Overview

The Depository Trust Company (DTC) is expanding the use of management by objective throughout the organization. This practice enables senior management to measure the success of the organization in accomplishing preset goals and objectives. This paper describes how SAS/EIS, in conjunction with other SAS products, facilitated the implementation of a Management By Objective (MBO) system at DTC.

An Executive Information System

The function of a good EIS is to support the prevalent management philosophy(s) of an organization. Some of the factors that make MBO practice at DTC, and most other management practices, suited to an EIS are the following:

- Executive Interest: The practice of Management By Objective is initiated by the president and he takes keen interest in its implementation.
- Changing Environment: The expansion of MBO throughout the company is due to external and internal changes (i.e. new president).
- Management Participation: Managers and their superiors (up to the president) are responsible for participating in the practice (vertical integration).
- Team Building: Managers, throughout the company, are required to form teams and work on common goals (horizontal integration).
- Organizational Unity: Goals and objectives are set forth for the organization as a whole (integrated and interrelated objectives) and cover all areas critical to the success of the organization.
- Enormity of the task: The necessary coordination and communication for submitting, reviewing, approving, monitoring, and reporting on objectives makes paper-based implementation painful if not impossible.

Why SAS software products?

The Decision Support department of DTC selected SAS software products for the following reasons:

- SAS Institute, Inc. commitment to quality and new technology and safe guards against embarrassing failures or obsolescence.
- SAS Institute, Inc. can provide development and analytical tools for every goal in any functional area.
- SAS Institute, Inc. has the financial stability to assure it's existence in the future and DTC's reliance on their service.
- SAS/ACCESS provides an easy access to our existing DB2 data base without duplicating the data.
- DTC's employees have acquired a good deal of experience with SAS software products.
- Compared to other products with the same functionality, SAS software products are very cost effective and it is easy to convince management of this fact.
- SAS programming code can be easily transported between platforms which eliminates the duplication of effort on MVS and OS2 platforms.
- DTC and SAS Institute, Inc. have, over the years, developed a strategic alliance which enabled us to experiment with SAS/EIS before its beta release.

What is MBO?

Management By Objective (MBO) is one of various organizational approaches toward goals and objectives setting. The MBO concept is very versatile. From a high-level organizational view it may be characterized as a strategic long-range planning system. From the viewpoint of personnel management it may be seen as a performance, training, and development plan agreed-upon by manager and subordinate. More importantly, MBO is a philosophy of participative management based on identifying purpose, objectives, desired results, and establishing a realistic program for obtaining these results and evaluating performance in achieving them.

MBO is a process whereby the superior and subordinate managers of an organization jointly:

- identify common goals,
define each individual’s major area of responsibility in terms of expected results,
- use these measures as guides for operating the unit and assessing the contribution of each of its members.

A prime reason for adopting an MBO program is to coordinate objectives at different levels in the organization. At DTC, MBO is a multi-step process which comprises elements of both of the characterizations noted above - a strategic long-range plan and a performance, training, and development plan. First, senior management defines the mission, overall goals, and critical success factors. Second, middle management develops their own specific objectives to supplement the overall goals. Next they seek cooperation and agreement from managers on whom they will depend to achieve the goal. After agreement by the work unit the objectives are added to the GMS. Finally, top executives review, revise (if necessary), and approve the goals.

Once tasks to achieve the goal have begun, managers provide periodic status reports so that senior executives can monitor the progress that is made. Finally, the completed goals are reviewed and rated in order to evaluate performance.

Designing a system to automate MBO

The system entails two levels of block icon panels. The first level permits the user to select one of four modules to add, approve, update, or review goals and objectives. The second level of panels allows users to select individual or groups of objectives by traversing an organization chart, selecting a critical success factor, or inputting objective criteria. Once an individual, or group of objective(s), is selected, variance reports and gantt charts can be produced, and other information about the objective can be pulled out of an “electronic folder.”

The system was designed to provide information on an intuitive and as-needed basis and to maximize the following advantages of MBO:
- improve management planning and control,
- link day to day activities to the goals and mission of the organization,
- encourage strategic, proactive style,
- encourage team-building,
- facilitate prioritization of goals,
- facilitate the identification of the goals that are crucial to the success of the company.

provide for structured communication and systematic feedback,
- reduce uncertainty by stating objectives.

How did SAS Help With the Practice of MBO?

SAS/EIS and other SAS products such as SAS/AF, SAS/Graph, SAS/English and SAS/OR provided comprehensive tools for implementation of MBO. The Goal Management System (GMS) was developed by using:

- SAS/AF Frame and Text objects to display company’s mission,
- SAS/AF extended table and push-button facilities to develop and input objectives and obtain agreement from managers of supporting departments (helping with team building process).
- SAS/Graph and SAS/AF Hot Spot features to develop an organizational chart (helping with monitoring the objectives at any level).

This MBO/EIS system allows managers to graphically see what the objectives are, in which they are working. The traditional org chart was inserted into the system as a way of traversing through the chain of command and to, at any point, review a selected manager’s goals by means of a Variance Report, Gantt Chart or the specific details of each goal.

The advent of SAS 6.07 with object oriented methods has allowed us to create a functional org chart that serves as an entry point to analyze goals. The org chart was developed using SAS/AF Frame entries. Each level of the chart is created, at run time, by a GSLIOE procedure embedded within SAS Screen Control Language (SCL).

Hot spots, within the Frame entry, play a vital role in allowing the user to point and click on a box, within the org chart, to produce another chart with that selected manager’s subordinates. When a hot spot is selected by a user, the SCL associated with the object is executed to perform a certain task. For example, a hot spot is created in the Frame and is called Hot1. The SCL behind the object could be coded as follows:

Control Label;
Hot1:
 n=1;
call display('SCL program',n);
Return;

The above code executes when the hot spot called "Hot 1" is selected. Within the object label we can execute some action, in this case assigning the value of 1 and calling an SCL program. This type of object allows for an extremely flexible org chart where a user can click on each box to graphically illustrate each manager's subordinates. The manager's goals can then be viewed or summarized by selecting a push button that will ask the user how to analyze the selected manager's goals.

- SAS/EIS CSF facilities to identify critical goals.

In our MBO/EIS system, CSFs are visually represented by the CSF object within SAS/AF. Each CSF resembles a gas gauge with a color scheme associated. The needle on the gauge indicates the percentage of the CSF that has been completed. Figure CSF1 illustrates a CSF called "Disaster Recovery". One quick glance at this CSF conveys an enormous amount of information concerning the goals associated with Disaster Recovery. The needle of the gauge is pointing to the green section of the dial, signifying that this CSF is almost completed. The actual percentage is specified on the gauge as 94 percent. The important point here is that not just one goal is associated with the CSF, but rather, many goals. Disaster Recovery could have 100 goals associated with it, in which 94 percent have been completed.

Each CSF dial is updated dynamically. Updating a goal's status to "completed" would subsequently update the CSF gauge to point at 100 percent completed. The system supports for further flexibility by allowing the manager to point and click on the CSF to produce Variance Reports, Gantt Charts or detailed information for the goals with the same CSF.

- SAS/AF push-buttons and extended tables to limit the number of goals that are reviewed at any given time.

- SAS/EIS variance reports and SAS/OR's Gantt charts to measure the progress of goals.

SAS/EIS contains a list of objects that can be used for an EIS system. The variance object is used to create variance report between two variables. Before creating the variance report, a special database called a metabase must be created. The purpose of this database is to tell the variance report what variables to use in calculating the variance. Figure Var1 shows a simple variance report. Three variables, goal, estimated cost and actual cost must be registered with the metabase before the report can run. Be aware that no coding is necessary to produce this report, the variance object contains all the code necessary to create the report.

The registration of data is accomplished in the following steps:

- Invoke SAS/EIS
- Select the metabase icon
- Select metaist button to create a new metaist (many metabase can be contained in one metaist)
- Select add push button to create a new metabase
- Place a 'E' next to the new metabase name to edit it
- Select add push button to add a member (a metabase can have many members)
- Select the dataset member that you wish to register
- Place an 'E' next to the member to edit the variable definitions
- Select the variables you wish to register (in our variance we selected goal, estimated cost and actual cost)
- Select the variable attribute for each variable. A variance report requires a drill-down variable, a budget variable and an actual variable

At this point you should have a dataset that is registered with the metabase. Creating the variance report can be accomplished by going to the EIS main menu and selecting "Build EIS". The variance object will require the registered database name.

- SAS/EIS hot spot and drill down features and SAS/Graph, SAS/Calc and SAS/OR to update the electronic folder for a specific goal.

The review process of this MBO/EIS system allows for analysis of many goals at a time. However, specific information about each goal can be reviewed in a section called "Folder".

The term "folder" was used to signify that information pertaining to a specific goal could be stored or "filed" electronically. For example, each goal associated with the Disaster Recovery CSF could have reports and graphs associated with each goal. The output for each goal can be stored in a SAS catalogue and can be reviewed at the completion of each goal by clicking on the Folder icon. Likewise, spreadsheets using
SAS/FSCALC or electronic mail can also be used to store information about a particular goal.

The specific detail of each goal is contained in each goal's folder. The manager can review the contents of a goal by selecting the detail icon, associated with each goal, to reveal all information regarding it. Estimated costs, returns on investments and actual completion date are just a few items contained in each goal's detail folder. The detail of each goals is assigned to the goal when a goal is entered into the system.

- SAS/English to provide flexible ad hoc reports on status of goals and individual achievements.

- SAS/Base to organize the data:

The data used in this system are stored in several fully normalized SAS tables such as employee, goals, department, etc. Views, using proc SQL are used to join several tables to combine data elements into logical objects. As a result, any update to the base tables will be automatically reflected in the objects. For example the following is the code that creates VWFINAL view.

```
**CREATING FINAL VIEW 'VWFINAL' BY JOINING**;
**GOAL, OTHER GROUP, DEPARTMENT, AND **;
**EMPLOYEE TABLES.**;

PROC SQL;
CREATE VIEW VWFINAL AS
SELECT G.G_ID, G.G_GOAL, G.G_DESC1, G.G_DESC2, G.G_DESC3,
G.G_RANK, G.C.CSF, G.G_ECOST, G.G_COST, G.G_ESAVE,
G.G_SAVE, G.G_EROI, G.G_ROI, G.G_EPB, G.G_PB, G.G_ESTART,
G.G_ESTART, G.G_EEND, G.G_END, G.G_RTDT,
G.G_FGM, G.G_PCOMP, G.A_ID, G.G_BEN1, G.G_BEN2,
G.G_PERF, G.S_STAT,
O.O_GRP1, O.O_GRP2, O.O_GRP3, O.O_GRP4,
D.D_NAME, D.C_CNTR, D.D_VP, D.D_ID, E.E_LNAME,
FROM GOALS G, OTHERGROUP O, DEPT D, EMPLOYEE E
WHERE G.G_ID=O.O_ID AND
D.D_ID=O.O_GRP1 AND
E.E_ID=O.E_ID
```

References


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