



Metrics that Work

Written by

James O. Cleverley, MHA

Cleverley + Associates

438 e wilson bridge road, suite 200

worthington, oh 43085

888-779-5663

info@cleverleyassociates.com

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During the last 25 years, there has been an explosion in the adoption and integration of information technology to financial reporting. Financial data are collected, analyzed, and distributed to decision-makers in a more accurate and timely manner and in greater quantity than ever before. However, we are not convinced that the technology has had a positive impact upon performance. While important strides have been made in the technology of information collection and distribution, significant improvements in the decision-making value of that information have not been realized.

What accounts for the failure to take advantage of information technology advances? We think the answer is very clear and is one that most executives would readily acknowledge. Technology is increasingly used to deliver data, and more of it, to decision-makers more rapidly; however, the issue of information relevance is often missing among all the data. As a result, technology simply delivers irrelevant or inappropriate data more quickly. Bad data delivered more quickly is not likely to improve performance in either the short term or the long term.

The concept of “Balanced Scorecards” developed by Robert Kaplan and David Norton represents an attempt to enhance the value of information and to exploit the capability of information technology to deliver true value to decision-makers. Balanced Scorecards in their stripped-down version simply state that reporting should be available on those key attributes that really affect performance. More data are of little value if they do not provide information to a decision-maker that can be used to improve the performance of the firm. “Dashboard” reporting is a natural subset of Balanced Scorecards and is being increasingly used in almost all sectors of the economy to keep managers focused on critical areas that will affect overall firm performance.

What Is Required to Develop an Effective Dashboard for Hospitals?

Assuming that many hospitals are interested in developing a dashboard reporting system for key executives and board members, what needs to be done? We believe that four critical questions must be answered.

1. What is most important to the firm's success?
2. What are the critical drivers that influence performance attainment?
3. What are the most relevant measures that reflect critical driver relationships?
4. What relevant benchmarking data are available to assess performance?

In the remainder of this paper, we will answer these four questions. Specifically, we will define a measure for assessing overall financial performance and then define 15 measures that relate to financial performance. We will relate those fifteen measures to actual 2003 financial performance for the hospital industry.

What Is Important?

We will use a very simple measure of overall financial health, the **Financial Strength Index**^{® 1}. The **Financial Strength Index**[®] is a composite measure of four critical dimensions that collectively determine financial health. The four dimensions are profitability, liquidity, financial leverage, and physical facilities. In its simplest translation, the **Financial Strength Index**[®] implies that firms with large profits, great liquidity, low levels of debt, and new physical facilities are in excellent financial condition. Conversely, those firms with poor profitability, low levels of liquidity, heavy debt financing, and old physical facilities are in poor financial condition. This should not be a hard concept to understand and should be applicable across all types of firms, as well as individuals.

What Are the Critical Drivers of Performance?

If we assume that financial strength is the primary measure of financial performance success, the schematic in Exhibit 1 provides a roadmap of the critical drivers of performance. The schematic shows that the four primary determinants of financial strength are profit, liquidity, capital position, and age of physical facilities. These four primary determinants of financial strength can be related to a set of drivers, and then ultimately to a number of specific metrics that will enable measurement and modeling for dashboard reporting.

Measurement of Critical Variables

Understanding the relationships that drive performance permits one to define performance measures that should focus management attention on areas that need correction. There is always a dilemma encountered in the definition of the measures that will be used for reporting. First, the absolute number of measures used must be limited. The measures used should have a high probability of problem/opportunity detection. Second, the measures should be naturally related to the key driver map developed earlier (Exhibit 2). In the case of our limited “Hospital Dashboard” example, we identify four critical performance driver categories: profit, liquidity, capital structure, and physical facilities. Third, the measures should also have an empirical validity that is related to actual hospital industry results.

1. Cleverley, W. and Cameron, A., “**Financial Strength Index**[®]: A Measure of Overall Financial Health”, Executive Insights, January 2003.

Relevant Benchmarking Data

Comparative benchmarking data are a crucial ingredient to the success of any dashboard reporting system. Ideally, a business would like some comparative reference points. How am I doing with respect to similar firms in my industry? How am I doing relative to my primary competitors?

Identifying measures that are better able to capture the nuances of revenue or cost drivers is nice but may be of little value if no external comparative benchmarks can be found. For example, most hospitals would like to measure and compare nursing cost on an acuity-adjusted basis, but uniform benchmarks are not currently available. In this situation, direct nursing cost per patient day may be the best that one can do.

The measures that are used in this paper allow external comparisons and competitor comparisons because the databases employed in measure definition are publicly available:

- Medicare Cost Reports
- Outpatient Analytical File
- MedPAR File

External Validity

Exhibit 2 provides a comparison of 2003 values for the 15 measures identified in this paper. We used actual computed 2003 values of the **Financial Strength Index**[®] to categorize all acute care hospitals into four quartiles (approximately 3,000 hospitals were included). We have shown the worst and best quartile values for the **Financial Strength Index**[®] for 2003 to highlight critical differences in metric scores between financially strong and financially weak hospitals. Approximately 750 hospitals were in each group. The four key drivers of the **Financial Strength Index**[®] are Profit (Total Margin), Liquidity (Days Cash on Hand), Capital Structure (Debt to Total Assets), and Age of Physical Facilities (Accumulated Depreciation Percentage). Data in Exhibit 2 clearly show the best-performing quartile of hospitals have better values for all four measures. High **Financial Strength Index**[®] hospitals have much higher total margins (10.8% versus -2.0%), more available cash (78 days versus 29 days), lower debt financing (26.1% compared to 56.2%), and younger plants as evidenced by lower percentages of accumulated depreciation to gross property, plant, and equipment (49.4% versus 56.2%). This is not surprising because the **Financial Strength Index**[®] is a summation of normalized values for these four measures. Financially strong hospitals appear to have superior performance in all four dimensions and do not necessarily over emphasize one area in relationship to another.

Profit is the critical driver with the strongest relationship to financial strength. This is intuitively obvious because high profit levels will ultimately drive debt down, increase cash, and result in more capital funding for acquisition of newer plant and equipment. We have split the assessment of profit into two critical drivers, revenue and expense. We then developed measures that we believe have the most influence on final profit performance. The secondary measures shown in Exhibit 2 clearly support their selection. The actual measures are defined in Exhibit 3. On the revenue side, it appears that higher charges drive higher margins. High-index hospitals have a pricing structure that is almost 13% above low-index hospitals. High-index hospitals are also likely to have a greater mix of surgical patients, 22.8% compared to 17.3%. Payer mix is also important, as Exhibit 2 shows. High-index hospitals have higher percentages of non-government inpatient days than do low-index hospitals, 36.1% compared to 31.8%. Coding also is a factor. The high-index hospitals experienced a 1.0% increase in their Medicare Case mix index in the last two years compared to only 0.1% in the low-index hospitals. High-index hospitals also have greater market share, 43% versus 32%.

Cost is also a determinant in profit performance and therefore affects **Financial Strength Index**[®]. High-index hospitals have a lower overall cost index, 101.7, versus 103.3 in low-index hospitals. While the direction of the change makes intuitive sense, it is very clear that pricing is far more important than cost control as a driver of the **Financial Strength Index**[®]. High-index hospitals have prices that are on average 13% higher but costs that are only 2% lower. High-index hospitals also have much higher productivity as measured by net patient revenue per FTE. The high-index hospitals generate \$26,800 more in net patient revenue per FTE than do low-index hospitals. High-index hospitals also have lower length of stay after adjusting for case mix (3.9 versus 4.3). Finally, high-index hospitals also have lower percentages of total costs in overhead areas, which means a greater percentage of their total resource cost is in direct patient care areas.

High-index hospitals have better liquidity, as evidenced by higher values for days cash on hand (78 versus 29). More than likely these values are biased downward in both groups because breakouts of cash and investments in Medicare Cost Reports are often hidden in other asset categories. Nevertheless, the differences are large and clearly point to better financial strength and greater ability to withstand financial shocks resulting from delays in accounts receivable settlement or major disruptions to patient demand.

As expected, high-index hospitals have lower levels of total debt. The high-index hospitals also have much higher levels of debt coverage as evidence by the times interest earned ratio. This is a direct reflection of both lower levels of debt and higher levels of profit.

Finally, high-index hospitals have depreciated significantly less of their gross property, plant, and equipment than have low-index hospitals. This clearly points to newer facilities and greater rates of new investment. While not shown, high-index hospitals increased their net plant by 9% over the last two years while low-index hospitals have seen their investment in net plant drop by nearly 1%.

Improving Profitability: A Case Example

Understanding key metrics for enhanced financial performance is not purely academic. Certainly, hospitals throughout the country engage in benchmarking and financial analysis on a routine basis. We have selected a case example hospital to highlight how the application of the fifteen metrics presented in this article can work in real life. The data results for the example hospital can be seen in Exhibit 2 so that the values can be compared against the low and high performing groups.

The first thing that is noticeable is the hospital's strong overall financial position – evidenced by the **Financial Strength Index**[®] score of 5.5. By comparison, the median value of the best performing quartile group is 3.5. With such a high score, it may be assumed that there is little room for improvement; however, as we begin to examine the four areas that comprise the **Financial Strength Index**[®] we will uncover opportunities. Inasmuch, profitability (Total Margin=0.9%), age of plant (Accumulated Depreciation to Gross PPE%=52.1%), and overall debt position (Debt to Total Assets=58.7%) all appear to be below targeted levels in the **Financial Strength Index**[®] formula (Exhibit 3). Only liquidity, as measured by Days Cash on Hand (374 days) was above the targeted level of 50 in the **Financial Strength Index**[®] formula. The cash position is clearly the primary driver for the high overall **Financial Strength Index**[®] score. As profit improvement appears attainable, we will focus on specific opportunity areas.

On the revenue side, pricing opportunities are present as shown through the low **Hospital Charge Index**[®] value of 88.2. This hospital would want to examine cost and competitor constraints before implementing a pricing increase; however, it does appear that pricing is low at present. The hospital could also have coding issues, as Medicare CMI decreased over the previous year.

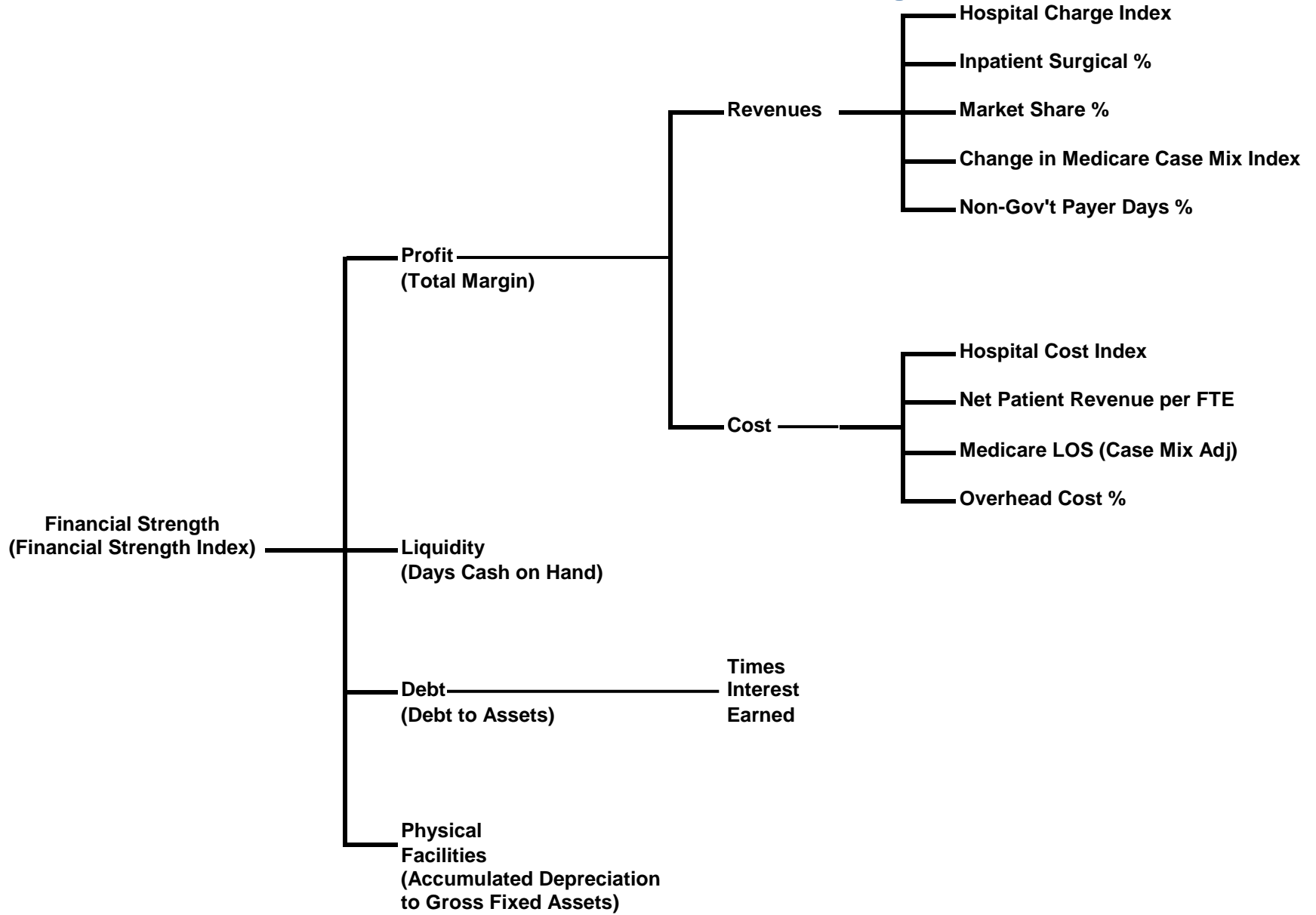
Costs appear to be high at the example hospital (**Hospital Cost Index**[®] = 114.9). While length of stay may not be an issue, productivity (NPR per FTE of \$89,500) and overhead appear problematic. Certainly, a portion of the productivity results could be explained by comparatively lower revenue at the example hospital, however, the difference, perhaps, should not be as large as is seen in the data.

In sum, while our Example Hospital has a solid financial position through its strong cash position, it is clear that opportunities exist to enhance profitability.

Summary

The fifteen measures shown in Exhibit 2 clearly show an association with strong financial performance. Monitoring these 15 measures on an annual basis should help identify potential opportunities or problems for hospital executives seeking to enhance their overall financial strength. We believe these measures meet the three tests outlined earlier for usage. There are a limited number of measures – only 15. Second, they directly relate to financial strength attainment. Third, they are empirically valid and track with financial strength in a predictable manner. Using these fifteen measures as part of a hospital dashboard should help managers maintain or improve their financial performance by focusing on the critical aspects of their business.

Exhibit 1. Schematic of Financial Strength



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Exhibit 2. 2003 Indicator Comparisons

		Financial Strength		
		Lowest Quartile	Best Quartile	Example Hospital
Financial Strength Index[®]		-2.0	3.5	5.5
Profit	Total Margin %	-2.4	10.8	0.9
Revenue	Hospital Charge Index[®]	100.4	113.1	88.2
	Inpatient Surgery %	17.3	22.8	28.3
	Market Share %	32	43	100
	Change in Medicare CMI %	0.1	1.0	-1.1
	Non-Gov't IP Days %	31.8	36.1	30.0
Cost	Hospital Cost Index[®]	103.3	101.7	114.9
	Net Pat Rev per FTE (000)	99.0	126.8	89.5
	Medicare LOS (CMI Adj)	4.3	3.9	3.8
	Overhead Cost %	33.6	32.3	46.0
Debt	Debt to Total Assets %	53.8	23.1	58.7
	Coverage			
	Times Interest Earned	-0.5	10.3	1.4
Physical Facilities	Accum Depr to Gross PPE %	56.2	49.4	52.1
Liquidity	Days Cash on Hand	29	78	374

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Exhibit 3. Financial Strength Drivers

Financial Strength Index®	$\frac{\text{Total Margin} - 4.0}{4.0} + \frac{\text{Days Cash on Hand} - 50}{50} - \frac{\text{Debt Financing\%} - 50}{50} - \frac{\text{Depreciation Expense\%} - 50}{50}$
Total Margin	$\frac{\text{Excess of Revenues over Expenses}}{\text{Total Revenue}} \times 100$
Days Cash on Hand	$\frac{\text{Cash \& Cash Equivalents} + \text{Long-Term Investments}}{\text{Total Expenses} / 365}$
Debt Financing %	$\frac{\text{Total Assets} - \text{Net Assets}}{\text{Total Assets}} \times 100$
Accumulated Depreciation %	$\frac{\text{Accumulated Depreciation}}{\text{Gross Property Plant \& Equipment}} \times 100$
Hospital Charge Index®	$\frac{\text{AvgCharge per Medicare Discharge (CMIadj)}}{\text{U.S.Median}} \times \text{Inpatient Revenue \%} + \frac{\text{AvgCharge per APC (RW adj)}}{\text{U.S.Median}} \times \text{Outpatient Revenue \%}$
Surgical Cases %	$\frac{\text{Total Medicare Inpatient Surgical Cases}}{\text{Total Medicare Inpatient Cases}} \times 100$
Market Share %	$\frac{\text{Net Patient Revenue}}{\text{Sum of Net Patient Revenues in County}} \times 100$
Change in Medicare CMI %	Percentage change in Medicare Case Mix Index (two years)
Non-Government Payers %	Percent of revenue from sources other than Medicare or Medicaid
Hospital Cost Index®	$\frac{\text{AvgCost per Medicare Discharge (CMI adj)}}{\text{U.S.Median}} \times \text{Inpatient Revenue \%} + \frac{\text{AvgCost per APC (RW adj)}}{\text{U.S.Median}} \times \text{Outpatient Revenue \%}$
Net Patient Revenue per FTE ¹	$\frac{\text{Net Patient Revenue}}{\text{FTEs}}$
Medicare LOS (CMI = 1.0)	$\frac{\text{Medicare Inpatient Days}}{\text{Medicare Discharges} \times \text{CMI}}$
Overhead Cost %	$\frac{\text{Overhead Expense}}{\text{Total Expense}} \times 100$
Times Interest Earned	$\frac{\text{Excess of Revenues over Expenses} + \text{Interest}}{\text{Interest}}$

¹Group Median has been adjusted to primary hospital's wage index.

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