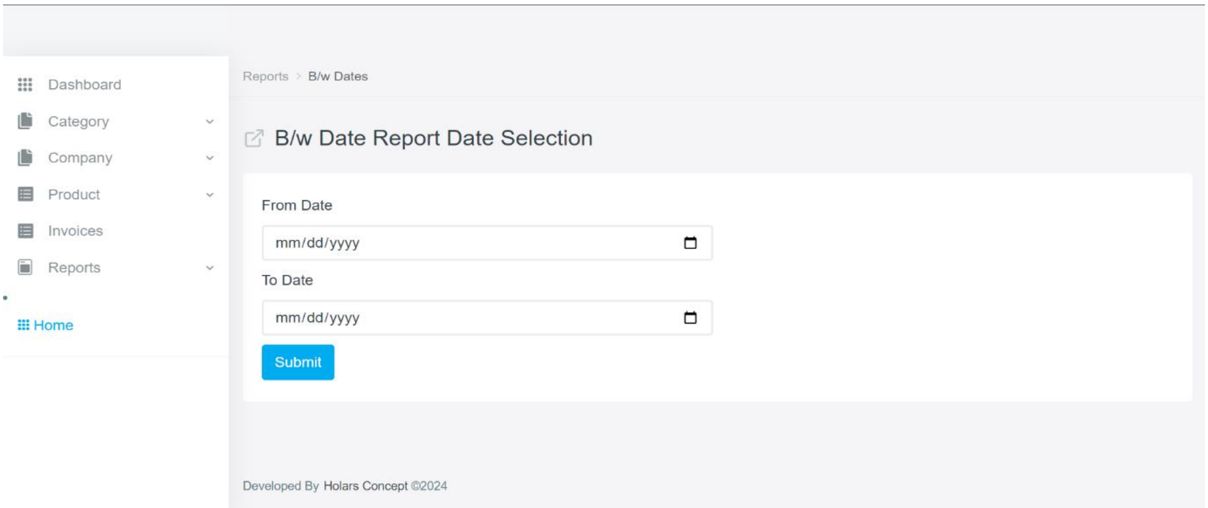

Fig. 4.8: B/w Date

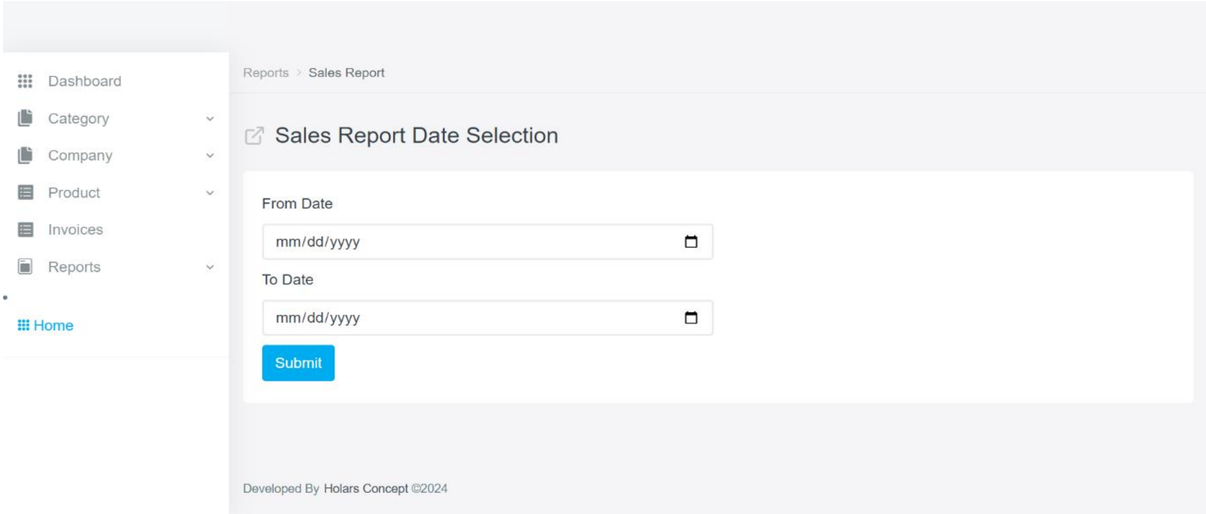

Fig. 4.9: Sales Report

c. FILES USED TO PRODUCE REPORT

i. Admin Dashboard: http://localhost/livestock/admin/Cart/dashboard.php

ii. Manage Category List: http://localhost/livestock/admin/Cart/manage-categories.php

iii. Manage Company List: http://localhost/livestock/admin/Cart/manage-companies.php

iv. Manage Product List: http://localhost/livestock/admin/Cart/manage-products.php

v. Invoice Report: http://localhost/livestock/admin/Cart/invoices.php

vi. B/w Date: http://localhost/livestock/admin/Cart/bwdate-report-ds.php

vii. Sales Report: http://localhost/livestock/admin/Cart/sales-report-ds.php

4.1.2 INPUT DESIGN

a) LIST OF INPUT ITEMS REQUIRED

i. Add Category: Company, Category Code

ii. Add Company: Company Name

iii. Add Product: Category, Company, Product Name, Product Price

b) DATA CAPTURE SCREEN FORMS FOR INPUT

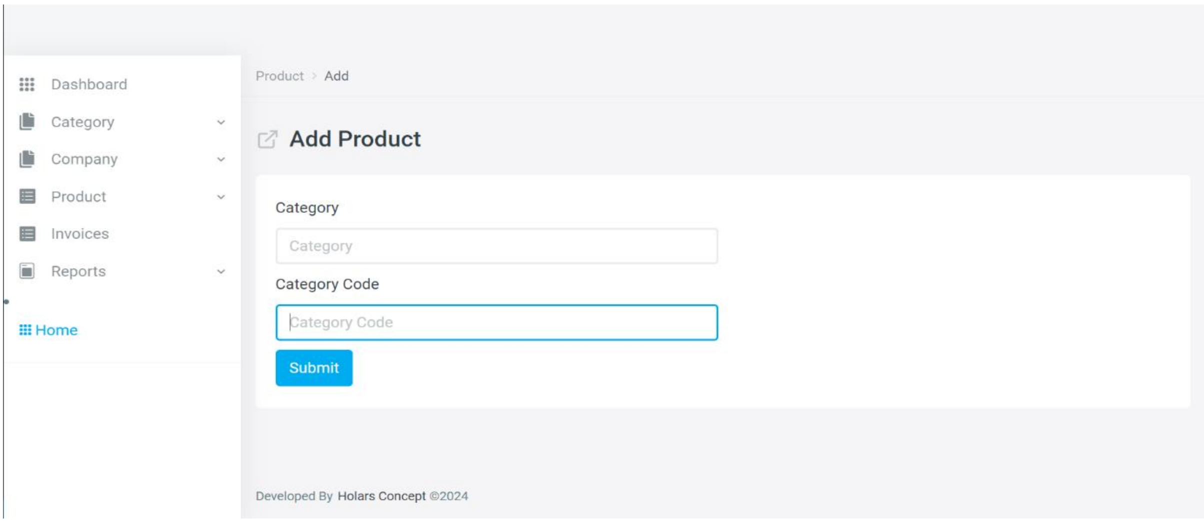

Fig. 4.10 Add Category

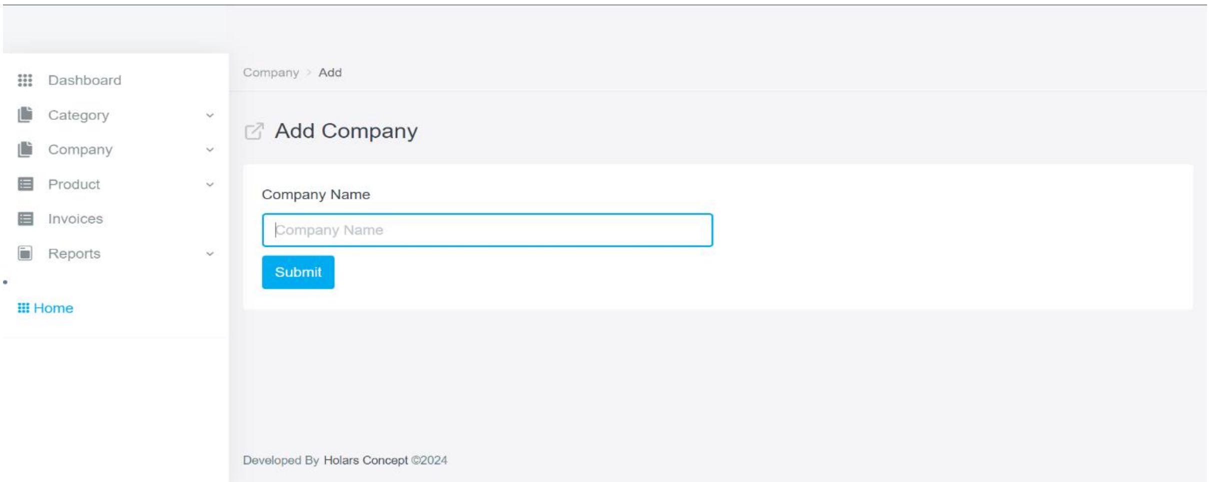

Fig. 4.11 Add Company

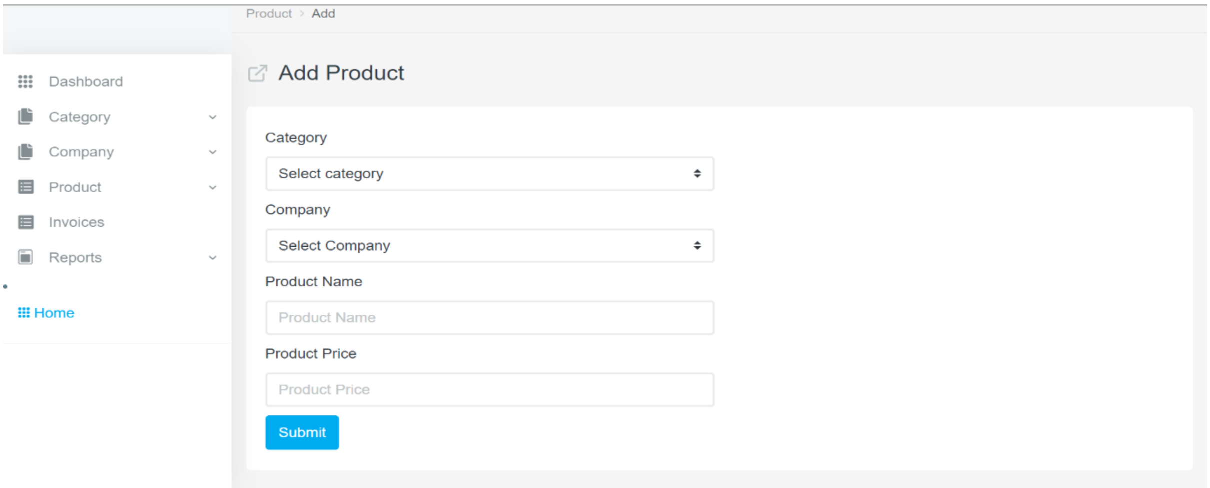

Fig. 4.12 Add Product

4.1.3 PROCESS DESIGN

a) List of all programming activities necessary

Various programming activities are performed to successfully build the new system these activities include:

- The design of the database used.
- Design of the client-side script i.e., JavaScript which enables efficient interaction between the user and the GUI application of the new system.
- HTML coding, this is used in preparing the presentation part of the new system; it helps us to design the pretty look of the website to be created.

PHP coding, which constitute the main and business logic of the new system. All the processes of the system are coded in this area of programming.

b) Program modules to be developed

Modules are developed individually to perform one function or the other, and they are linked together to work as single system called “Main Program". The major modules developed in this research are:

i. Login Module

ii. Category Module

iii. Product Module

iv. Invoice Module

v. Reports Module

c. Virtual Table of Content (VTOC)

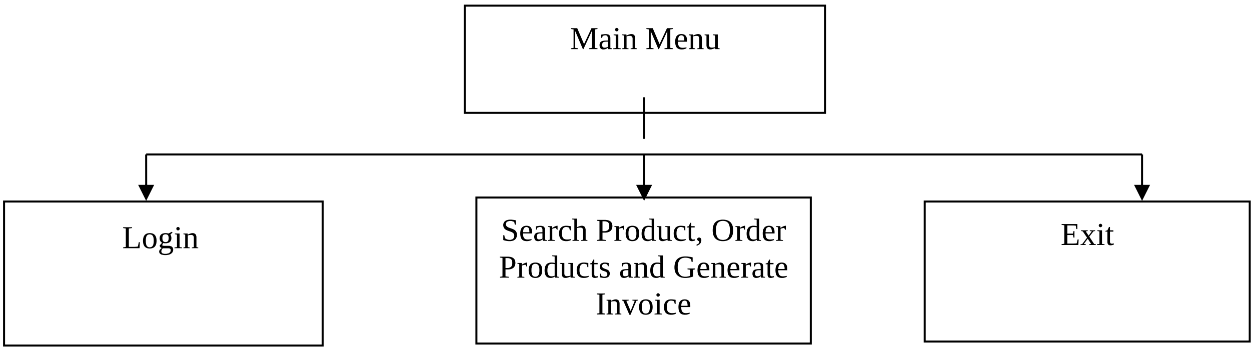

Fig. 4.13 VTOC

4.1.4 STARAGE DESIGN

a) DESCRIPTION OF DATABASE USED

A database is a collection of interrelated data stored with a minimum of redundancy to serve many applications. Database is used to group data into a number of tables and minimizes the artificiality embedded in using separate files.

- MySQL Database: This is an open-source relational database management system (RDBMS). Its name is a combination of "My", the name of the co-founder Michael Widenius's daughter and "SQL", the abbreviation for Structured Query Language. MySQL is free and open-source software under the terms of the GNU General Public License, and is also available under a variety of proprietary licenses.

b) DECRIPTION OF FILES USED

- Content Provider: Provides all the content needed in the project.
- Contrast: It gets the entire column in the project.
- Data Source: It deals with the update and closing of the database.

- DBOpenHelper: It holds all the data entries in the project.

c) RECORD STRUCTURE OF THE FILES USED

Database name: livestockdb

Table name: tblcategory, tblcompany, tblorders, tblproducts, tbl_category, tbl_contact, tbl_footer, tbl_page, tbl_post, tbl_slider, tbl_social, tbl_theme, tbl_user, title_slogan

Input device: Keyboard, mouse

Output device: VDU, printer

Storage device: Hard disk

This aspect of the project deals with the skeletal framework of the database. Every file is structured in a format that it can accept extra data as input and be able to print out any additional information.

ATTRIBUTE	DATA TYPE	LENGTH
Id	int	11
username	Varchar	50
Password	Varchar	50

Table 4.10. A table showing details of admin login details

FIELD NAME	DATA TYPE	SIZE
ANIMAL TYPE	VARCHAR	40
NO. OF ANIMAL	INT	20
DATE	DATE \ TIME	10
VACCINE	VARCHAR	100

SIZE	VARCHAR	100
MEDICATION	VARCHAR	

Fig. 4.6: Data Base File Design

4.1.5 DESGIN SUMMERY

a) SYSTEM FLOWCHART

After installing the software and necessary components, the user begins by logging in (START). Data such as names and numbers are entered via keyboard or mouse. The system checks for errors in data input to ensure accurate output. For the livestock management system, this includes verifying the names of staff, animals, and related procedures to match the data entered by the farm management. The process concludes when the expected output is produced (STOP). Below is the system flowchart.

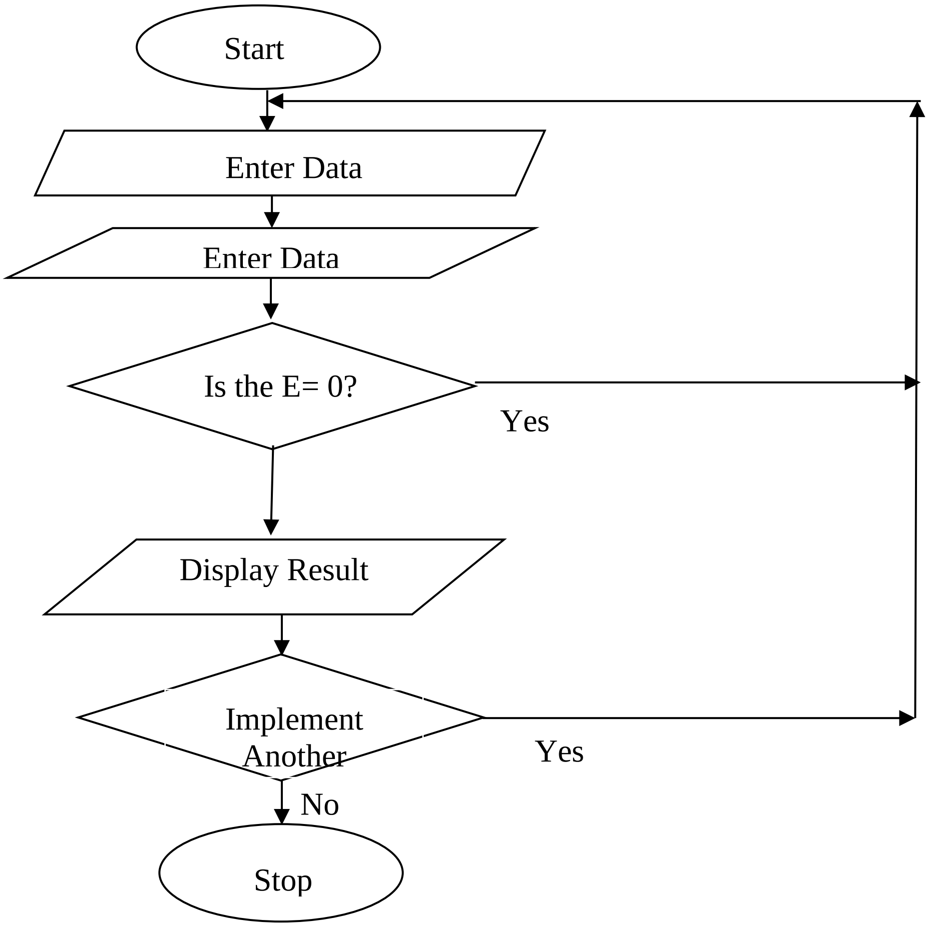

Fig. 4.4 Program Flowchart

b. HIPO CHARTS

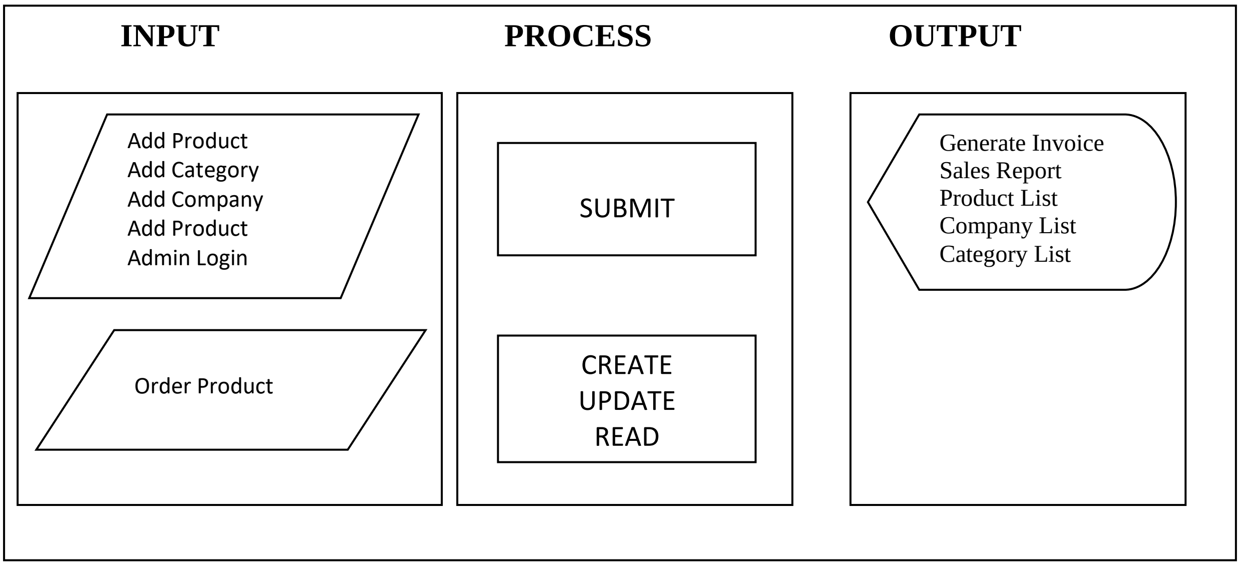

Fig. 4.14. HIPO chart

4.2 SYSTEM IMPLEMENTATION

The researcher made use of stages of programming which are:

- **Program Design**: The program logic on how the facts gotten can be put together in order to solve the problem through charts, symbols etc. was applied by the researcher.

- **Program Coding**: the researcher applied an appropriate programming language VISUAL BASIC which suit the software been developed.

- **Program Testing**: Here disk checking is performed, debugging the program for errors, and the program is run with data to ensure it achieves its purpose.

4.2.1 PROGRAM DEVELOPMENT ACTIVITIES

a) Programming Language Used: The programming language used in developing the software is the web language which includes HTML, CSS, JS and PHP. Web language is a concurrent, function-based, content management language.

(b) Environment Used in Development: The application was built using a text editor (Visual Studio Code) and XAMPP server. XAMPP is a free and open-source cross-platform web server solution stack package developed by Apache Friends consisting mainly of the Apache HTTP Server, MariaDB database, and interpreters for scripts written in the PHP and Perl programming languages.

c) Source Code: The source code of this project has been attached to the appendix of this report.

4.2.2 PROGRAM TESTING

During program testing each module of the program were tested to determine the reliability of the system.

a) Coding Problems Encountered

As at the time of developing this project, a lot of errors was encountered. They are categorized as follows:

- **Syntax error:** Syntax error is an error in the coding syntax of a language, usually when reserved keywords of the programming language are not spelt correctly. Bracket applies syntax coloring to keywords. Majorly, keywords are highlighted in blue.
- **Too many fields error:** This happens when compiling a PHP code.

- **Path error:** This happens when there is a mistake in the referencing or addressing of an object, file, image etc.

b) Use of Sample Data

The various data used for sampling are for easy imputing of activity record, they are used for effective generation of the various reports.

4.2.3 SYSTEM DEPLOYMENT

a) System Requirements

System requirements are the configuration that a system must have in order for a hardware or software application to run smoothly and efficiently. Failure to meet these requirements can result in installation problems or performance problems. When a system starts functioning, it is necessary to monitor its operation to ensure that the user requirements are met. The new system has to be examined from time to time to ensure that it works as expected.

b) Tasks Prior to Implementation

i. Hardware/Software acquisition

For easy running of the application on any user’s device, the following are necessary:

- 1280 x 800 maximum screen resolutions.
- 1GB RAM minimum.
- XAMPP or WAMP server.

(ii) PROGRAM INSTALLATION

The system is a very easy package even though the user may not be too good in computer operation. To use this new system, follow these instructions:

STEP 1 – To run this program, you need a server (XAMPP SERVER) installed on the machine.

STEP 2 - Copy the project folder to the xampp/htdocs directory on the server.

STEP 3 - Run the XAMPP server and make sure you start Apache and MySQL.

STEP 4 - Open any of your favorite browser and type "localhost/phpmyadmin" to the address bar and hit enter button.

STEP 5 - Create a new database name 'livestockdb' same name as the database file (livestockdb.sql) you find the project folder

STEP 6 - Import the database file.

STEP 7 - Open another tab on your browser and type "http://localhost/livestock/admin/" to the address bar and hit enter button.

STEP 8 -This will display the index page of the app, then you can start exploring the app from there.

c) STAFF TRAINING

The staff training for the implementation of the Computerized Livestock Management Information System focuses on equipping users with the necessary skills to effectively operate the system. The training includes:

1. System Setup: Staff will be guided on installing and configuring the system using XAMPP server, ensuring proper setup for optimal operation.

2. Data Entry and Management: Training will cover how to accurately input livestock data, manage records, and maintain up-to-date information within the system.

3. System Navigation: Users will learn to navigate the system's interface, access different modules, and utilize its features for tracking livestock activities, health records, and financial transactions.

4. Report Generation: Staff will be trained to generate and interpret reports, enabling better decision-making based on real-time data.

5. Troubleshooting: Basic troubleshooting skills will be provided to address common issues that may arise during system operation.

6. Security and Backup: Emphasis will be placed on data security measures and regular backup procedures to prevent data loss and unauthorized access.

The training ensures that staff are competent in using the system, leading to improved efficiency and accuracy in livestock management.

d) CHANGING OVER

Change-Over Procedure

The changeover procedure is a method of moving from the existing system to the newly designed system. There are four basic procedures for achieving the change-over, they include:

- Direct change over: The existing system is discontinued altogether and the new system becomes operational immediately.
- Parallel change over: Here, the existing system and the new system are run simultaneously using the same input. The outputs are compared and reasons for differences resolved. The output from the existing system continues to be considered until the new system proves satisfactory. At this point, the existing system is discontinued and the new system takes its place.
- Pilot Run change over: This involves a changing over of a part of the system either by Parallel or by Direct.
- Phase change over: Here bits of the new system are introduced, one at a time.

The conversion plan chosen is the PHASE CHANGE OVER. This is because Phase Change Over processes is done in phase, it is similar to parallel running except that initially only a portion of the current system is run parallel on the new system, i.e., only one department or section.

4.3 SYSTEM DOCUMENTATION

4.3.1 FUNCTION OF PROGRAM MODULES

Program module is the breakdown of the large program. Each of these modules performs a specific function in the entire program. This module includes Login module, Admin module and Student module, Logbook module.

Login Module: - In this module this, users are to input their login details in other to get access to their Dashboard be it the admin or the student.

Admin Module: - This is the module that handles the management of the entire system, viewing list of companies, products, category, register new products, company, category generate invoice, sales report by date, and also edit and delete them.

Customer Module: In this module, users can search of available farm product, make purchase and generate invoice.

Blog Module: The admin can create blog post and manage every post on the client side of the software.

4.3.2 USER MANUAL

The system is a very easy package even though the user may not be too good in computer operation. To use this new system, follow these instructions:

STEP 1 – To run this program, you need a server (XAMPP SERVER) installed on the machine.

STEP 2 - Copy the project folder to the xampp/htdocs directory on the server.

STEP 3 - Run the XAMPP server and make sure you start Apache and MySQL.

STEP 4 - Open any of your favorite browser and type “localhost/phpmyadmin” to the address bar and hit enter button.

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STEP 7 - Open another tab on your browser and type "http://localhost/livestock/admin/" to the address bar and hit enter button.

STEP 8 -This will display the index page of the app, then you can start exploring the app from there.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Summary

Technology forms an integral part of a total agricultural development system. If it was not for the development and adoption of new technologies in agriculture, the world would have been starved today, as predicted by economists two centuries ago. With the present population growth rates, especially in the developing world, the implementation of improved technologies and bioengineering are essential in increasing the world's food production and supporting the ever-increasing world population growth.

The technology transfer and adoption to livestock production and management aspect especially in the developing nation like Nigeria, in most of the cases showed a great improvement in meat and other raw material production; as poverty alleviation will become the long-term benefit.

5.2 Conclusion

Those days, livestock are managed manually by farmers. The special physical appearances of each animal and other factor, including myths were used by the farmer as means of managing the entire production processes and procedures. But the introduction of the computer system is quickly changing the method of livestock management. Computer and automated systems brings better and more efficient ways of carrying out operations. Based on findings, it is recommended to every farm, to embark and embrace computerize system of data management in every system.

Conclusively, to achieve this, the existing system had to be studied (system investigation and analysis) to know how things are done and the shortcomings/errors they encounter and a result theory of inventory management to know what concepts will be most appropriate to enhance the efficiency of the farm.

5.3 Recommendation

In general, the researcher recommends that the farmer should

- Implement fully the proposed system after the test run
- Work towards training and retraining staff
- Employ competent hands to help in system maintenance
- Further research be carried out to improve the study

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APPENDICES

APPENDIX A

PROGRAM FLOWCHART

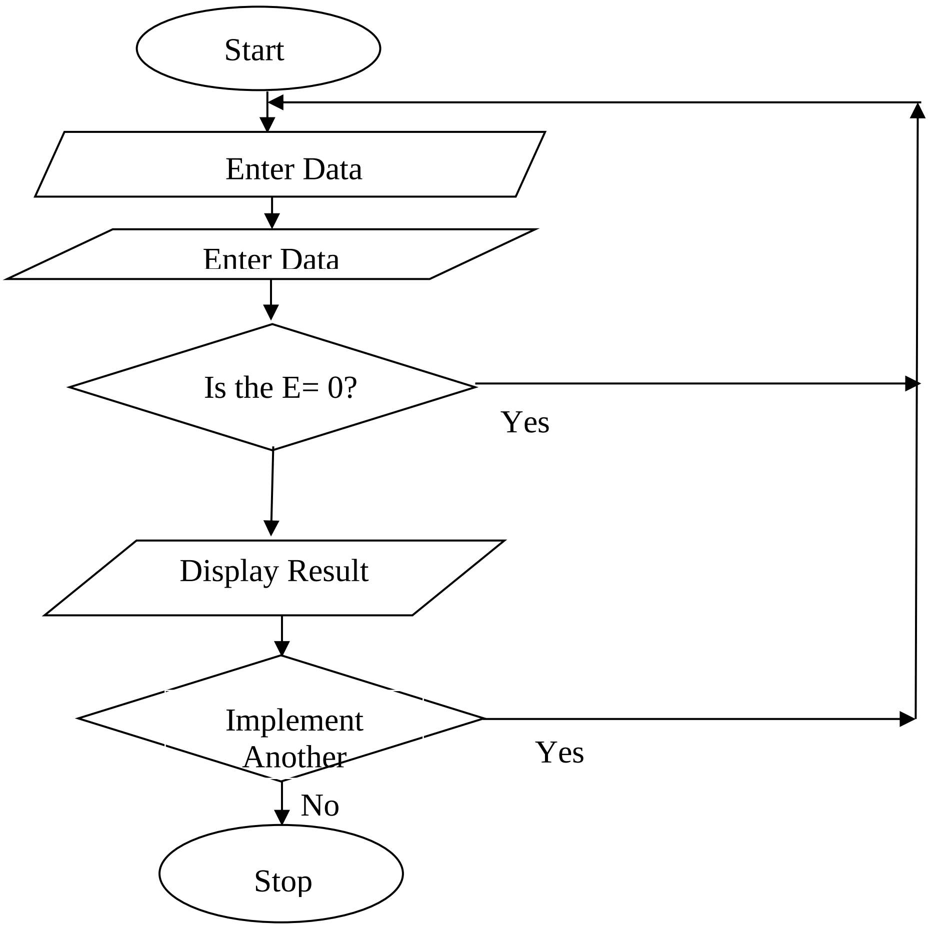

Fig. 4.4 Program Flowchart

b. HIPO CHARTS

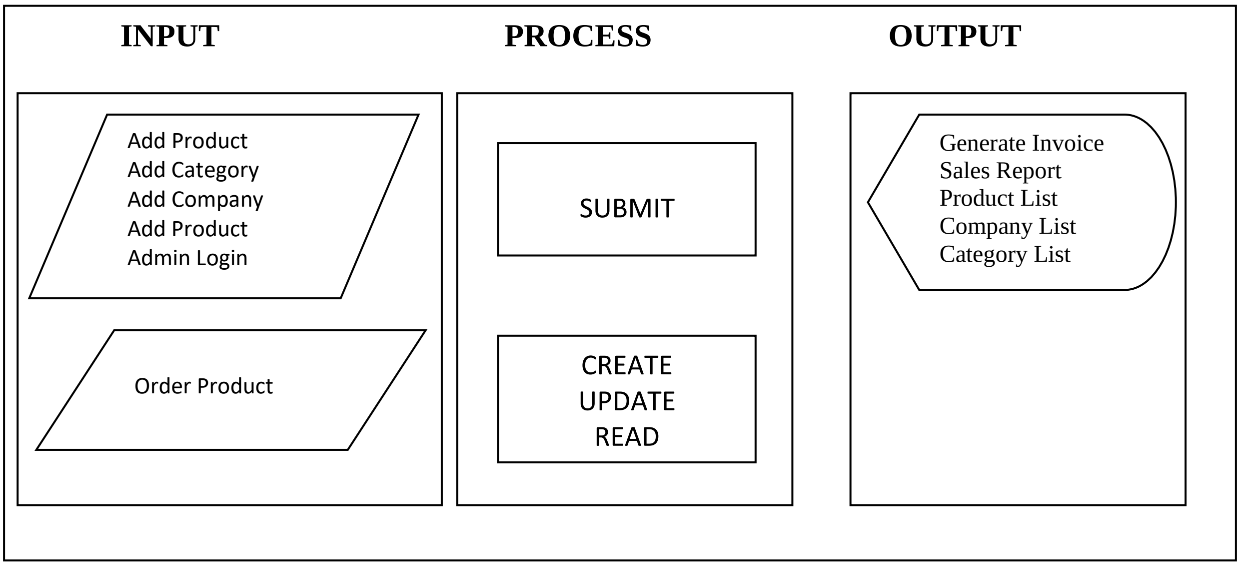

Fig. 4.14. HIPO chart

APPENDIX B

PROGRAM LISTING (SOURCE CODE)

```
<?php include 'inc/header.php'; ?>
<?php include 'inc/sidebar.php'; ?>
<?php
    if(!isset($_GET['userid']) || $_GET['userid'] == NULL) {
        echo "<script>window.location = 'userlist.php';</script>";
    } else {
        $id = $_GET['userid'];
    }
 ?>
<div class="grid_10">
    <div class="box round first grid">
        <h2>User Details</h2>
        <?php
            if($_SERVER['REQUEST_METHOD'] == 'POST'){
               echo "<script>window.location = 'userlist.php';</script>";
                        }
            ?>

            <div class="block">
    <?php
        $query = "select * from tbl_user where id = '$id'";
        $getuser = $db->select($query);
        if($getuser){
            while ($result = $getuser->fetch_assoc()) {
    ?>
     <form action="" method="POST">
        <table class="form">

            <tr>
                <td>
                    <label>Name</label>
                </td>
                <td>
                    <input type="text" readonly value = "<?php echo
$result['name']; ?>" class="medium" />
                </td>
            </tr>
            <tr>
                <td>
                    <label>Username</label>
                </td>
                <td>
                    <input type="text" readonly value = "<?php echo
$result['username']; ?>" class="medium" />
```

```
                </td>
            </tr>
            <tr>
                <td>
                    <label>Email</label>
                </td>
                <td>
                    <input type="text" readonly value = "<?php echo
$result['email']; ?>" class="medium" />
                </td>
            </tr>

            <tr>
                <td style="vertical-align: top; padding-top: 9px;">
                    <label>Details</label>
                </td>
                <td>
                    <textarea class="tinymce" readonly>
                        <?php echo $result['details']; ?>
                    </textarea>
                </td>
            </tr>
            <tr>
                                <td></td>
                                <td>
                                    <input type="submit" name="submit" Value="Ok"
/>

                                </td>
                            </tr>
                    </table>
                    </form>
                <?php } } ?>
            </div>
        </div>
    </div>

    <!-- Load TinyMCE -->
    <script src="js/tiny-mce/jquery.tinymce.js"
type="text/javascript"></script>
    <script type="text/javascript">
        $(document).ready(function () {
            setupTinyMCE();
            setDatePicker('date-picker');
            $('input[type="checkbox"]').fancybutton();
            $('input[type="radio"]').fancybutton();
        });
    </script>
```

```
<?php include 'inc/footer.php'; ?>

<?php include 'inc/header.php'; ?>
<?php include 'inc/sidebar.php'; ?>
<?php
    if(!Session::get('userRole') == '0'){
        echo "<script>window.location = 'index.php';</script>";
    }
?>

        <div class="grid_10">
            <div class="box round first grid">
                <h2>Add New User</h2>
               <div class="block copyblock">
            <?php
                if($_SERVER['REQUEST_METHOD'] == 'POST'){
                $username = $fm->validation($_POST['username']);
                $password = $fm->validation(md5($_POST['password']));
                $email    = $fm->validation($_POST['email']);
                $role     = $fm->validation($_POST['role']);

                $username = mysqli_real_escape_string($db->link, $username);
                $password = mysqli_real_escape_string($db->link, $password);
                $email    = mysqli_real_escape_string($db->link, $email);
                $role     = mysqli_real_escape_string($db->link, $role);

                if (empty($username) || empty($password) || empty($email) ||
empty($role)){
                    echo "<span class = 'error'>Field Must Not Be Empty
!!</span>";
                } else {
                    $mailquery = "select * from tbl_user where email =
'$email' limit 1";
                    $mailcheck = $db->select($mailquery);
                    if ($mailcheck != false) {
                        echo "<span class = 'error'>Email Already Exist
!!</span>";
                    } else {
                $query = "INSERT INTO tbl_user(username, password, email,
role) VALUES('$username', '$password', '$email', '$role')";
                $valueinsert = $db->insert($query);
                if($valueinsert){
                    echo "<span class = 'success'>User Created Successfully
!!</span>";
                        } else {
                    echo "<span class = 'error'>User Not Created !!</span>";
                        }
                    }
```

```
                }
            } ?>
                <form action="" method="post">
                    <table class="form">
                        <tr>
                            <td>
                                <label>Username</label>
                            </td>
                            <td>
                                <input type="text" name="username"
placeholder="Enter Username..." class="medium" />
                            </td>
                        </tr>
                        <tr>
                            <td>
                                <label>Password</label>
                            </td>
                            <td>
                                <input type="password" name="password"
placeholder="Enter Password..." class="medium" />

                            <td>
                                <label>Email</label>
                            </td>
                            <td>
                                <input type="text" name="email"
placeholder="Enter Valid Email..." class="medium" />
                                <label>User Role</label>
                            </td>
                            <td>
                                <select id="select" name="role">
                                    <option>Select User Role</option>
                                    <option value="0">Admin</option>
                                    <option value="1">Author</option>
                                    <option value="2">Editor</option>
                                </select>
                            </td>
                        </tr>
                        <tr>
                            <td></td>
                            <td>
                                <input type="submit" name="submit"
Value="Create" />
                            </td>
                        </tr>
                    </table>
                </form>
<?php include 'inc/footer.php'; ?>
```

APPENDIX C

TEST DATA

In design and implementation of computerized livestock production system in modern farming, test data includes information like livestock report, feeding schedule, health monitoring data, inventory management, product management, invoice generation and other textual content related to managing livestock, operation efficiently using technology. Test data plays a crucial role in organizing and analyzing information to improve overall livestock production processes

APPENDIX D

SAMPLE OUTPUT

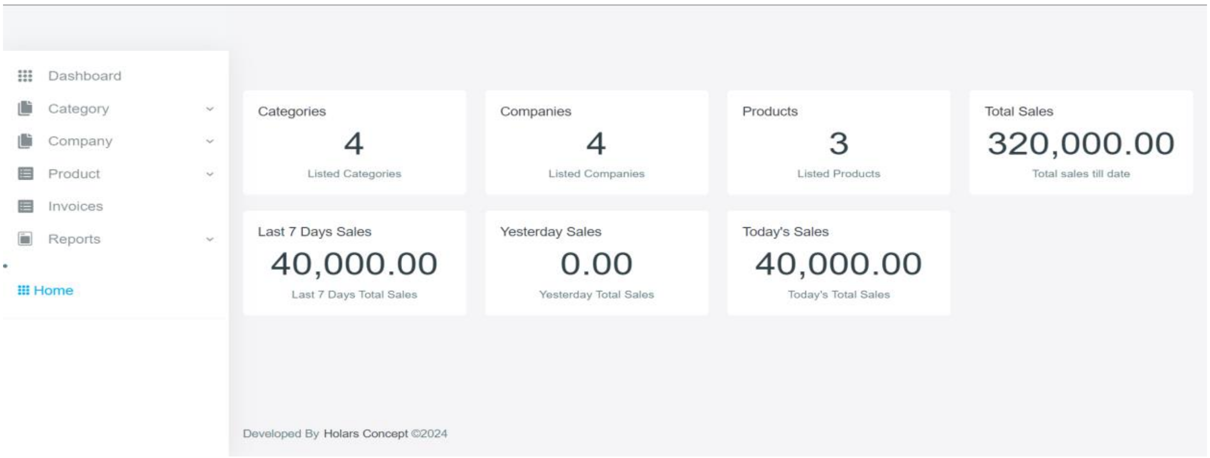

Fig. 4.3: Admin Dashboard

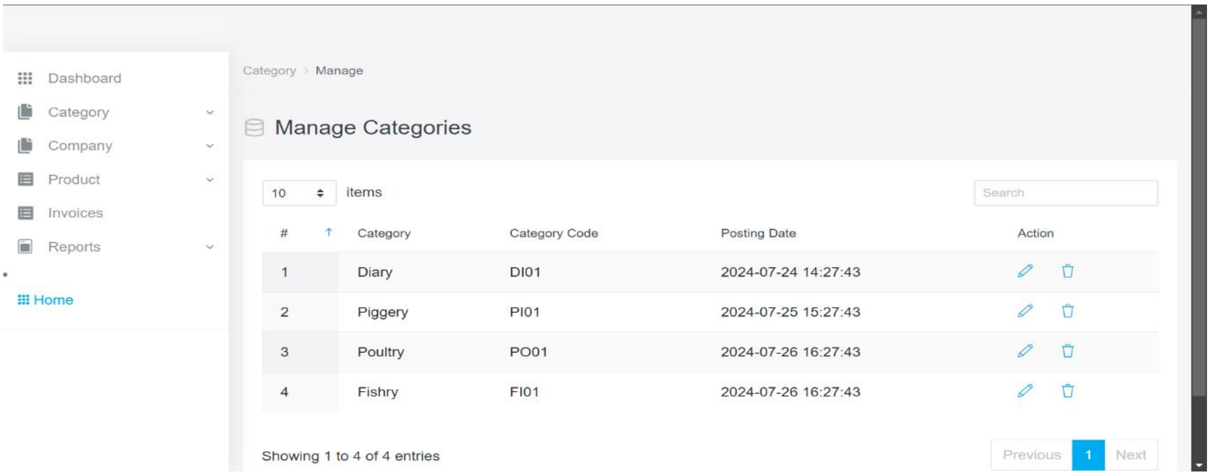

Fig. 4.4: Manage Category

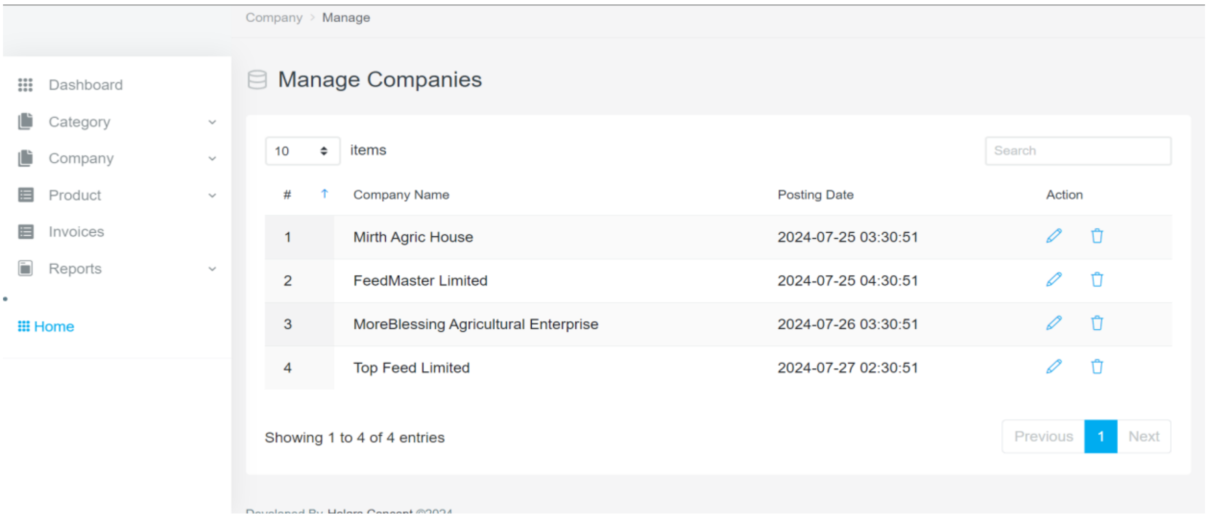

Fig. 4.5: Manage Company Lists

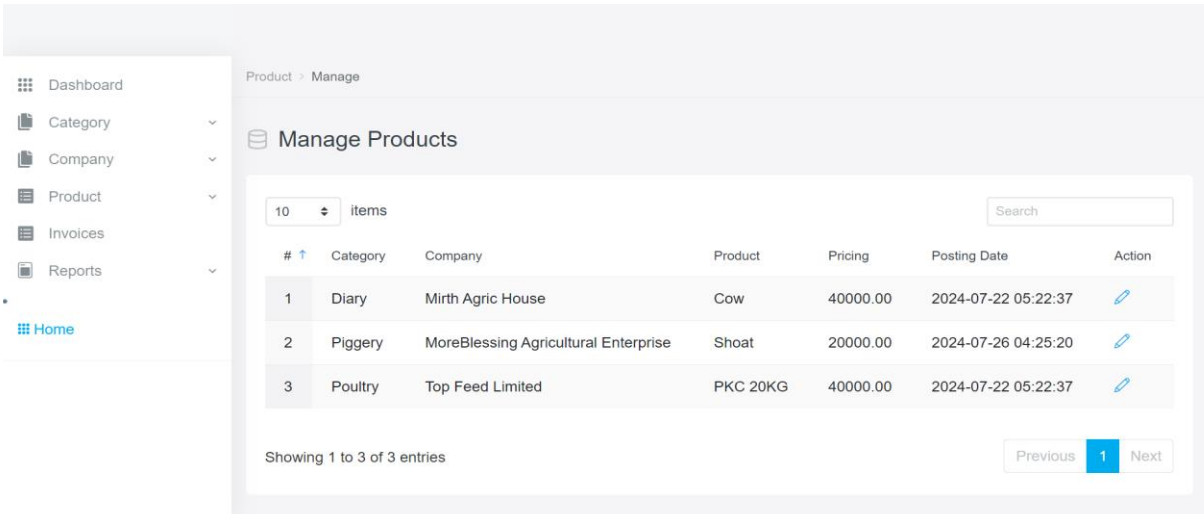

Fig. 4.6: Manage Product List

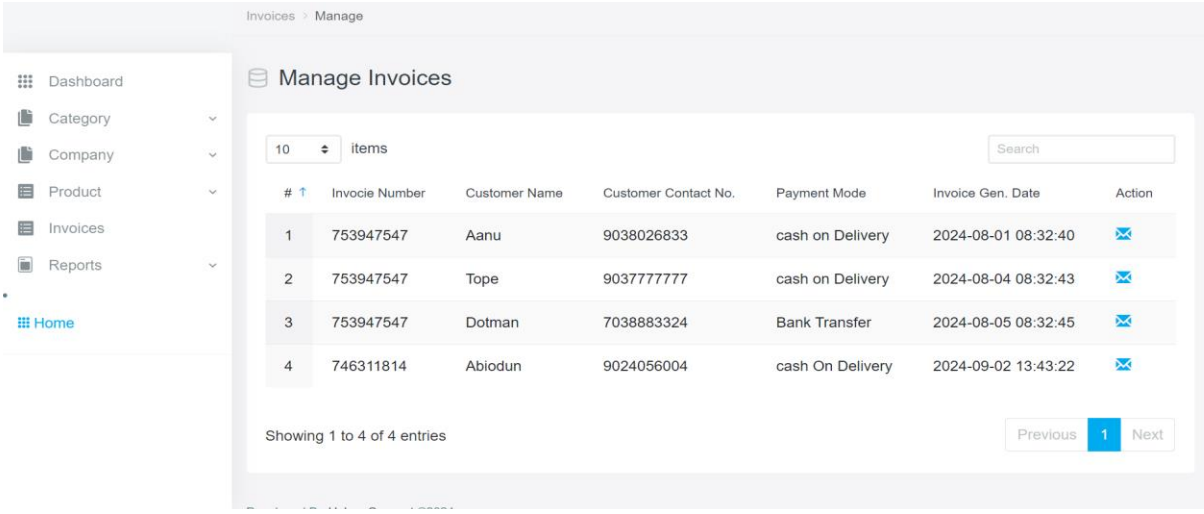

Fig 4.7: Invoice Report

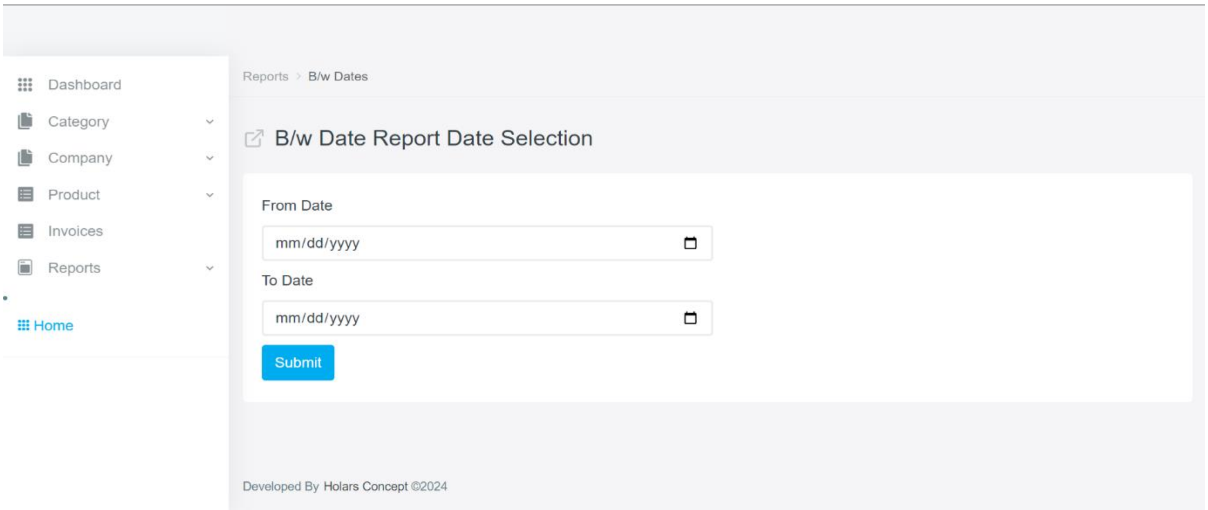

Fig. 4.8: B/w Date

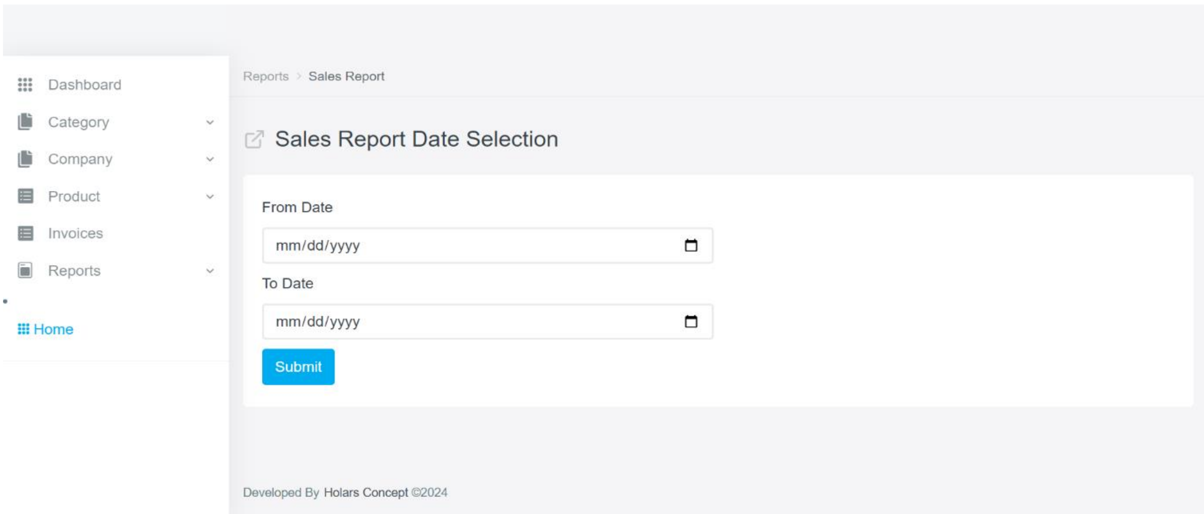

Fig. 4.9: Sales Report