

Paper 156-27

From the Tactical to the Strategic, Transforming Data into Knowledge for use in an Enterprise Performance Management System

Phillip Yeich, Aiman Zeid, SAS Institute Inc., Cary, NC

ABSTRACT

Many organizations struggle with “data overload” from a multitude of different transactional systems. However, very few organizations have the appropriate “integrated strategic” information needed to successfully measure strategic direction.

The focus of this paper is to demonstrate how SAS’ business solutions can enable organizations to turn transactional data into useful and strategic information. Once empowered, this knowledge can be used to make strategic decisions and develop an Enterprise Performance Management (EPM) solution.

The paper will accomplish this goal by demonstrating how SAS® Human Capital Management, SAS Strategic Performance Management and SAS Financial Management Solutions can turn tactical HR and financial transactional data into an EPM solution.

INTRODUCTION

Measurement systems and performance management methodologies have been around for ages, as illustrated in Figure 1. Too often organizations have adopted the “program of the month” for strategic planning and performance management. This approach has led to organizations with confused, and frustrated, employees and the inability to determine if strategic goals and objectives are truly being met. The old adage of “what gets measured, gets done” holds more truth than many of us would want to admit. So how does an organization develop, communicate, monitor and achieve strategic objectives and goals?

SAS has developed an EPM solution that adopts the Balanced Scorecard methodology. While adopted for the Balanced Scorecard methodology, the solution can easily incorporate any other performance management methodology including; Six Sigma, Total Quality Management (TQM), European Foundation for Quality Management (EFQM), Malcolm Baldrige and Capability Maturity Model (CMM). The remainder of this paper will discuss the SAS EPM solution in detail.

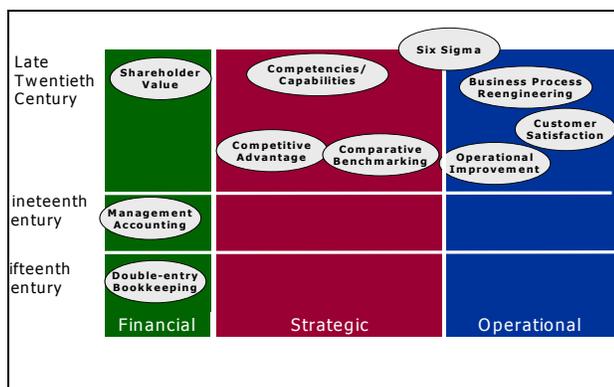


Figure 1. The Evolution of Measurement

DEFINING ENTERPRISE PERFORMANCE MANAGEMENT

Historically, organizations have primarily focused on financial performance measures to judge their health and success. While extremely important, focusing only on financial figures cannot give an organization the holistic view that is required to succeed in today’s economy.

Organizations need to act faster and smarter everyday in order to gain a competitive advantage. They cannot afford to blindly follow market trends, or miss value-creating opportunities if they want to be innovative and profitable. However, managing the present and creating a flourishing future is not something that can be done by a single person, group or set of financial figures. Ultimately every business is about managing relationships with customers, staff, suppliers and shareholders while reacting intelligently to their changing demands. Organizations need to intimately understand these relationships, know their interactions, and share this information across the entire organization so that everyone understands their impact on these relationships. Amassing this information, identifying and focusing on the right activities, and providing the data to make intelligent decisions that go beyond today is a daunting task for any organization.

An EPM framework can help to communicate a compelling organization-wide strategy and ensure that the entire organization understands the purpose, goals and objectives of the organization. It demonstrates what is important to the organizations success and equips a workforce with tools that will enable them to understand past, present and future relationships. It provides a persistent focus on how to learn and re-energize continuously through shared learning.

In short, an effective EPM system will enable an organization to identify, and measure both the impact & value of changes faster, smarter and easier. As a result, management can update or correct corporate strategy in an expedited timeframe versus participating in a constant “fire fight.”

THE IMPORTANCE OF ENTERPRISE PERFORMANCE MANAGEMENT

In 1998 Ernst & Young conducted a survey of 275 portfolio managers entitled “Measures that Matter.” The results of the survey indicated that these managers realized that to execute strategy was more important than the strategy itself. These managers cited strategy implementation as the most important factor shaping management and corporate valuations.

More recently, a 1999 Fortune Magazine cover story of prominent Chief Executive Officer (CEO) failures concluded that the emphasis placed on strategy and vision created a mistaken belief that the right strategy was all that was needed to succeed. In the majority of cases, Fortune Magazine estimated 70%; the real problem isn’t bad strategy, but faulty execution.

FOCUS ON INTANGIBLE ASSETS

In 1982 a Bookings Institute study showed that tangible book values represented 62% of organizations market value. By 1995 the ratio had dropped to 38%. Research conducted in January 2000 by Professor Baruch Lev of New York University suggested that the figure had dropped to between 10 and 15%.

- AOL's book value at the end of 1999 represented just 3% of market capitalization
- Coca-Cola's book value was at 7.9%

Traditional management systems focus on tangible assets - a mixture of sales, production and profitability figures as depicted in Figure 2. These tangible assets are geared toward defining financial metrics that enable investors to calculate market value. These may include Return on Investment (ROI) or Return on Capital Employed (ROCE). The problem is that these are 'lagging' measures - they tell what has happened in the past but provide little indication of what is possible in the future. In this context, anything that is done as a result of these indicators tends to be a reaction. Problematically this reaction tends to result in a short-term fix not a strategic response.

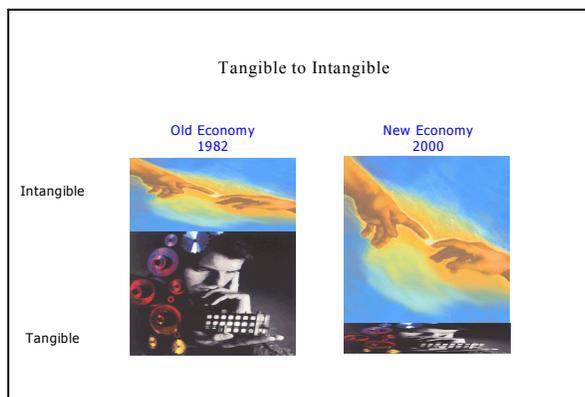


Figure 2. Tangible to Intangible Assets

More recently, companies have adopted various shareholder and value-based-management metrics such as Economic Value Added (EVA), Cash Flow ROI, and variations of Discounted Cash Flow. While this is a step in the right direction, these measures still do not adequately help today's business leaders to understand the true value of their intangible assets...and thus how to manage the organization toward higher market values.

Typically when talking about intangible assets, areas such as Human Capital and Information Technology are the focus. In their own right, these areas have little perceived value. But when their impact on other areas are tracked and measured an understanding of what drives value through the organization is realized. In other words, you give the business leaders the power to manage more effectively and more strategically.

Coca Cola has stated that if all its assets were wiped off the face of the earth - its buildings, machinery and equipment, all its products, all its data - the company would be able to borrow \$100 billion, merely on the strength, or value, of the Coca Cola brand alone. Just the name. No accounting or financial systems measure that.

SAS' APPROACH TO ENTERPRISE PERFORMANCE MANAGEMENT

SAS approaches EPM from a holistic viewpoint and provides a suite of tools that results in optimizing human and capital resources in alignment with corporate strategy. The SAS EPM solution provides the means to focus, communicate & collaborate on corporate strategy from a single portal while allowing the power to dig deeper and access activities across the entire organization. The EPM solution leverages the power of SAS' Intelligent Enterprise architecture as depicted in Figure 3 below.



Figure 3. The intelligent enterprise

PERFORMANCE MANAGEMENT METHODOLOGY

The Balanced Scorecard (BSC)[®] as defined by authors Robert S. Kaplan & David P. Norton, requires companies to look at other factors that drive value – such as how well they satisfy their customer needs, how content and efficient their workers are, how well they stay abreast of new trends, how well they can adapt to change, in addition to how healthy they are financially. Focusing on such value drivers provides balanced benefits across the entire enterprise that helps to:

- Sustain and improve shareholder value (for non-profit organizations, replace *shareholder* with *stakeholder*)
- Align, track and measure performance
- Monitor the health of the organization
- Optimize resources throughout the organization
- Secure future growth and adaptability.

Fundamentally, the BSC[®] is a management framework that helps companies

- Identify their strategy
- Translate that strategy into operational tasks that can be measured
- Communicate that strategy to every member of their organization
- Focus all its attention on pursuing that strategy.

There are four common perspectives - groupings that provide this balanced focus:

- Financial
- Customer
- Internal Process
- Learning and Growth.

The whole Balanced Scorecard concept relates to how strategy is defined and communicated. The starting point focuses on financial goals. Themes and objectives to achieve the desired results are then determined. A 'Strategy Map' is created to demonstrate how each of the other three perspectives influence results in a cause-and-effect manner (See Figure 4 below). This 'map' is the visual interpretation of how to convert the intangible to the tangible. It provides a simple 'heads-up' that shows where the organization is, where they are going, and what they can expect in the future. By collecting measures that quantify results in each of the defined areas, organizations provide employees with the information required to make positive changes in an appropriate time frame i.e., everyone becomes strategy focused and the organization moves toward its goals in a holistic manner. The basic concept is that you get what you measure.

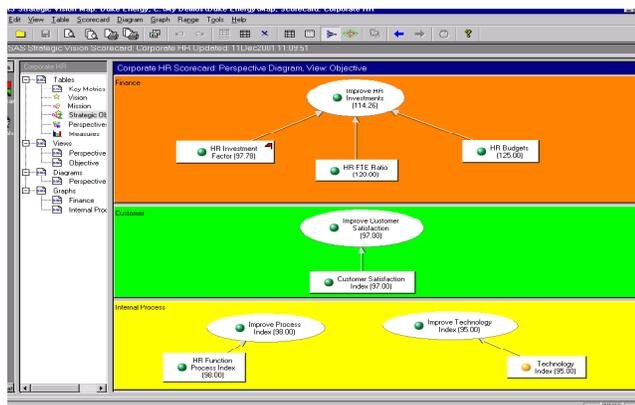


Figure 4. Strategy Map

OTHER FRAMEWORKS

As stated earlier there are a number of other performance management methodologies that are available to organizations. The SAS EPM solution does not eliminate or compete with these methodologies. Each tends to have a specific goal, or is focused on one area. Some such as Baldrige in the U.S., and EFQM cover similar areas as the BSC[®], but are geared more towards quality standards rather than achieving breakthrough performance. Kaplan & Norton would argue that both could run alongside the BSC[®], as could Six Sigma and TQM. Indeed, these help companies enhance or improve many of the activities reported on in the 'Internal Process' perspective - in other words, Kaplan & Norton would see them as initiatives that support the strategy.

AN INTEGRATED EPM SOLUTION

SAS has its entire product suite to choose from when creating an EPM solution for an organization. For the purposes of this paper three SAS products will be highlighted to illustrate the capabilities of developing an integrated EPM solution. These three SAS solutions include: Strategic Vision[®], HR Vision[®] and Total Financial Management. In the following section, each of the three SAS products will be discussed briefly.

SAS STRATEGIC PERFORMANCE MANAGEMENT OVERVIEW

(SAS Strategic Vision)



SAS Strategic Vision translates strategy into actions that can be measured and monitored throughout an entire organization. The results can be distributed via the web, and provide an organization's employees with the necessary information to analyze, collaborate and successfully implement that strategy.

SAS Strategic Vision is an integrated solution that translates goals into metrics and captures performance management strategy. It provides simple, clear indicators of performance that assist an organization to see the causes and effects on their business strategy. By focusing on a holistic view of a business, you can identify the true sources of business failure and the best practices that lead to future success.

SAS Strategic Vision provides:

- Track, measure and execute corporate strategy
- Simplify communications company-wide in order to act quickly and efficiently
- Tap into the collective knowledge of employees and unleash each person's potential
- Receive or surface valuable information from other SAS offerings.

The key metric values in a scorecard can be supplied interactively or by an automated process. Strategic Vision[®] includes *Knowledge Base tools* to assist in automating the flow of data from a data warehouse to a scorecard.

The Knowledge Base tools are built on top of base SAS and SAS/Warehouse Administrator[®] software. Because of the flexible nature of Strategic Vision and the power and versatility of the SAS System, scorecard automation processes can draw key metric values from anywhere. It doesn't matter what the data looks like, as long as you can construct an extract-transform-and-load (ETL) process to load the desired value into one of the tables used by the Knowledge Base tools. Once the values for a key metric are in the appropriate table, the tools take care of identifying the target scorecard, metric, and column for each value and exporting them to the appropriate location.

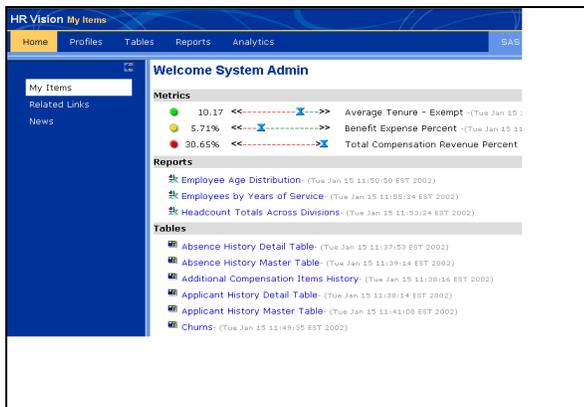
SAS/Warehouse Administrator can be used to construct the ETL process or a customized SAS program can be defined, whichever method is appropriate for the organization and technology environment.

For each key metric value a link can be specified to a supporting document (a static Web page or other file) or application (a

dynamic Web application). The supporting document or application for a value may explain how the value is derived or give additional descriptive information. The supporting link can allow the end user of the scorecard to explore the data from which the value was drawn and even to perform further analysis of the data.

For automated values from Web-based SAS solutions, a supporting application link can be specified that will launch the Web-based component of the solution with appropriate context. For example, a scorecard might include a metric called Involuntary Separation Rate that is supplied by HR Vision. Then a link could be specified that would invoke HR Vision so that the appropriate table is displayed to show how involuntary separation rate is calculated or how it breaks down across the business units and divisions in the organization.

SAS HUMAN CAPITAL MANAGEMENT OVERVIEW
(SAS HR Vision)



HR Vision is a web-enabled decision support system. Its value lies in its ability provide Human Capital Analytics. It empowers users to query, explore, analyze and report on data using a software interface tailored for the human resources (HR) professional. What is not so obvious, but nevertheless equally valuable, is the HR data warehouse itself and the data model that drives it. The process of developing the HR Warehouse takes into account the business rules used by each organization as depicted in Figure 5.

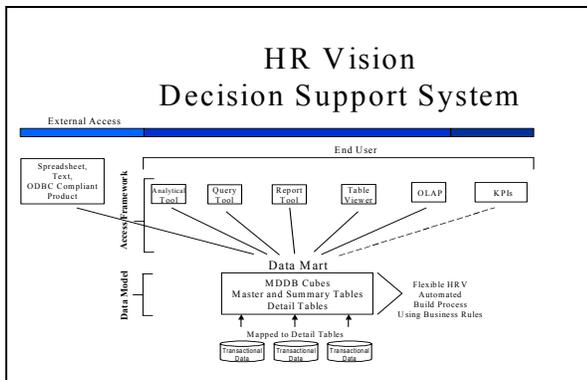


Figure 5. HR Vision Decision Support System

HR Analytics:

The HR Vision system provides users with several predefined

analyses such as Headcount History Analysis, Geographic Analysis, and an Organizational Chart Analysis. These analyses are designed to focus on one specific area and provide users with powerful functionalities to analyze the data around each area. For instance, Headcount History Analysis provides users the ability to analyze historical headcount information across Business Unites, Gender, Ethnicity, etc. Users can also analyze termination, turnover, and other HR Metrics over time.

HR Metrics:

Pre-built functionality provides the ability to create, monitor, and publish HR Metrics. The system is designed to produce metrics using the Saratoga Institute definitions[®]. The system also stores benchmarks published by Saratoga Institute. This enables organizations to quickly start producing their own HR Metrics and comparing them with benchmarks from the Saratoga Institute. Organizations can also develop, monitor, and publish their own internal metrics and use benchmarks from any external data source for comparisons.

Data Query and Reporting:

Users of the HR Vision can query the data using the query facility. No technical knowledge of SQL or any other programming language is necessary to use this tool. Users can perform simple queries as well as complex queries using multiple tables using an easy to use interface. Several standard HR reports are built-in the system. In addition, a flexible ad-hoc reporting tool is also available to enable users and organizations to develop, automate, and publish their standard reports. All the reports tables, and analytics can be used as supporting documents in a corporate Enterprise Performance system.

Open Data Warehouse Model:

Summary statistics aggregated across any number of dimensions, such as Department, Location, Gender, or Ethnicity are essential to provide effective Human Capital Analytics. These statistics are available on several measures, such as Salary, Years of Service, Termination rate, and Turnover. This kind of processing is typically not possible with most transaction systems, and made even more difficult by the highly normalized nature of the data in most transaction systems.

Not only is it important to have a defined HR data model for the warehouse but also that model should be flexible to accommodate additional subjects and/or modify any of the key subjects. The HR Vision data warehouse denormalizes the site's basic HR transaction data and creates several types of detail, master, and summary tables to provide users with flexible decision support functionality. An effective data model must be comprehensive as well as flexible to allow for site-specific enhancements. HR Vision uses a data model that allows each organization to add any additional tables or elements that are specific to their business and environment. The data used to populate the HR data model may come from any number of internal or external source, such as Benefits systems, Applicant tracking system, Sales tracking system, Financial systems, or any external Benchmarking systems.

OLAP Environment:

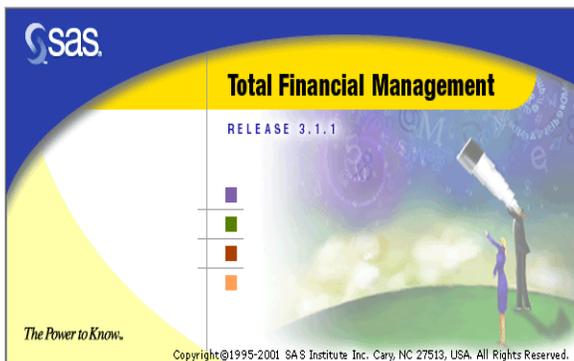
The warehouse makes extensive use of multidimensional tables or "cubes" to allow dynamic exploration of summarized data across any kind of desired summary level. An OLAP environment enables users to navigate through the multidimensional tables while providing access to the detailed data. These powerful capabilities combine access to

summarized data as well as the detailed transactions used to produce the summarized numbers. This functionality is provided without accessing the live transactional systems

Data Automation:

The SAS system has the capability to automate the process of extracting the data from any number of transactional or external systems. An overnight batch process is setup to extract required data from the transactional systems without imposing additional load on those systems during the working hours. To increase the return on investment, the system provides organizations with the ability to export and import data from the HR warehouse. Each organization's business rules are applied during the data mapping and warehouse development process to provide users with a consistent and valid corporate measure. Once the warehouse is developed, the data in the warehouse become very valuable. Exporting this data to other systems increases the return on the investment for each organization.

SAS FINANCIAL MANAGEMENT SOLUTIONS OVERVIEW (SAS Total Financial Management)



SAS for Total Financial Management (TFM) provides a single approach to an organization's spectrum of financial management needs, including: budgeting, planning, forecasting, cost management, consolidation, reporting and analysis driving a performance management approach to business.

The dynamics of business are rapidly changing in the global economy. To be successful, the finance professional must strike a balance between driving new economy business best practices, while still preserving the organization's old economy financial foundation. Traditional measures, such as the income statement and balance sheet, need to be combined with non-tangible measures, such as the value and profitability of their customers, products and services, supplier relationships, and employees to optimize business performance and manage financial risk.

Conventional financial packages, in-house systems and spreadsheets cannot adequately support the planning, management, reporting and analysis needs of dynamically changing organizations. As a result, financial performance has traditionally focused on the measurement of a corporation's historic results, rather than what will create value for the organization in the future. Additionally, finance executives are operating their business and making decisions at Internet speed, which requires at any given time, knowing the status of their entire business to stay ahead of the competition and to promote change.

Currency and Journal Capabilities:

Several types of currency rates are available to provide flexibility to the organization. The system uses a powerful currency conversion system that is able to track any number of currencies to enable global organizations to track and report their financial figures in any local currency. In addition, a Journal Entry subsystem is enables the organization to make any corrections necessary to close their books on time.

OLAP Environment:

TFM provides financial intelligence to track, monitor, and report on the organization's financial data. Multidimensional tables with financial intelligence are used to consolidate the organizational financial data.

Corporate finance can now revolutionize the financial management process. As depicted in Figure 6, SAS for Total Financial Management enables organizations to effectively:

- Plan - develop and maintain a world-class finance function determining and aligning strategic and operational planning & performance.
- Analyze - have the latest information about your company's strengths and weaknesses as quickly as possible, and have real-time information that can be acted on before opportunities disappear.
- Report - meet changing reporting standards and greater disclosure requirements while decreasing information delivery times.

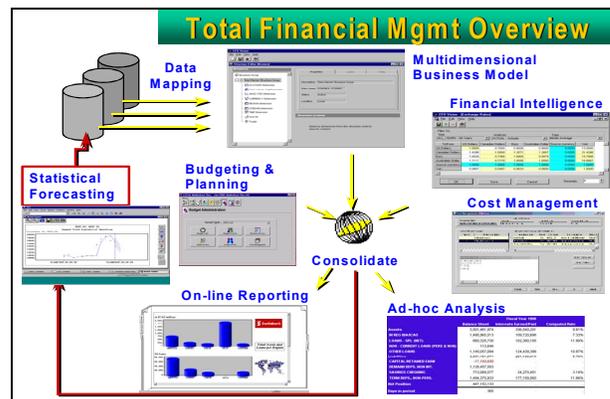


Figure 6. TFM Overview

THE SAS EPM SOLUTION "IN ACTION"

In this section of the paper, a short example will be given that illustrates how an organization can use the SAS EPM Solution.

"XYZ" organization has embraced and implemented an EPM solution. During the course of the implementation "increased revenue" was determined to be of importance and the following cause and effect linkage was developed:

- Increased revenue is driven by satisfied customers
- Satisfied customers are driven by quality products
- Retaining key employees drives quality products.

Therefore, if an organization retains key employees, those key employees will produce a quality product, quality products will result in satisfied customers, and satisfied customers will purchase more products resulting in increased revenue.

Based on the strategic linkage, “key metrics” are established to track, collaborate and take proactive action when performance is not at targeted levels. In Figure 7, a high level view of performance can be delivered via the web.



Figure 7. Strategic Vision perspective view

Performance not meeting organizational thresholds is “rolled up” to the highest level of organizational reporting. In Figure 7 above, the threshold/alert flag is present notifying the viewer that there is a performance issue in the learning and growth perspective. Drilling into a key metrics table, see Figure 8, provides specific metric performance.



Figure 8. Strategic Vision key metrics table

The key metrics table reveals that “Turnover of Key Employees” is the measure that is not meeting its’ target. Further exploration of can be accomplished by drilling into HR Vision which houses the turnover data, see Figure 9.

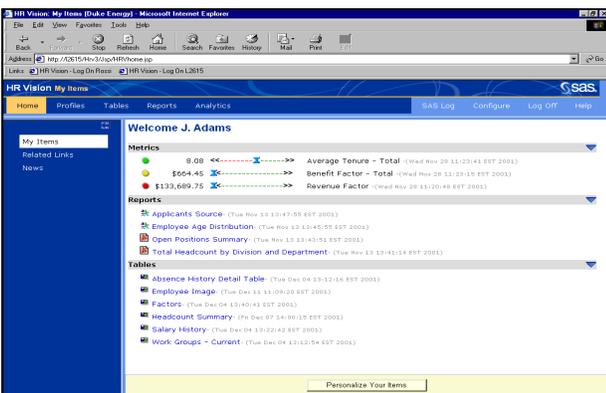


Figure 9. HR Vision

Utilizing OLAP functionality further analysis can be accomplished, see Figure 10.

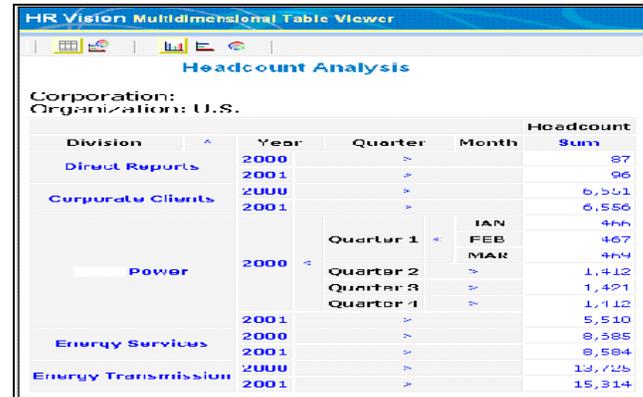


Figure 10. HR Vision OLAP table

Drawing on the strategic linkage established earlier, the financial impact could be analyzed using components of SAS TFM. See Figure 11 and 12.

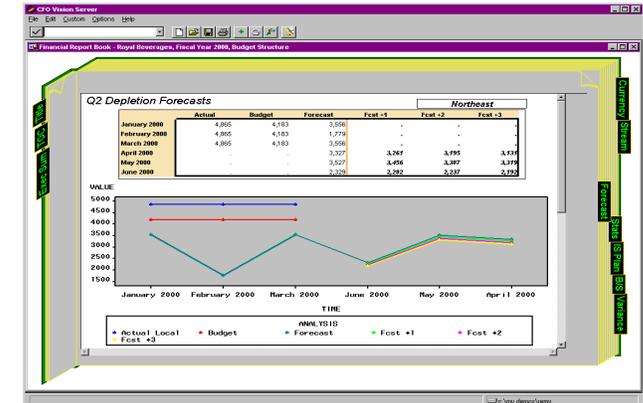


Figure 11. TFM forecast

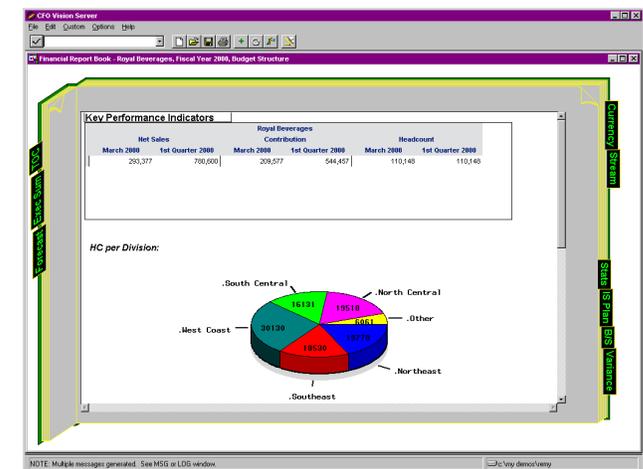


Figure 12. TFM report

In this short example, financial and human resources data are supplied to the EPM framework, which transforms data into information allowing organizations to proactively monitor strategic direction.

CONCLUSION

In today's "new" economy organizations can no longer continue operating with the "old" economy mindset and infrastructure. Focusing only on financial results without addressing the intangible results will give a partial indicator of an organization's health and potential for success. Organizations can no longer afford to get mired down in transactional data without tying it to corporate strategy.

The SAS EPM solution translates an organization's strategy into actions that can be measured and monitored throughout your entire organization.

companies.

REFERENCES

Jonathan Hornby, *"Enterprise Performance Management: Strategies for Surviving the Web-Speed Economy,"* SAS Institute Inc. White Paper.

Robert S. Kaplan and David P. Norton, *The Balanced Scorecard: Translating Strategy into Action* (Boston: Harvard Business School, 1996).

Robert S. Kaplan and David P. Norton, *The Strategy-Focused Organization: How Balanced Scorecard Companies Thrive in the New Business Environment* (Boston: Harvard Business School, 2000).

Gary Young, *"Enterprise Performance Management from SAS,"* SAS Institute Inc. White Paper.

ACKNOWLEDGMENTS

Special thanks to the following individuals who provided their technical expertise to ensure that this paper accurately depicts the various products:

Brian Perkinson, Strategic Vision Development
 Sheryl Ray, HR Vision Development
 Jim Toth, Total Financial Management Consulting
 AJ Ramsey, SAS Consulting

CONTACT INFORMATION

Your comments and questions are valued and encouraged. Contact the author(s) at:

Phillip Yeich
 SAS Institute Inc.
 SAS Campus Dr
 Cary, NC 27513
 919.531.0109 Work Phone
 919.677.4444 Fax
 Phillip.Yeich@sas.com

Aiman Zeid
 SAS Institute Inc.
 SAS Campus Dr
 Cary, NC 27513
 919.531.5873 Work Phone
 919.677.4444 Fax
 Aiman.Zeid@sas.com

SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration. Other brand and product names are trademarks of their respective