A White Paper by Exact JobBOSS

Measuring Shop Performance to Increase Efficiency and Monitor Profitability:

How a Balanced Scorecard solution can benefit job shops

By M. Callan Fischer

Business Unified™

Measuring Shop Performance to Increase Efficiency and Monitor Profitability

Today's shops must excel both strategically and operationally to thrive.

Contract manufacturers have always worried about running business operations efficiently. They face increased competition from overseas suppliers, cope daily with rising costs, and manage to provide just-in-time, build-to-order, and end-to-end supply chain visibility. As they deliver the quality products and services customers expect, competitive pressures and demands for performance improvement mandate that today's shops worry equally about something else—good strategy.

Stephen Covey's quote in his book, *The 7 Habits of Highly Effective People*, illustrates the importance of being both operationally and strategically excellent. "People and their managers are working so hard to be sure things are done right, that they hardly have time to decide if they are doing the right things."

No one knows better than shop owners how difficult it is to achieve the efficiency necessary to support their production needs, strengthen their relationships with customers, and move in a direction that ensures the future. In short, today's shops must excel both strategically and operationally to thrive. One framework that helps achieve the required balance between strategy and operations is the Balanced Scorecard.

The Balanced Scorecard measures performance within the entire organization. It aligns vision and mission with day-to-day job and customer demands. The scorecard manages and evaluates business strategy, monitors operational efficiency, and communicates progress to all employees. Because it measures all aspects of performance—financial and customer results, operations, and organization capacity—no one area overshadows another. Out of the precarious equilibrium of opposing forces come balance, steadiness, and high performance.

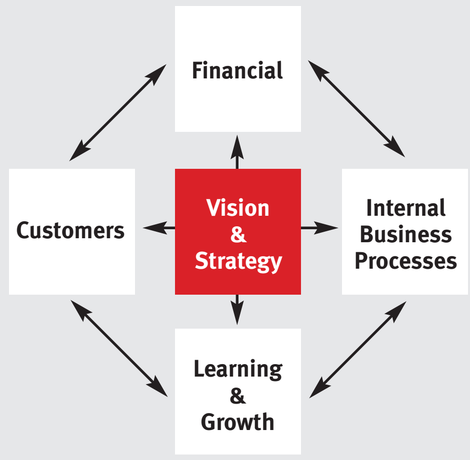


Figure 1

Basic Design of a Balanced Scorecard Performance System —monitoring performance across the board allows a manufacturer to see whether it is improving in one area at the expense of another. The end result is balance that leads to profitability.

Source: Kaplan & Norton, The Balanced Scorecard Collaborative

The scorecard represents a fundamental change in how contract manufacturers view performance measurement. Traditional measurement systems most often derived from the finance function tended toward control—specifying the actions employees should take, then measuring those actions and controlling behavior. Granted, control lessens confusion, reduces waste, and moves jobs through. But it does not plan for tomorrow.

Many Fortune 500 companies adopted the scorecard in the 90s with good results. Now smaller companies are implementing it, including job shops.

The Balanced Scorecard works differently—strategy and vision supercede control. The scorecard gives employees more leeway to achieve strategic objectives and goals as they see fit. Employees work toward them the best way possible. The measures move the work force towards the overall vision.

In Balanced Scorecard language, upper management's vision and mission are disseminated and communicated within different views or perspectives, as seen through the eyes of the business owner, the customers, the managers, and the employees. The Financial perspective represents the owner(s). Customers are represented by the Customer perspective. The Internal Business Processes perspective corresponds to process (shop floor) personnel. Employees and infrastructure (capacity) are represented by the Learning and Growth perspective.

Here are the questions many shops ask themselves daily, grouped by perspective:

- **Financial:** Are we making money and posting profits? (Measure sales growth, operating income, cash flow and, if applicable, increase or decrease in share of market by segment.)

- **Customers:** How do customers see our company? (Measure lead times, costs and quality.)

- **Internal Business Processes:** What should we excel at? (Figure out the competencies and skills that are most critical and track them—cycle time, quality, employee skills, productivity.)

- **Learning and Growth:** Are we continuing to grow and add value? Are we entering new markets, working lean, creating value for our customers?

Many Fortune 500 companies adopted the scorecard in the 90s with good results. Now smaller companies are implementing it, including job shops with 30-90 employees working three shifts daily, shops wrestling with rising material, fuel, equipment, and labor costs at the same time customers demand double-digit cost reductions.

The scorecard functions like many quality management systems requiring establishment of objectives, measurements, targets, and corrective actions when goals are not met. In fact, it complements quality initiatives already in place such as ISO, Total Quality Management, or the Baldrige National Quality Program. It embraces cross-functional

integration, customer-supplier partnerships, lean manufacturing, global scale, and continuous improvement. Most important, the scorecard fosters the adoption of strategic objectives and measurements in four areas, thereby balancing the critical factors leading to operational success.

Implementing the Balanced Scorecard is doable for fast-paced shops where parts are due tomorrow and schedules can fall perilously behind in a matter of hours.

Shop owners are using it to systematically improve performance through ingenious management of resources, sound competitive strategy, and balanced metrics.

> *ITD Precision, a family-owned metal-stamping company established in 1946, has plants in Houston and Harlingen, Texas, and employs 80 people. Though a proponent of a Texas-style "whatever-it-takes" attitude, ITD has successfully employed management techniques and principals developed at the Harvard Business School. This approach to management is embodied in the Balanced Scorecard, which has been implemented by such large companies as Mobil, Cigna and Wells Fargo. Developed by Robert Kaplan and David Norton of the Balanced Scorecard Collaborative (www.bscol.com) in association with Harvard, the Scorecard has been the critical management tool used to effectively steer ITD Precision toward success in financial, quality, operational, and cultural realms.*
> ***—Metalforming Magazine, July, 2005, Reprinted with Permission***

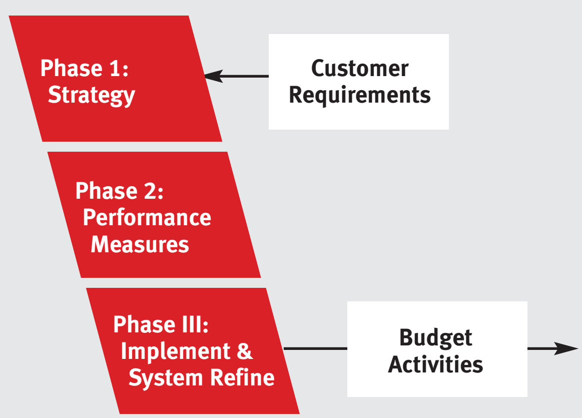
A Three-Step Program Designed to Manage Performance

Implementing the Balanced Scorecard is do-able for fast-paced shops where parts are due tomorrow and schedules can fall perilously behind in a matter of hours. Implementation occurs within a broad three-step process that occurs over time.

Step I: Devise a Strategy
Step II: Translate it into Metrics
Step III: Use an Automated System to implement, run, and continually refine it

Figure 2

Balanced Scorecard Three-Step Process



Step I: Devise a Strategy

Many shops have a strategy—the strategy is to survive the best they can. However a world class manufacturer, competitive and thriving in a global economy, will have a well-defined multi-level manufacturing strategy. A large organization will have several overarching strategic themes that contain specific business strategies, whereas a contract manufacturer's strategy will be simpler, centering around quality, reliability, short lead times, flexibility, or customer satisfaction.

Outside the shop lay results, opportunities, and threats. It pays to seek information from non-customers rather than relying solely on inside data or untested assumptions about the competition.

As the scorecard implementation unfolds, the strategy will be tested—how it is working, how efficiently it is being executed, and how well it moves the shop toward its goals. In some cases, a shop's strategy may need to be refined or even changed based on performance factors.

Strategy can be viewed as a mission statement with teeth in the form of measurable objectives.

For example, the Federal Aviation Administration Logistics Center developed two business strategies: Become Customer Driven and Increase Business. These strategies were then decomposed into actionable objectives with specific performance measures (metrics) and targets.[1]

Manufacturing strategy can be built around any of six elements. The amount of emphasis a shop places on each of these areas defines the strategy:

- **Quality**
- **Cost**
- **Delivery Reliability**
- **Lead Time**
- **Flexibility**
- **Employee Relationships**

When devising strategy, what an organization needs most is data about what goes on outside of it. Outside the shop lay results, opportunities, and threats. It pays to seek information from non-customers rather than relying solely on inside data or untested assumptions about the competition.[2]

Shops should make sure their strategy differentiates them from the competition in a believable way, and then begin making customers and prospects aware of this difference. Here's an example of a manufacturing strategy that has worked for years:

> *Volvo creates value by providing transportation-related products and services with superior quality, safety, and environmental care to demanding customers in selected segments.*[3]

Differentiation comes in many forms—shop attributes, reliability, innovation, convenience, even being the biggest, or the smallest and the best can be marketable differences.

Once a strategy exists, it must be "cascaded" or translated into departmental or divisional objectives. The goal is to align and translate corporate strategy down through teams and individuals. In a large organization, separate scorecards are developed for each major department or support office. In a smaller manufacturing setting, objectives, tasks and activities linked to corporate strategy will serve to align teams and individuals to the mission and vision of the business.

The balanced scorecard supplements "lagging" financial indicators, traditionally the most prevalent way to measure success in a shop environment, with "leading" performance indicators.

Step II: Translating Strategy into Metrics

Once a shop has viable strategies and objectives, how does it achieve *alignment* so performance hews to strategy and leads to achievement of objectives?

The manufacturing strategy will have a big impact on the performance measures put in place. For example, if a shop has a strategy that focuses on flexibility as a primary objective, then it will be interested in measuring breadth of capabilities and workcenters, depth of its employees' skill base, the flexibility of the plant, turnaround time on new projects, etc. On the other hand, a business that stresses the quality of its workforce and their relationships with customers and each other would measure turnover, participation in quality programs, instances of customer delight, the number of internal improvement suggestions, the level of cross training, etc.

A contract manufacturer should fuse his strategy to performance for two reasons:

1) To assess how well the strategy is working: managers will need leading indicators in the form of performance measures linked to strategy to give them a view of how well the plan is working.

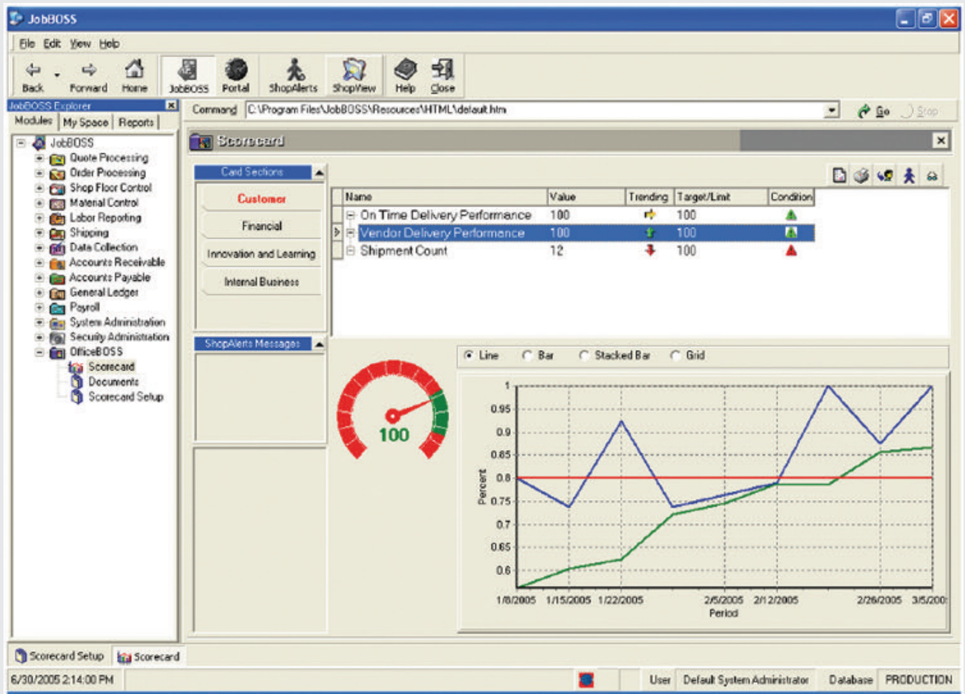
2) To encourage and incent employees to perform well in the required areas: if someone's performance is being measured and rewarded, that is what he/she tends to focus on.

Four Perspectives Provide Balance

The balanced scorecard supplements "lagging" financial indicators, traditionally the most prevalent way to measure success in a shop environment, with "leading" performance indicators. Managers using the scorecard to look at the business from four different perspectives should consider all measures together to see if improvement in one area is achieved at the expense of another. Following are suggestions for possible objectives and metrics within the four perspectives—Customer, Internal, Growth and Learning, and Financial:

Figure 3

A scorecard system will provide a birds-eye view such as this one—the health of your company from four key perspectives all on one screen.



Customer Perspective: How do our customers see us?

Many shops focus their strategy on customer service. Most customers care about four general areas: time, quality, performance/service, and cost. So it follows that a shop would devise its strategy and tactics along those lines and then translate into specific measures such as:

- On time delivery performance
    - Vs. promised date
    - Vs. requested date
- Shipments
    - Dollar volume
    - Count
- Late Deliveries
    - Count
    - Dollar volume
- Throughput Measures:
    - Time to shipment/transfer into finished goods
        - From order date
        - From first time entry

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- Outstanding Quote Volume (with aging)
- Quote win rate over a period
- Customer satisfaction surveys
- Percent of sales from new vs. existing customers
- Percent of sales from top ten customers
- JIT delivery performance

The key is to identify and measure your shop's critical talents (employee skills) and technologies that will power it to a leadership position.

Price is also a factor to customers but just one component of cost incurred when dealing with a job shop. Some position themselves as excellent suppliers by charging a slightly higher price for parts but delivering them defect-free in the right quantities at exactly the right time in their customer's production process.

Internal Processes Perspective: What must we excel at?

Internal measures for the balanced scorecard usually relate to what creates the most customer satisfaction: core competencies impacting cycle time, productivity, and quality. The key is to identify and measure your shop's critical talents (employee skills) and technologies that will power it to a leadership position. Employees' actions are the main factors influencing these measures.

Managers should decompose measures down to the local level, making sure that employees on the shop floor and in the office have clear targets for their actions, decisions, and efforts to improve. So that everything contributes to the company's strategic objectives.

The internal perspective is two pronged:

- To identify critical processes essential to meet current customer and financial goals
- To identify new processes the company should implement to be successful in the future

Some examples of specific internal process measures:

- Vendor delivery performance
- Rework costs for a time period
- Rework hours for a time period

Creating new products, increasing value for customers, and working lean help a shop penetrate new markets, increase profits, and grow.

Learning and Growth Perspective: Can we continue to improve and create value?

Customer and internal process measurements reveal what a manufacturer considers critical to competitive success. Global competition and changing markets will cause those targets for success to change over time and lead to the constant need for learning and growth.

A shop's capacity to innovate, improve, and learn adds immeasurably to the value of the business. Creating new products, increasing value for customers, and working lean help a shop penetrate new markets, increase profits, and grow. The emphasis here becomes the achievement of stability in new areas of manufacturing rather than improving current expertise.

While the previous two perspectives focused on where you are and where you're going, the innovation and learning perspective focuses on how to get there. Measures should concentrate on three dimensions: people, systems, and organizational factors. Focus on how to "close the gap" between where you are and where you need to be.

Some examples of strategic measures in the learning and growth perspective:

- Revenue per employee
- Rate of improvement
- Staff attitude surveys
- Percent of employees in education and training opportunities
- Number of employee suggestions
- Percent of reduction in cycle times

Financial Perspective: How do we look on paper?

The last perspective—traditional financial performance measures—reveals whether a company's strategy, execution, and metrics are improving the bottom line. Typical financial goals and measures are profitability, growth, and in the case of a public company, shareholder value.

Obviously, financial objectives should go beyond mere survival which is measured by cash flow, and include success as measured by quarterly sales growth or operating income, and in the case of a larger manufacturer—market share or return on equity.

Financial measures provide a picture of the economic consequences of various actions. Different financial measures may be needed for different business units. All objectives and measures in the other perspectives are linked to achieving results in the financial perspective.

Examples of financial performance include:

- Sales
  - – Volume
  - – Count
- Current ratio
- Cash position
- Debt/equity ratio
- Current backlog

Periodic financials remind management that improved quality, response time, productivity, and new equipment pay off only when translated into improved sales and reduced operating expenses.

A caveat—though financial control enhances an organization's quality management, the linkage between improved operating performance and financial success can be tenuous. For example, a discrepancy with desired operational improvements failing to translate to bottom line improvements can arise. This creates plenty of frustration. In this case, shop management must take another look at their strategic objectives. Not all strategies end up being profitable.

Unsatisfactory financials also may result when a shops fails to follow up their operational improvements with another round of action. For instance, excess capacity can result from quality and cycle-time improvements. Managers then need to use the additional capacity to boost profits. Either that or get rid of the excess capacity by lowering costs.

Periodic financials, though a lagging indicator, remind management that improved quality, response time, productivity, and new equipment pay off only when translated into improved sales and reduced operating expenses.

Advancing More Quickly

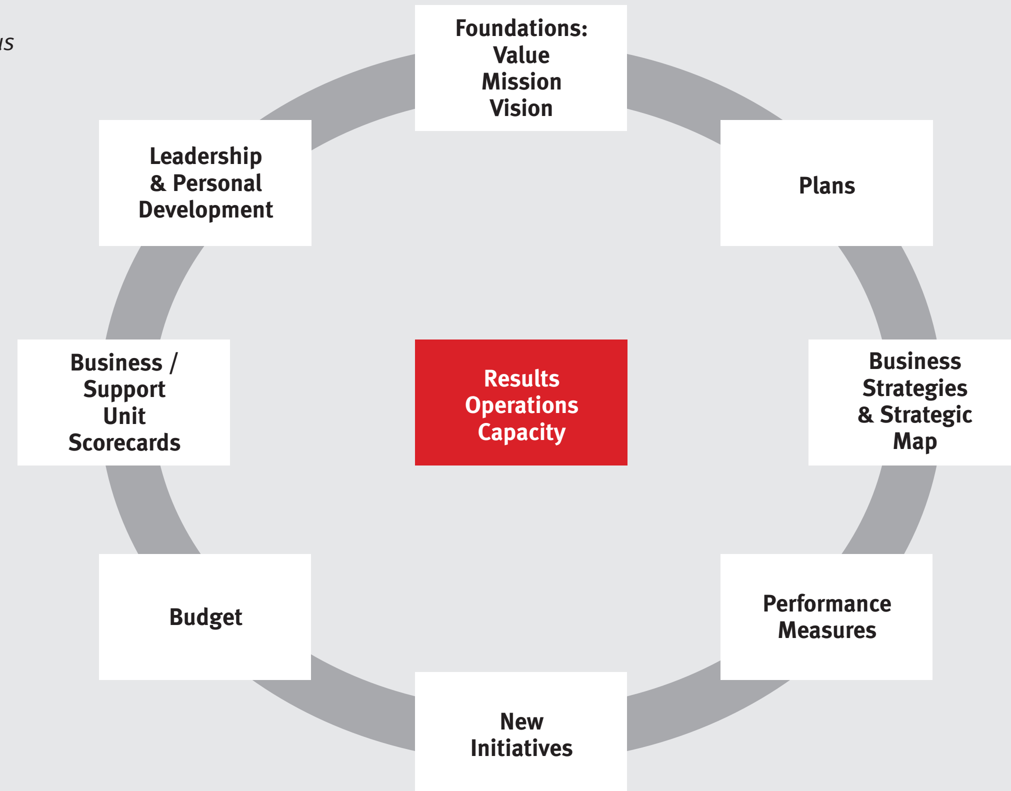
According to Brian Maskell in his book *Performance Measurement for World Class Manufacturing*, watertight performance metrics, though different from one company to another, will have seven characteristics in common:

1) Directly related to the manufacturing strategy
2) Primarily use non-financial measures
3) Will vary between locations
4) Will change over time as needs change
5) Simple and easy to use
6) Provide fast feedback to operators and managers
7) Intended to foster rather than just monitor improvement

Maskell advises planning metrics so they are relevant to the work performed. Then do, check, act.

Figure 4

The scorecard is a continuous journey. At some point, the destination will change and the performance measures will be altered as the company evolves.



Metrics should communicate the results of employees' efforts clearly and show results in terms that are relevant to their work. For example, if a shop wants to reduce work-in-process inventory, then it will try to reduce set-up times so as to produce smaller volumes of parts. A good measure would be a report showing set-up times achieved at each workcenter.

It also pays to keep metrics fairly simple. Too many measures will become confusing.

If a shop has two locations, metrics may differ at each of them. Local managers should have the chance to define necessary measures on their own so reporting can be customized and adapted to fit their needs. Scorecard objectives and corresponding metrics are reviewed periodically and revised if necessary.

Management should use the scorecard system to improve organizational performance, not to punish lack of individual performance. Tracking progress across pre-defined reporting periods works well.

Step III. Choosing a system to implement and refine the scorecard

The need for flexibility, accessibility, and timeliness of information demands the use of an automated system to track the balanced scorecard within your organization—not a huge cumbersome centralized system but one designed to collect scorecard metrics and display them easily on a frequent basis for shop, office, and management.

Daily or weekly performance reports quickly illustrate whether objectives and metrics are relevant and leading in the right direction.

The OfficeBOSS Scorecard (Exact Software, Minneapolis, MN) represents such a system and is, in fact, the only scorecard software designed specifically for contract manufacturers. It integrates with Exact JobBOSS, shop management software that manages workflow, quoting, scheduling, purchasing, tracking, quality, and accounting.

The Exact JobBOSS version of the scorecard, OfficeBOSS, is a flexible visual solution designed for shop owners and managers to view the key indicators that drive their business.

It combines forward-thinking business strategy with daily control of the shop, and enables the measurement of progress on objectives within the four perspectives.

Faster feedback of information that comes with a system allows employees to better understand their work and solve problems quickly. Daily reporting within the four perspectives uncovers production deviations and their root causes sooner rather than later, resulting in faster achievement of objectives.

Daily or weekly performance reports quickly illustrate whether objectives and metrics are relevant and leading in the right direction. Using a system to implement and run the scorecard should result in a balanced evaluation of the health of your business through the four defined perspectives.

The costs of deploying software will vary. Besides the price of the system, key selection criteria should include: visualization of performance results, ease of implementation, training and maintenance, robustness of the underlying database engine, compatibility with existing systems, vendor product and technical support, product maturity and vendor experience, and ease of use.

An optimal system will help a company manage by exception using Balanced Scorecard metrics. Pre-defined measurement data should display on the screen for quick review in order to:

- Understand the status of your business across the entire enterprise
- Put that understanding in context against objectives
- Take action to quickly make improvements where needed
- View metrics in graphs, trends, and targets, then drill into spreadsheets where the detail resides
- Alert the staff via email showing measurements—tell them when limits, trends, and conditions are out of range for quick corrective action

Almost any contract manufacturer at one time or another assigns overcommitted resources to initiatives that lack large strategic value. Scorecard software enables a business to stay on track for higher performance—to direct its resources to those initiatives that have the greatest strategic value.

Devising and implementing metrics will take time and once in place, must entail rewards for employees meeting their goals.

When employees see regular feedback and the frequent communication of results via the system, they can take quick corrective actions if problems develop. When their rewards are dependent on reaching those goals, they naturally spend the time and effort to stay on track to reach corporate goals.

Changing Hearts and Minds

The Balanced Scorecard is no longer a new system of performance management. Harvard professor, Robert S. Kaplan, and David P. Norton created it in 1992. Nor is it a "project" with a definite beginning and end. The scorecard is a journey. A business will travel, turn, adapt, quicken, and then slow their pace of improvement. At some point, the destination of the journey will change—performance measures will be altered as the company and its competition evolve.

Shops that succeed with the Balanced Scorecard know there are no quick fixes. Coming up with a strategy may be challenging. Devising and implementing metrics will take time and once in place, must entail rewards for employees meeting their goals. Regular reporting and communication of progress will lead to periodic refinement of objectives and metrics, perhaps even the strategy itself will be revised.

The journey is made up of thousands of small steps, each paving the way for more improvement.

> *"After a short period of study and training, I knew that the Balanced Scorecard was the tool we needed to drive the company toward continuous quality improvement, operational excellence and financial health. Like most managers, we struggled with development of a clear strategy. In fact, we did not have a clear idea of what a corporate strategy is or should be. After a time we learned that strategy is simply an ordered set of objectives. The Balanced Scorecard delivered the 'order' to our objectives."*—***Bill Tofte, ITD Precision, Houston, Texas as quoted in Metalforming Magazine, July, 2005; Reprinted with Permission***

In reality, as business owners know, building and implementing a scorecard system will be more about changing hearts and minds and sustaining new directions, than selecting performance measures and buying software.

When a shop embarks on a strategy, balances its effectiveness within four perspectives, then implements a system, they're aiming for high performance. The scorecard works as a framework to get there.

End Notes:

1. Thomas Stewart, Intellectual Capital, Doubleday, pg 12
2. Peter F. Drucker, "Be Literate—Know What to Know" Journal of Applied Manufacturing Systems, University of St. Thomas Technology Press, Winter 1992
3. Hal Ries and Jack Trout, Positioning: The Battle for your Mind, McGraw Hill, pg 56

For more information on the Harvard-based Balanced Scorecard, go to www.bscol.com. For more information on scorecard software for contract manufacturers, go to www.jobboss.com and click on More Info/Business Performance Mgmt. Or call Exact Software at 1-800-777-4334 or 952-831-7182.

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