Implementing a Hospital Balanced Scorecard

J. Peter Chingos, Maine Medical Center, Portland, Maine
Rocket Wong, Maine Medical Center, Portland, Maine

ABSTRACT

The balanced scorecard concept, introduced by Kaplan & Norton, aims to measure (and manage) performance across multiple perspectives: financial, customer, internal business process, and learning and growth. MMC embraced this approach as it is particularly helpful to an enterprise that needs to be financially viable, satisfy its patients; fine tune its internal capacity, and keep up its flexibility to staff and meet new challenges.

MMC began by producing a high level, institutional scorecard manually. The structure and content were conceptualized during a facilitated executive retreat. The output of the retreat was a set of performance measures that reflected MMC’s strategic objectives. MMC staff aggregated data; calculated metrics and graphics using MS Excel and then transferred this onto a template for printing. This effort was very labor intensive and did not meet other needs such as secure distribution, “drill-down” analysis, and desire to expand this approach to multiple business entities. For these reasons, MMC implemented the SAS Strategic Performance Management (SPM) solution.

In the past 18 months, MMC has produced over 50 balanced scorecards for various clinical entities. Each scorecard has 15-20 metrics and each metric has 2 or more reports. This paper will review the life cycle of creating balanced scorecards at MMC. We will review the steps for defining and publishing scorecards.

The first phase focuses on analysis of end-user needs:

1. Translating a business unit’s strategy into measures and reports;
2. Analyzing data sources to construct a data warehouse;
3. Defining end-user security.

The second phase focuses on building a scorecard for intranet publication:

1. Building a balanced scorecard framework using SAS Strategic Performance Management (SPM);
2. Developing SAS programs using SAS Enterprise Guide (EG) for data manipulation and reports;
3. Mapping data and SAS programs to the balanced scorecard framework using Large Scale Automation (LSA);

The NESUG presentation will include a demonstration of MMC’s balanced scorecards.

PHASE 1: ANALYSIS OF END USER NEEDS

1) Translating a business unit's strategy into measures and reports

In this step, stakeholders map their strategic plan into objectives and those objectives into metrics. Once metrics are defined, benchmarks are established and report “drill-downs” are defined. This step is repeated for every metric of every balanced scorecard.

For example, part of MMC’s strategy is to deliver safe patient care. This strategy translates to an objective to reduce patient falls. We measure and trend falls per 1000 patient days in aggregate and per nursing unit.

Another important consideration is timing of the reports and data availability. We publish our balanced scorecards monthly with current month and rolling 12 month year-to-date values. In some cases data is not available monthly or is lagging such that it is not available until 2 months after month end. In this case, we display the most recent data available and identify what time period it represents.
2) Analyzing data sources to construct a data warehouse

In this step the data requirements are defined. There are four areas: data source; metric calculation; access/data transfer procedures; and data integration. For data source, we need to identify where the data is located; what format it is in; who manages it; how often it is updated. For metric calculation, we need to know the formula for calculating the metric; inclusion/exclusion criteria; what to do with missing values. For access, we need to determine whether we can access electronically or by other means and we establish a process for when and how the data will be accessed or extracted for publication in the scorecard. Finally, a further consideration in building the SAS data warehouse is how to integrate different data sources that might have different names for the same field. To deal with this we create crosswalk tables. You may also wish to group or encode data from your sources. We insert a blind ID in some of our scorecards to de-identify the reported metric. This is accomplished by adding a field to dictionary or crosswalk table.

For example, patient falls are captured in an incident reporting database. We have access to this database. The monthly data is available 3 weeks after month end. The calculation is defined as number of patient falls/patient days x 1000. The institutional balanced scorecard excludes falls and days for the Psychiatry unit whereas, the scorecard for Nursing includes Psychiatry. Patient days come from the finance department. The data is in MS Excel. We have access to it and it is available 1 week post month end. Our process is to extract the data from both sources into a text file for import into SAS 3 weeks after month end. Once both data sets are available in SAS they are mapped through a crosswalk that links different nursing unit descriptions (RI vs. Richards 1).

For a visual example of how the data warehouse is constructed, see MMC’s Data Flow Diagram.

3) Defining end-user security

Different balanced scorecards have different stakeholders. SAS SPM allows security by scorecard for individuals and groups. We define groups for each scorecard and give them rights for viewing their respective scorecards. We add and delete individuals from these groups as needed. SAS SPM Version 2 allows metric level security. This will be helpful for including restricted information along with unrestricted information for only those that need to see it.

PHASE 2: BUILDING THE SCORECARD FOR INTRANET PUBLICATION

1) Building a balanced scorecard framework using SAS Strategic Performance Management (SPM) release 1.4

SPM is used to build the framework for the scorecards and to assign access to the scorecards. The SPM software includes tools:
- Map to build scorecards that track MMC’s organization’s goals and processes;
- Knowledge Base Tools to extract scorecard data from our SAS data warehouse;
- Compass to display our published scorecards on MMC’s intranet.

2) Developing SAS programs using SAS Enterprise Guide (EG) for data manipulation and reports

EG version 2.0 is used to develop macros for data manipulation, implementing algorithms for calculating values for the Key Metrics table and generating metric reports. EG provides us with:
- a point-and-click user interface to the SAS server;
- transparent data access to our SAS data sets and other types of data;
- interactive task windows that allow us to easily create SAS macros for the manipulation of our data and calculating metric results and reports.

3) Mapping data and SAS programs to the balanced scorecard framework using Large Scale Automation (LSA)

The following steps are used by SPM to assign the developed macros and reports to the balanced scorecards.
- Create an environment export file from SPM. The environment export file provides the LSA Wizard with information about scorecards, measures, and columns in the scorecard environment. The LSA Wizard is invoked for a new scorecard or if there has been a change in an existing scorecard or metric within a scorecard. This process creates or updates a warehouse for the selected environment.
• After the LSA Wizard creates a warehouse for our scorecard environment, we use the LSA Administrator to extract the data and load it into our scorecards.

4) Publishing process for MMC Scorecards

There are four batch programs that are executed when we do our monthly publishing:

• LoadWAData.bat file – loads the ODBC SQL Interfaces, MS Excel, and text files into SAS datasets. This provides us with a 12 month snapshot of the operational data and builds summary and detailed tables where needed;
• LoadLSAMetrics.bat – Runs the selected macro programs to calculate metric values and generate the html reports;
• GenerateBatchLoadFile.bat – creates a batch file for the month to be published;
• MMCPublish.bat - loads the calculated values into the compass for the published month.
CONCLUSION

SAS SPM has allowed MMC to mass produce Balance Scorecards to various stakeholder groups. Once initial analysis and programming are complete, the system produces an intra-net publication requiring only the maintenance of feeding the programs with new data.

REFERENCES

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Microsoft programs referenced: Excel, Access

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CONTACT INFORMATION

J. Peter Chingos, Manager & Rocket Wong, Systems Analyst, Performance Management
Maine Medical Center
22 Bramhall St
Portland, ME 04102-3175
207-662-4212
207-662-4610 fax
chingp@mmc.org, wongr@mmc.org