ABSTRACT
CV Agriranch is currently using a manual system and simple database program to manage the execution of purchasing, sales, and production. The system, however, is ineffective to determine the loss and profit gained by the company per period. Therefore, a new application was designed to assist with the workflow in CV Agriranch. The application supports the lifecycle in the company through purchasing, sales, cost of goods sold calculation, and monthly report of inventory status. The application is using PHP as programming language, and Microsoft SQL Server 2005 as data storage media.

Based on the experiment, 80% of the users stated that the features on the application are sufficient to fulfill the needs of the company.

Keywords
FIFO, Cost of Production, Cost of Goods Sold, Cattle.

1. INTRODUCTION
CV Agriranch, located at Raya Driyorejo km. 19,3, Gresik, Jawa Timur was founded in 2007 by Mr Kim Chance MLC, West Australia Minister for Agriculture and Food. This company builds farm and cattle feedlot. Agriranch has a commitment to procure high quality beef cattle both from domestic resources and Australia. Cattle are raised intently and fed with high nutrition feed for periods ranging from 90 to 100 days to achieve specific market requirements.

Over the years, purchasing, sales and data recording are conducted manually using Microsoft Excel. These facts posed a challenge made it difficult for the producer to calculate “cost of goods sold” for the cattle. Besides, the manual system causes difficulties in generating detailed reports at the end of period. To resolve these problems, a new computerized system is needed to help Agriranch provide accurate and detailed data and report at the end of period. In the end, this new system can raise more profit for Agriranch.

2. COST OF GOODS SOLD
In a production of the goods, there are two types of costs, i.e. costs of production and non-production costs. Production costs are costs incurred for processing raw materials into finished products, while the non-production costs are the costs incurred for non-production activities, such as marketing activities and administration [1].

Cost of goods sold can be categorized into three types. First, direct materials are all materials that form an integral part of the finished product and that can be included directly in calculating the cost of the product. Examples of direct materials are the lumber to make furniture and the crude oil to make gasoline [3]. Second, direct labor is labor that converts direct materials into the finished product and the cost can be applied accordingly to a specific product [3]. Third, Factory overhead—also called manufacturing overhead which includes all manufacturing costs except those accounted for as direct cost, i.e., direct material and direct labor [3]. Below is the formula to assign cost of goods sold:

\[
\text{Beginning Work In Process inventory + manufacturing cost} - \text{Ending Work In Progress inventory}
\]

3. SYSTEM ANALYSIS
In general, the company business process starts from cattle purchasing. At the farm, incoming cattle will be weighed and checked for health. Then, each cattle will be given ear tag as its identity. The cattle will be weighed monthly and any weight changes will be recorded. It is useful to know whether the weight gain of cattle balances with the amount of food. For selling process, buyer directly comes to the farm and choose the cattle they want to buy. When both parties have reached an agreement in regards to the price, cattle health, payment methods, etc., the buyer can take the cattle directly. The cattle feedlot production cost includes the employee cost, electricity, water, feed, vitamin, injection and medicine. At Agriranch, the actual profit of this farm was not known exactly because there was no proper guideline and system to a record all of the production costs. Reports are available only to the extent of price and number of cattle sold each month and the weight gain of the cattle. Document Flow of cattle purchasing can be shown as figure 1 below.
4. DATA FLOW DIAGRAM
Context Diagram Design can be seen on figure 2 below. There are 4 external entities that deliver input and output to the system, i.e. a. Supplier who receives purchasing order from CV Agriranch. Any materials are inputed to the system. B. Customer who buys cattle from the farming. The sold cattles are inputed to the system. C. Manager who obatins reports from the system. D. Staff who is responsible to breed and sell the cattle.

5. IMPLEMENTATION
The evaluation starts from purchase order, cattle receiving, medicine supply purchasing, cattle breeding, sales and cost of goods sold calculation.

5.1 Cattle Purchase Order
Figure 3 below show the interface to make a purchase order. For example, an order to PT SAPISEHAT of three types of “Brahman” cattle with an average weight of 190 kg and the average price of Rp. 15,000,- and two types of “Brahman Cross” cattle weighing on average 180 kg and the average price of Rp. 12,000,-.

5.2 Cattle Receive Form
When the cattles arrive at the farm, the cattleman will record the data. Figure 4 show 3 suppliers sent three types of Brahman with the total price of Rp. 9,000,000,- and an additional fee of Rp.150,000,-.
5.3 Medicine Supply Purchasing

For medicine purchasing, the transaction will be stored in this form below (figure 5). For example, the farm wants to buy medicine at PT OBAT KIMIA, a bottle of Sangobion that costs Rp 15,000,- per each. This form can be seen as follow.

The stock card of Sangobon will be added to one bottle or 50ml (1 bottle equals to 50ml). One bottle of Sangobion costs Rp 15,000, therefore 1 ml would cost Rp15.000/50 = Rp 300,-. The form can be seen as follow.

5.4 Cattle Care and Handling

Medicine can be administered when cattle are sick. Example, May 16, 2009, a cow with identification # NS95 needed 50ml of Sangobion. It can recorded as follows.

Card stock of Sangobion will be reduced by 50ml with the price of Rp 200,-/ml. This price was obtained from medicine usage NS035 (sangobion). The stock report of sangobion can be seen in figure 8.

5.5 Cattle Selling

For example, user sells a cow -to Edo with identification number 004. That cow weighs 191 kg and the price per kg is Rp. 18 000, The process can be seen in figure 9.

5.6 Reporting

This is Cost of Goods Sold report in April 2009. All sales in April 2009 will be calculated with conversion cost in the same month.
6. EVALUATION

The evaluation of the application of this program is done by analyzing the questionnaires of the five users who carried out tests on this application. This evaluation is done through a user rating given to the criteria mentioned in table 1.

Table 1 Questionnaire Result

<table>
<thead>
<tr>
<th>Question</th>
<th>1 (poor)</th>
<th>2 (fair)</th>
<th>3 (good)</th>
<th>4 (very good)</th>
<th>5 (excellent)</th>
</tr>
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<tbody>
<tr>
<td>User Friendly</td>
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<td>20%</td>
<td>80%</td>
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<td>System Suitability</td>
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<tr>
<td>Benefits Application</td>
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<td>0%</td>
<td>0%</td>
<td>20%</td>
<td>80%</td>
</tr>
</tbody>
</table>

7. CONCLUSION

This Cost of Goods Sold application runs well and helps CV Agriranch improve company performance gained on each month by providing actual expenses and cattle detail record.

Based on the evaluation, this application has fulfilled the user’s needs. This is shown by the fact that 80% of respondents provide positive feedbacks when answering question number three on suitability of the features created to the needs of users. In addition, this application can be proven as beneficial for the company by looking at the total percentage of answers to question number six, which asked about how large the benefits of this application for a company that is 80% of users replied very useful.

8. REFERENCES
