CONSTRUCTION OF OPERATIONAL MANAGEMENT INFORMATION SYSTEM AT WARUNG CEPOT RESTAURANT

Bambang Ariyanto[1]

[1] Teknik Informatika – Universitas Komputer Indonesia
Jl. Dipatiukur 112-114 Bandung
E-mail : bambang.ariyanto@outlook.com

ABSTRAT

Warung Cepot Restaurant is a business place which is engaged in the field of culinary. Warung Cepot Restaurant currently located in two locations, where both locations are located in different places. Based on the results of the interview with Mr. Wawan as the Operational Manager of Warung Cepot Restaurant, Warung Cepot selling transaction amount within one month there are over 350 data storage and sale of goods done by saving the document in the form of a sales transaction, causes the Manager Operational difficulties in supervising and evaluating the results of sales target per month. The amount of raw materials reached 82 type and process consolidations and additions to usage is still done by menuggu until business hours end made the Pitch Control difficulties in determining the amount of raw material to be bought and the ADM. Gudang/Keuangan difficulties in terms of supervision of the raw material. Approach to solve a problem that has been described is to build an Operational management information system the Home Eat Cepot Stalls.

Information systems operations management implemented a method of forecasting to assist managers in planning the sale of the goods. Method of forecasting method is applied to a single moving average (SMA). After the planning process, the next process is the process of monitoring the planning. The process of monitoring applied to monitor the planning process so that went well. The last process is the process of evaluation. The evaluation process is the result of the process – the process previously and as a determinant for the next planning process.

Operational management information system using the software development model that is the model of the waterfall, while analysis system using structured modeling by using Data Flow diagrams (DFD). Based on the implementation and the testing that has been done then it can be inferred that the operational information management Systems that are built can help solve the problem – an issue that has been raised by house party packed Warung Cepot.

Keywords: Management Information System , Operational, Forecasting, Single Moving Average

1. INTRODUCTION

Warung Cepot restaurants based in Pasteur has had 1 (one) branch in the area of Bandung, Pasirkaliki one of the parts of the work listed at RM. Warung Cepot operational part, the activities contained in the operational part of the IE process sales, purchases of raw materials, and management of the stock of raw materials. Staff involved in operational activities is the Manager of operations, Pitch Control, Head cashier, Kitchen, HRD, owner, and part Warehouse Administration/Finance.

Based on interviews with Mr. Wawan Gunawan as the Manager of operations at the Warung Cepot RM. be known there are some facts that cause problems among them, namely the number of monthly transactions reached more than 350 transactions, the recording of the results of the transaction are still recorded in the document manually which resulted in Manager Operational difficulties in supervising and evaluating the results of sales target per month.

In the process of purchasing and monitoring stocks of raw materials disclosed few facts that happened on the field, the amount of raw materials used is currently reaching 82 type then the process usage and increased the stock of raw materials not directly recorded on a moment's notice but must be mengunggu the completion of the operational hours of the restaurant resulted in part of the Pitch Control keslulitan in determining the amount of raw materials to buy for the next month and the Administration section of the warehouse/financial difficulties in the supervision of the expenditure and revenue of the raw materials such.

The impact experienced by restaurants from the problems that have been mentioned above above is a benefit diner is not the maximum because of the often unused sales target and stock materials piled up in warehouses because the process of monitoring and recording the use of raw materials that are not the maximum.

Based on a problem that has been exposed then required the construction of management information system Operational at home Eating Stalls Cepot web based. Website technology used for its flexible and dynamic so as to make it easier for the user application to access it anywhere.

2. Content Of Research

2.1 Basic Concept Of Management Information System

The term management information system has been heavily was defined by management and computer experts with different ways. The term has been known since the 1960s [1]. The concept of management information system currently developed as the development focus of the use of computer technology. Development of current computer technology has provided a new awareness that computer applications should be applied to the primary purpose of generating information for management decision making.

2.2 Sales Information System

Sales information systems are information systems that organize a series of procedures and methods designed to generate, analyse, disseminate and obtain information to support decision making on the activities of the sales.

The following is the flow of processes running on the system of sales information.

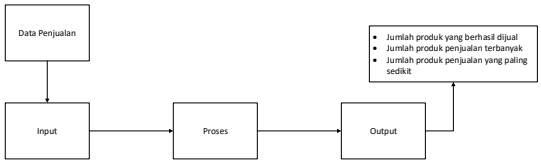


Figure 2-2 process flow information system Sales

From the picture above can be explained first sales data that have been acquired during the sales activities will be processed in such a way by existing systems to provide information for its users, eg onformasi generated is:

a. the number of overall product sales.
b. the amount of the sale of most products.
c. number of product sales at least.

2.3 Raw Material Purchasing Information System

Purchasing information system account is used to record all goods purchased by the company in one period. The company purchases made to mememnuhi the availability of raw materials or merchandise in the warehouse until the goods or materials were sold back to the consumer.

Purchase information in the system there are a few things to note are: the needed information management, the purchasing procedure, the corresponding function in the purchase flow chart, and document information systems purchases.

2.4 Inventory Information Systems

Inventory information system of goods namely method or way to melaukan perekapann or logging data items complete with explanation of the item and can generate detailed reports from the data perekapan, and offering us-based computer graphics software with fast, precise, and accurate.

Inventory information system is a structure of human interaction, apparatus methods – methods, and controls-the controls are laid out to achieve the following objectives:

a. Supporting rutinaitas work in a section within a
company

b. decision making Support to personnel-personnel
set building and a part control supplies.

c. Memdukung preparation of internal reports and reports
external

The system supplies support the routine work under the control of supplies, namely, to capture and record data that is associated with the pesediaan system, for example a transaction receipt of goods and use of transaction stuff.

Inventory system supports decision making for personnel-personnel that manage warehousing and inventory control section

. Inventory system is a system which describes how transactions the acceptance of goods and use of transaction stuff that describes the status of stock items itself that can help increase the productivity of the company.

2.5 PDCA Cycle

PDCA cycle provides a troubleshooting process stages that are scalable and accurate. PDCA cycle is effective for:

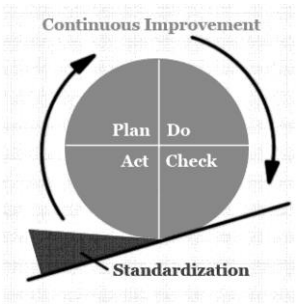
1. Assist the application of Kaizen or continuous improvement process. PDCA cycle is repeated when he opens the possibility to find new areas that need to be improved.

2. Identify new solutions to improve the process of recurring significantly.

3. Open broader horizons will be the existing problem solutions, test them and improve their results in a controlled process before being implemented widely.

4. Avoid waste of resources.

According to Bambang PDCA Cycle is a process of Kesit empa measures to improve the quality of [5], as shown below:



Figur **Error! No text of specified style in**

Source : buku "siklus PDCA," in *Kamus Manajemen Mutu*, jakarta, S. syahu, 2006

1. *Plan*

Planning is selection and connecting facts, making and using assumptions relating to future by describing and formulating certain activities that are believed to be needed to achieve a certain result. In the stage of PDCA cycle plan is done against the planning target of sales of goods.

2. Do

Do (Do) this means that the planning process has been fixed in advance and monitor the implementation process. Size-the size of this process has also been set out in the PLAN. Refer to the application and implementation of the planned activities.

3. Check

At this stage we measure how effective the experiments have been performed on the stage of PDCA cycle of beforehand, i.e. Do. In addition, this step also interesting learning as much as possible so that later can be produced better results. In this stage of the cycle PDCA Do and Check by looking at the scale and areas of improvement to be made, we can repeat this step prior to the next stage if considered necessary. If the outcome is already satisfying that we can go to the next stage of PDCA cycle i.e. the Act.

4. Act

Follow up on results to make improvements is required, means also reviewing the whole step and modify the process to fix it before the next implementation. If this step is completed and we've reached the next stage, we can repeat this process from the beginning again to reach a higher stage.

2.6 Forecasting

Forecasting is the activity of calculating usage that will occur in the future. Forecasting techniques will help in holding the approach to analysis of behavior or patterns of data, so as to provide a way of thinking, the workmanship and the breaking of a systematic and pragmatic, as well as providing a greater level of confidence over the accuracy of the forecast results are made [6].

There are several methods in forecasting, where these methods are visible in Figure 2-5.

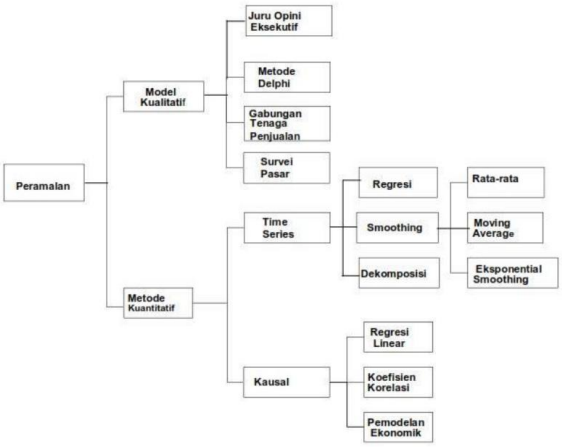


Figure **Error! No text of specified style in document.**-2 Planing Taksonomi

Source: buku Forecasting Konsep dan Aplikasi Edisi 2 , Subagyo, Pangetsu. 1986

Figure 2.5 shows the methods in forecasting arranged hierarchically. Forecasting in cases can be solved with the methods illustrated in Figure 2.4, where the suitability of the chosen methods is seen from the pattern of the data, so that the most appropriate method with the pattern can be tested. The pattern data can be differentiated into four types, namely:

a. Horizontal Pattern (H), occurred when the data values fluctuate around an average value that is constant (series such "stationary" against the value of the average of its value). The typical pattern of stationary or horizontal data visible in Figure 2-6.

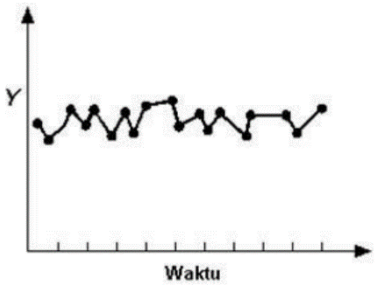


Figure **Error! No text of specified style in document.**-3 Horizontal Patern

Source : buku Forecasting Konsep dan Aplikasi Edisi 2 , Subagyo, Pangetsu. 1986

b. the seasonal Pattern (S), occurs when a series is influenced by seasonal factors (e.g. a particular year quarter, monthly data on the

week days). For the quarterly seasonality seen in Figure 2-7.

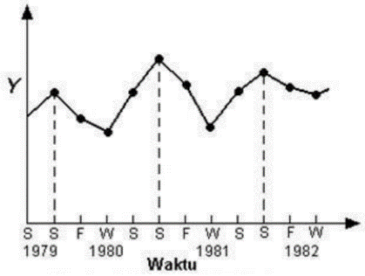


Figure **Error! No text of specified style in document.**-4 Seassonal Pattern

Sumber : buku Forecasting Konsep dan Aplikasi Edisi 2 , Subagyo, Pangetsu. 1986

c. Cyclical pattern (C), occurs when the data is diperngaruhi by ekomoni long-term fluctuations such as those associated with the business cycle. This pattern looks to figure 2-8.

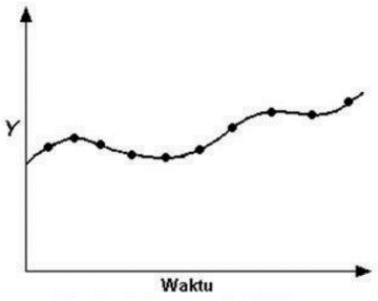


Figure **Error! No text of specified style in document.**-5 Cyclical pattern

Source : buku Forecasting Konsep dan Aplikasi Edisi 2 , Subagyo, Pangetsu. 1986

d. Trend pattern (T), occurs when there is an increase or decrease in long-term secular in the data. Trend pattern visible in Figure 2-9.

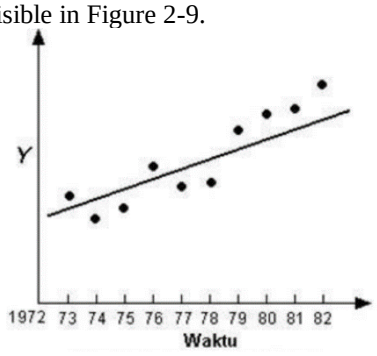


Figure **Error! No text of specified style in document.**-6 Trend Pattern

Source : buku Forecasting Konsep dan Aplikasi Edisi 2 , Subagyo, Pangetsu. 1986

Moving Average

Moving Averages forecasting is a method of smoothing value by taking a bunch of value of observations and then look for the average, then use the average as the forecast for the next period. The term moving average is used, because every time a new observation data is available, then the average is calculated and used as the new forecast.

2.7 Single Moving Average

Single Moving Average is a method of forecasting is done by taking a group of observation values, find the average value as the forecast for the period to come. Single Moving Average method has special characteristics, namely;

a. to determine the forecast in the coming period requires historical data for a certain period. For example, with a three-month moving average, then the forecast 5 months into the newly created 4th month after completed/ended. If month moving averages of the new 7th month can be made after the 6th month ends.

b. the more long period moving average, the effect more visible in pelicinan or menghasilakan moving average forecasts of increasingly refined.

Mathematical equations single moving averages:

$$M_t = F_{t+1} = \frac{Yt+Y_{t-1}+Y_{t-2}+\cdots+Y_{t-n+1}}{n} \quad \text{(II.1)}$$

Where:

Mt = Moving Average for period t + 1
ft = Forecast For Period t + 1
YT = the real value of the period to t
n = number of limits in the moving average

2.8 Measurement Errors of forecasting

In modeling periodic series, most of the known data can be used to predict the rest of the next data so that it can be done the calculation accuracy of forecasting better. The accuracy of forecasting in the future is very important.

If Yt is real data for the period t and Ft is forecast for the same period, then the guilty can be written as follows:

(II. 2)

:

$$et = Yt - Ft \quad \text{(II.2)}$$

Description:

et = error at period t
YT = the actual data in the period t
FT = forecast period t

If there is a value for n observations and forecasting a period of time, then there will be n error and fruit the size of a standard statistics can be defined as follows

a. the Mean Absolute Error (MAE)

Mean Absolute value of Error or error obsolut Central is the average absolute error-predict, regardless of positive or negative sign. MAE can be calculated with the formula:

$$MAE = \frac{\sum |Yt - Ft|}{n} \quad \text{(II.3)}$$

a. Description:
MAE = Middle Absolute Error
∑| Yt-Ft | = The summation result reduction of the original data and forecasting
n = number of Data

b. Mean Squared Error = MSE

MSE is a alterntif method of forecasting techniques to evaluate each of the error (difference between actual data against data forecasting) squared, and then summed up and divided by the number of data. MSE is calculated by the formula:

$$MSE = \frac{\sum (Yt - Ft)^2}{n} \quad \text{(II.4)}$$

Description:
MSE = Mean Square Error
∑| YT-Ft | 2 = Summation result reduction of the original data and forecasting squared
n = number of Data

2.9 Management Selling Analysis of Ayam Cepot Menu

At this stage it does is analyze the activities of sales management for the menu Chicken Cepot. Sales management stage is divided in four stages, became the first stage of the planning phase, the next stage is the stage of implementation, after the pelakasanaan phase, the next stage is the stage of examination and the last stage is the stage of Action. The following is an explanation of the stages performed on sales management activities:

1. Planning stages

At this stage of the planning target of sales forecasting experiments have been conducted with some of the methods that have been previously selected (see Appendix F).
Of the three methods that are already tested to be drawn the conclusion that the Single method of Moving Average with period 5 months may be taken as the appropriate paramalan method since it has the most value for RMSE of all methods that have been tested with RMSE value = 16. RMSE value itself is the possibility of error that occurs between forecasting and results achievement. For the target to be achieved in October was 259 servings Cepot chicken menu.

2. Tahap Pelaksanaan

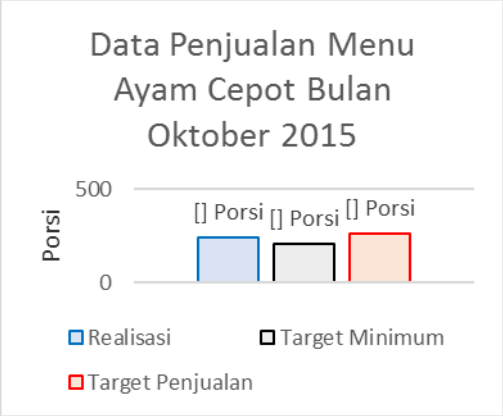
At this stage of implementation does is perform sales activities to meet the pre-set target i.e. 259 servings for Cepot chicken menu.

The target is to be met is 259 servings for the month of October, the assumption for the number of days in each month is 30 days so the obtained calculations: = 8.63 portion. So to reach the target of such Restaurants have to sell at least 9 servings Cepot Chicken every day.

Before conducting the sale done before was checking stockpiles of raw materials in advance, based on the results of the interview with the father if the stock is less than 20% then it will do the purchase of raw materials in advance.

3. Tahap Pemeriksaan

At this stage of the examination that is done is monitoring the results of penjulanan products. Based on the results of interviews with Operational Managers percentage of attainment of the minimum target is 80% of the targets are already determined in advance done by process monitoring product sales results with a graph with two curves. With the y axis is the number of products sold and the x axis is the examination period for 1 month. Indicators in the process of supervision are the number of monthly sales results. The following is an example of an examination conducted in October 2015:



Gambar **Error! No text of specified style in document.**-7 Grafik Penjualan Menu Ayam Cepot Bulan Oktober 2015

On the monitoring process will be evaluated by calculating the percentage comparison between the sale proceeds and the target which is already specified.
Example: evaluation of the attainment of targets in October 2015

$$\%= \frac{\text{Penjualan}}{\text{target minimum}} x100$$

$$\%= \frac{242}{207} \times 100\% = 116{,}91\%$$

On the evaluation can be seen that the results of sales reached the minimum target to be achieved, namely in the amount of 80%.

4. Stages of Action

At this stage will do is taking action to perform sales activities next month, a reference that is used in the process of taking action is the result of the evaluation of the achievement of sales targets in advance. If on evaluation results the previous month sales target not reached the minimum target is already determined, then action will be taken in the form of product promotion.
Following are the results of the evaluation of the rekapituasli table are required at the stage of monitoring.

Table **Error! No text of specified style in document.**-1 Tabel rekapitulasi hasil evaluasi penjualan menu Ayam Cepot untuk periode 1 bulan

No.	Hasil Evaluasi (%)	Aksi
1	< 80	Melakukan promosi untuk meningkatkan jumlah penjualan
2	>80	-

Other actions that can be taken from the evaluation process is if in a period of 3 consecutive months sales target not reached will be given suggestions to lower the price, if within 6 months of the target not reached will be given advice on replacement menu.

2.10 Analisis Manajemen Pembelian Bahan Baku

At this stage it does is analyze the management activities of the purchase of raw materials for the menu Chicken Cepot. Raw material purchase management phase is divided in four stages, became the first stage of the planning phase, the next stage is the stage of implementation, after the pelakasanaan phase, the next stage is the stage of examination and the last stage is the stage of Action. The following is an explanation of the stages performed on sales management activities:

1. Planning stages

At the stage of planning the purchase of raw materials to meet the sales target in October 2015 calculations done as follows:
The raw materials used to make a single serving of chicken menu Cepot is as follows:

Table 3 3 Cepot chicken Menu Composition Table

Nama bahan	Jumlah
1. Ayam Potong	¼ ekor
2. Bumbu Pelengkap	secukupnya

The raw materials used in the process of forecasting the purchasing of raw materials using only the main raw material, namely Chicken pieces.

The target sales of chicken products in October 2015 Cepot is as many as 259 products, for 1 chickens can be made into 4 servings of chicken products Cepot, so to meet the quota of chickens during the month of October the Pitch Control to buy chicken at least 64.75 tail or tail of about 65, obtained from the sales target is split 4

.

$$\frac{259}{4} = 64.75$$

So target purchases of raw materials for the menu Chicken Cepot in October 2015 is 64.75 chickens or as many as can be rounded into 65 tail.

2. Stage of implementation

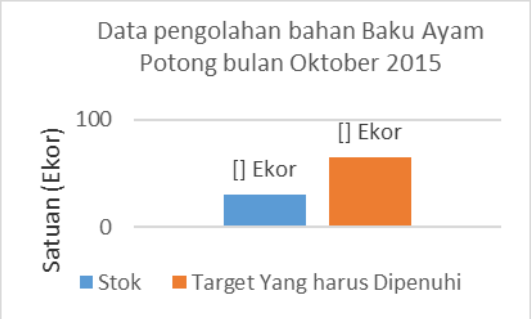
At this stage of implementation does is make purchases of raw materials. The purchasing process of raw materials that are being run in ROM.

Stalls Cepot is currently done each day before business hours the restaurant opened, the conditions for the purchase of raw materials is the remaining stock of materials available in the warehouse of the 20% target < purchase raw materials that must be achieved.

In October the daily part Pitch Control should buy at least 2 chickens for memenuihi target which must be purchased, i.e. 65 tail.

3. Checking Stage

At this stage of the examination of the thing to do is check the amount of availability of raw materials during sales activities and compare it with the purchase of the raw materials already determined at the beginning of the month. The indicators used in the supervision of the purchase of raw materials is the remaining stock of raw materials. The following is an example of an examination conducted in October 2015:



Gambar **Error! No text of specified style in document.**-8 Grafik Pengolahan bahan baku Ayam Potong Bulan Oktober 2015

On the monitoring process will be evaluated by calculating the percentage comparison between the sale proceeds and the target that is already determined.

Example: an evaluation of the availability stock of raw materials

$$\frac{\text{Stok}}{\text{target}} \text{x} 100\,\% = \frac{30}{65} \times 100\% = 46.1\%$$

On the evaluation process can be seen that the availability of the raw material stock is still above 20%.

4. Stages of Action

At this stage of the action does is take action based on the results of the evaluations that have been done before. If the rest of the stock is in the warehouse is still above 20% system will provide the information that the stock is still sufficient, but if the rest of the stock is under 20% then the system will give you suggestions for the immediate purchase of raw materials.

Following are the results of the evaluation of the rekapituasli table are required at the stage of monitoring.

Tabel **Error! No text of specified style in document.**-2 Tabel rekapitulasi hasil perhitungan sisa stok bahan baku

No.	Hasil Evaluasi (%)	Aksi
1	<20	Harap melakukan pembelian bahan baku karena stok kurang dari 20%
2	>20	-

3. End Phase

1. Conclusions

The conclusions can be obtained after performing the analysis and testing of the system is operational information management Systems that are built, the following conclusions can be drawn based on the testing that has been done.

1. The system can help Operational Managers in conducting surveillance and evaluation of sales targets.
2. The system can assist ADM. Warehouse/financial oversight in terms of raw material stock.
3. Pitch Control System can help in determining the amount of raw materials that must be purchased.

2. Suggestions

Based on the conclusions above, basically the system already meet the goal and purpose of the intended recipients, but can still be developed hand in hand with the development needs of the user, then the advice is expected to build this system in order to be better is to implement information systems Executive at RM. Warung Cepot.

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