

CHAPTER SIX

Human Capital Analytics: The Leading Edge of Measurement

“In these matters the only certainty is that nothing is certain.”

—**PLINY THE ELDER**

In October 1996, doctors predicted that Lance Armstrong would be dead from cancer in less than six months. In July 1999, he won the Tour de France. Over the next six years, he won every time for an unequalled seven victories.

Prediction is a fine but dangerous art. If anyone really knew with certainty what was going to happen tomorrow, much less a year or more from now, that person’s advice would be prohibitively expensive. I don’t claim for a moment to know with certainty what will happen tomorrow around human capital management; however, I do know something about organizational variables and how they interact in predictable ways most of the time. From this, we can risk projecting future events with a better-than-average

degree of success. The goal is not to change the world overnight. It is just to decrease the variance and increase the certainty a bit at a time.

In general, people do not understand simple probability statistics. Let's use gambling as an example. The casinos in Las Vegas make billions every year on just a percent or two in favor of the house. However, when we apply that concept to organizational improvement programs we can find similar incremental gains but not the same type of success. The reason is that a couple percent of improvement in quality or productivity in one part of the organization does not accumulate to the same percent corporate-wide. In fact, in some cases, the effect is only in the local process with no effects elsewhere. To obtain that percent gain across the organization and drop it to the bottom line we have to work holistically.

A Model and System

Consider that each year, barring some national or global economic anomaly, most companies have anywhere from a financial loss to a small profit. That leaves no more than about 20 percent that have a good to better-than-average year. Every population has only 10 to 20 percent on the top end of the traditional bell-shaped distribution curve. It is a law of distribution that never changes under normal conditions. To be on top, all we have to do is to beat two out of ten competitors. If we can increase our return on human capital a couple of percent a year more than the competition, we will be in the top 5 percent of our industry. The best way to do this consistently is to manage our greatest leverage point, which is people, more effectively than the other two competitors. The secret is not to focus on transaction efficiency. To attain this position we need the following:

- Clear vision from the CEO
- Brand and culture that are coordinated
- Capability plan
- Effective processes
- Integrated delivery
- Predictive analytics

Relationships and Patterns

Many of us unconsciously follow an instruction or example without thinking about the rationale behind it. There are several reasons for this. Among them is fear of contesting an authority figure, whether it is our boss or a so-called expert. Another is resistance to change. It is easier to do something the accustomed way than to spend energy thinking of another way. How many times have I done something the old way rather than take the time to reset or revise the process so that I could do it more easily in the future? And if you think I am going to read the bloody manual, you are crazy. Frustration is another barrier. Maybe we tried to do it a different way and were told, “That isn’t the way we do things around here.” Then there is apathy. Some people simply do not care. In business, the common retort of employees when asked why they are doing something a certain way is, “I just work here. They don’t pay me to think.” Or, “We’ve always done it that way.” Or, “We’re doing pretty well and you can’t argue with success.” The litany of excuses goes on. These sad but all too common retorts are examples of doing without learning—and obviously doing without caring. If we apply that to managing and measuring human capital performance, we learn nothing through mere repetition. There is a better way, which I call *looking for patterns*.

Pattern Recognition

We've established in previous chapters that there is a connection, an interdependency, between and among human capital activities, between and among functional processes, and between human capital management outputs and functional process outcomes. Logically, we should expect to see correlations between and among some of the many variables inside those activities, processes, and outcomes. If we look for them, we will find them. Once these correlations have been established at any consistent rate of occurrence, we should be able to make tentative predictions.

Now comes the problem: Things are not always what they seem to be. Just when you thought I was going to be profound, I fall back on a cliché. I'm sorry if I've disappointed you, but clichés are often an effective way to startle us into peering through our biases or misperceptions. As my mother once told me after I explained in great detail all the things I was learning in a psychology seminar, "It seems like common sense to me."

Fallacies in Trend Identification

In the research business, we are always looking under the covers of data for patterns. This is what we have to sell. If we can find a valid trend, we can package it and sell it to people who want to understand their company, market, or region better. This inner drive of researchers often leads them to espouse a directionality that does not exist. It also pushes them to infer causality that is not sustainable.

Stephen Jay Gould, a paleontologist who wrote so beautifully that I read his books for the language as much as for the content, wrote a marvelous treatise about data analysis that a layperson can understand.¹ An interesting side note

that is relevant to my point is that Gould and Ed Purcell (a Nobel laureate in physics), both of whom were baseball fanatics, once conducted an exhaustive study of baseball streaks and slumps. They found that all such runs fell within reasonable probability except for one solitary instance: Joe DiMaggio's fifty-six-game hitting streak in 1941. According to probability statistics, it should not have happened at all. Thus, it is the greatest achievement in baseball, if not all sports. What few people know is that the day after his streak was broken, he started another that lasted seventeen games. Imagine a seventy-four-game streak! That is almost half a season. Before that, he had a sixty-one-game hitting streak in the minors. Thank you, Joltin' Joe. I am indebted to Gould for the following dissertation on the complex but fascinating issue of data analysis, to which I have added my views.

Finding Meaning

We are prone to reading patterns into sequences of events because we are looking for meaning in our lives. Yet, to the untrained eye, there is little sense of how often a pattern will or should emerge from random data. Gould illustrated this point with coin flipping. Since the probability of heads is always one in two, or one-half, then the chance of flipping five heads in a row is $\frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2}$ or one in thirty-two flips. This is rare, but it happens occasionally simply through randomness. No one can predict when that rare sequence might occur, but when it does, we might think that we are on a hot streak if we are betting heads against the flipper. If, after a couple more trials, the flipper produces a run of five tails in a row, we might think that the person was cheating somehow, even if he wasn't. As Gould pointed out, people have been shot over such innocent occurrences.

Another fallacy about trends is perpetrated when people

correctly discover a directionality in events but then assume that something else moving in parallel must be the cause or the effect. Mistaking coincidence or correlation with causality is the stuff of the naive, of charlatans, and of demagogues. Politicians, religious fanatics, and consultants are masters at this tactic. As a consultant friend says, “Anything that is not provably wrong is arguably right.” In any system there is variation. The apparent trends can be nothing more than random expansions or contractions of the natural variation within a system. Nothing runs in a straight line, or

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along a predictable curve, for long. To add even more unpredictability to the mix, two things running in the same system will occasionally coincide for no apparent reason. This is why we cannot ever *prove* anything. Even in the controlled atmosphere of the

laboratory, we don’t try to prove our hypothesis. We only try to disprove the null hypothesis—that is, that the effects we observed are apparently not caused by forces other than our treatment 95 percent of the time (.05 level of confidence). This is as close as we try to get in the lab. So imagine how much less proof there is available in the field, the so-called real world, where nothing is controllable. (I must add that in medical or pharmacological research, which deals with matters of health, the level of confidence must be much higher—in the neighborhood of 99 percent or greater during repeated trials.)

Extrapolation

One of the common misuses of trend data is extrapolation. When we have a data set that covers a period of time

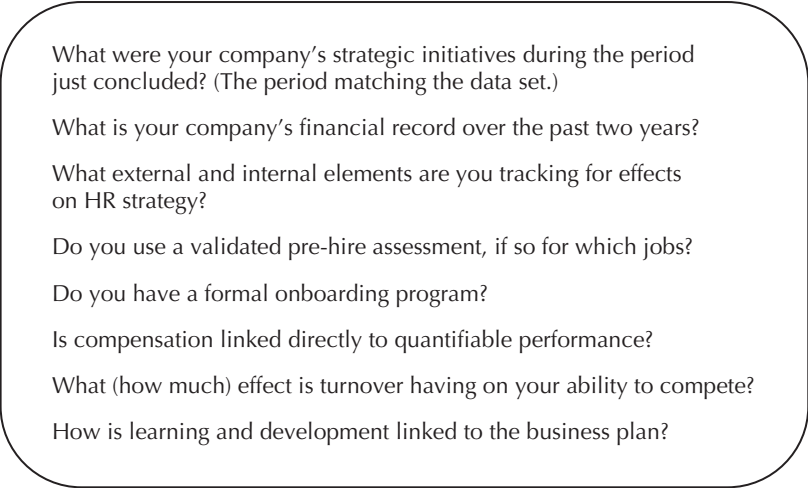
whether it is for weeks, months, quarters, or years, we usually want to know what it will look like going forward. If something is on an upward or downward slope of, for example, 5 percent over the past three years, is it safe to say it will be 5 percent next year? We do this with benchmarking all the time.

Assuming or extrapolating a past trend into the future is risky. A straight line extrapolation would assume that the future will be a mirror of the past. You could do that with some confidence in the 1970s and 1980s, but since then it has become highly unlikely. Volatility and constancy are polar opposites. This is why I believe that benchmarking has lost most of its value since the arrival of the dot-com industry. The dot-com phenomenon rewrote our thinking about organizations. It was a highly disruptive technology, which although it was disastrous for many people, did launch U.S. business in a new, more unpredictable direction.

The Importance of Context

If we want to use data from the past to tell us about the future, we have to add context. As I write this book, I am preparing a benchmarking survey for a client. We will talk to thirty companies about seventeen human capital variables. If we bring back the data and simply present it without any contextual questions, we do a disservice to the client. First, we know that the data from the thirty companies will not be identical even though they are all in the same industry. What will make it different are their individual idiosyncrasies, or their context. So we are developing more than a dozen questions having to do with financial, technological, organizational, and human capital issues that affect the human resources activities we are surveying. A few of these issues are listed in Figure 6-1.

Figure 6-1. Contextual questions for benchmarking.

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- What were your company's strategic initiatives during the period just concluded? (The period matching the data set.)
 - What is your company's financial record over the past two years?
 - What external and internal elements are you tracking for effects on HR strategy?
 - Do you use a validated pre-hire assessment, if so for which jobs?
 - Do you have a formal onboarding program?
 - Is compensation linked directly to quantifiable performance?
 - What (how much) effect is turnover having on your ability to compete?
 - How is learning and development linked to the business plan?

Collectively, the answers to these types of questions will give insight into the quantitative results. As we match the context with the quantitative we should understand why there is variance. We might even obtain some ideas about generalizable effective practices. Notice, I did not say “best practices.”

Charlatans

Over the decades, I have witnessed the arrival and departure of many products in the business management market that allegedly claimed correlations, if not also causation. One of the most popular exercises has been the attempt to find causation between employee activity and human resources programs with financial results. I admit to being part of this practice at times. The best-practice craze lent support to the search for this holy grail—namely, the value of people in business. Published stories of isolated events claimed to be

revealing generalizable paths to financial performance. I am hard-pressed to remember any that has ever been proven to work beyond chance over the long term.

One of the more blatant ruses I've seen is to recommend a set of mixed, arbitrary, often overlapping, subjective issues, while simultaneously ignoring quantitative performance records, and then promise to draw correlations with the creation of shareholder value. Even if a set of opinions about programs, employees, applicants, systems, and what have you did match to some degree with the movement of shareholder value, it is ludicrous to claim more than coincidence without analysis. Carrying this ruse to the ridiculous, to take one sample in time and make claims of general validity is almost criminal. It certainly could not claim to hold over a long period through market changes. There are so many reasons why this is bogus that I won't even attempt to list them. Opinions do not correlate with anything other than the opinion-giver's own biases. So, let's call it what it is: a very thinly veiled attempt to sell consulting services.

Business Applications

Taking business events as examples of correlations and causation, there are a multitude of variables that coalesce in sales, operating expense, and profitability. All the people and things inside the enterprise plus the people and things outside of it that can affect sales, expense, or profit are in constant movement. At any moment, there can be an aligning of two variables, such as increasing pay and increasing sales. Although both might be moving in the same direction—coincidence, possibly correlation—there may be absolutely no causality involved. Sales can rise for many reasons that have nothing to do with the incentive pay plan for salespeople. To infer that the new pay plan caused sales

to increase is premature until we check out and eliminate the other possible causes. Among those other drivers that must be examined are our product compared with that of the competition in terms of price, performance, reliability, deliverability, and service, plus the personal relationships of seller to buyer. The movement of any single variable or combination of variables could affect sales in either direction.

Congratulating the sales force without checking other possibilities can cause problems. We might even go so far as to give an extra bonus for outstanding performance only to learn later that the increase was due to a competitor's inability to deliver while its plant was on strike or burned down. Suppose the competitor subcontracts production to a third party and next month is back in business, perhaps with an even more reliable product, and our sales decrease accordingly. If we did not take the time to research the cause, our conclusion might be that the salespeople were coasting after receiving a big bonus. Having spent nearly ten years as a salesman and sales manager, I have personally witnessed this type of executive disappointment many times. The typical response is, "They're not as hungry as they used to be." This is the classic rationalization of executives who won't invest the time and expense to understand what is really happening. As a result, they continue to make the same mistakes over and over in sales and other functions as well.

Performance Valuation

An example in another direction is the way in which we set standards of performance. Nearly everyone dislikes having to do performance appraisals. We know that accurately judging another human being's performance is an extremely

difficult task that is filled with room for error. Despite all the advances made in this technique, the situation of having to defend a rating in court is very difficult. In an attempt to reduce the error rate, we set supposedly objective standards of performance. For the simplest tasks, this is not too difficult if we have enough observations of a given performance. For example, assume that we want to know how long it should take warehouse staff to move a number of boxes a certain distance in the warehouse by hand. This would allow us to forecast how many workers we will need as the volume of boxes increases with increasing sales. If we observe the one-time movement of one 10-pound box that is 2 by 2 by 1 foot a distance of 20 feet, we can say that it takes 7 seconds (my wife just timed me doing it). So, we set the standard at 7 seconds. What are the variables: my strength, my agility, or my motivation? Am I the model for all men? What if the box size, shape, and weight change? What if the material in the box varies? If the box is filled with paper and the humidity is very high, the weight of the box can change significantly. What about the fatigue factor, boredom, and breakage if we have to move two hundred boxes versus twenty? Forecasting performance is a subtle and complex task.

To make a long story short, you can see how complicated it is to set standards of performance for even the simplest tasks. When we move to the work of salespeople, systems analysts, loan officers, nurses, or a hundred other professional occupations, you get the point. So, how do we rate and forecast human performance if we cannot step away from our prejudices and sometimes flat-out mistaken notions? Obviously, if it is important, we have to study the variables within the system to reduce our estimation errors. To end with another cliché, you get back what you put in. If we want to understand the correlation and causation of our

business in pursuit of competitive advantage, we have to put some effort into it or continue to follow the pack. To use a graphic model for being in the pack: If you are not the lead animal in a sled-dog team, you spend your career looking at the rear end of the guy ahead of you.

We are indebted to W. Edwards Deming for showing us how to reduce variance and set valid performance standards in factories. After his explanation, we could see that it made sense and was comprehensible by the average person. Carrying the same concepts into other areas such as human capital management greatly reduces the mystery and exposes true correlation and causation.

Data Sensors: Forecasting and Predicting

There is a phenomenon I call *data sensors*. These are data that tip you off to the emergence of a problem or opportunity. They are early warning signals. They are not evident to the amateur. It takes time and many observations to perceive the signals. The following are examples drawn from my experience:

- An increase in absenteeism is often a sign of unrest among employees. Employees are telling management that they are unhappy by staying off the job. If this signal is ignored, it is highly predictable that turnover will begin to rise in about six months.
- Increases in processing errors of any type are a precursor of employee and later customer dissatisfaction. Employees respond to their unhappiness by slowing down their productivity, turning out sloppy work, and staying home. Customers respond by complaining and eventually finding another supplier.

- Reductions in any voluntary activity, from suggestion programs to company picnics, are signs of employee unrest. People are signaling with their abstention.
- Sharp increases in employee requests for transfer, even when there is no problem with the current supervisor, might be a sign of general malaise or boredom.
- High levels of employment-offer rejections tell us that we are not treating applicants properly. Offers are seldom turned down for pay reasons. More often, it is due to the employee's perception that this is not a good place to work.
- A change in any metric presages effects in others. Increasing turnover means more hiring and training to come. An increase in employees coming to talk to employee-relations staff indicates problems with supervision, coworkers, or work conditions, which leads to employees quitting. Decreases in attendance in training usually signal employee frustration or supervisors who won't let employees take time to be trained. Either one will lead to requests for transfers or quits.

All the above factors negatively affect quality, innovation, productivity, and customer service. So, what can we predict with some degree of confidence? What leads to what? This was implied in Chapters 2 through 4. I stated that there were clearly predictive connections between the human capital management tasks of acquiring, supporting, developing, and retaining employees and the outcomes of the various functional unit processes. Let me note that I'm not talking about causation, only some level of connection. To quickly review linkages, consider the following:

If human resources, in collaboration with the hiring supervisor, delivers a high-quality candidate faster than normal, the business unit supervisor should be able to maintain or even increase productivity. Hence, there is probably a correlation between the time to fill jobs and productivity, all other things being equal. But as Hamlet said, “Ay, there’s the rub.”²

The nonbelievers have a standard objection: What if this or that happens during the same time period? What about all the things in the environment that pop up and affect the outcome? The obvious answer is that when you change the circumstances or an intervening event occurs, you get a different result. The only way at the beginning you can judge or forecast anything in any function or at any time is to assume that surrounding conditions are constant (even if they aren’t). This principle is called *ceteris paribus* or “other things being equal.” This constraint is not unique to social science. It applies to all judgments we make in life. In the morning we mentally forecast that if we take a certain route to work, we will arrive in a certain number of minutes, give or take a small variance. That is a *ceteris paribus* assumption that normal conditions will prevail. The same thing applies in business for attempts at evaluating and predicting. Budgets, sales plans, and production schedules are based on *ceteris paribus* assumptions. In effect, we say that if things go according to our assumptions about the cost of goods, competitor actions, product development, the weather, customer tastes, and so forth (*ceteris paribus*), the following should be attained (probability).

If something happens during the course of the study, we can identify it and account for it. Previously, we played out the process value analysis model and saw that at step three, the impact stage, we would be able to account for significant external events and make statements of apparent correla-

tion, if not causality. This can be done without running a field experiment. At the very least, using that model would allow us to be more confident of our conclusions than most managers can be of theirs. So, let's get on with it.

The following is a set of examples of actual problems, actions, and events and their predictable results compiled over the past twenty years.

Issue	Result
Time to fill jobs increasing	Productivity and/or customer service in the hiring departments negatively affected at a predictable level leading to lost customers
Absenteeism increasing	Turnover will increase within six months leading to negative effects in QIPS*
Introduction of flextime and telecommuting	Turnover will decrease as applicant pool increases, positively effecting QIPS
Introduction of employee referral bonus program	Quality of candidates improves, hiring cost decreases, and turnover drops
Employees cite poor support and communication from supervisors in exit interviews	Incidence of employee-relations problems and absence increases, performance decreases, then turnover and customer dissatisfaction increase, especially in public contact units
Introduction of employee assistance program	Absenteeism decreases, performance increases, turnover slows, eventually cost of healthcare benefits decreases

Issue	Result
Training increased	Internal replacement pool increases and turnover decreases
Training staff and budget cut	External applicant pool shrinks as market learns we have reduced development support; eventually, voluntary separations increase
Consistent college recruitment program with internships	Higher job-offer acceptance rate, lower cost per hire, improved hire quality, increased longevity, enhanced reputation

* QIPS = quality, innovation, productivity, service

Over time, you will see patterns that are common, as well as ones that are unique to your situation. The more you study your data, the more your predictive capability will improve. The key to improving that capability is to ask yourself why when you see any phenomenon. What could have caused this: problems with people, material, process, or equipment? People can be employees, supervisors, managers, customers, vendors, and even executives. Here is a true story that makes the point of predictable results.

Company X had a very successful year. The following February, the CEO assembled everyone through an electronic town-hall setup. He went on at great length about what had occurred last year and what was coming this year. In the next month, morale dropped like a lead balloon, turnover started to increase, and customer service slipped noticeably. What happened at that meeting? If we knew, what would we have predicted?

The key to improving your predictive capability is to ask yourself, Why?

The CEO's remarks can be boiled down to two statements.

1. "We had a great year last year with record profits (read between the lines, I got a hell of a bonus)."
2. "This year will not be as good, so we are cutting the salary increase budget in half and might have to have some layoffs."

Do you have any idea why the people responded as they did? Could you have predicted their behavior after that communication? Of course you could. These things happen, and people—managerial personnel, especially—have to think ahead to the predictable response. Most important, they have to get out of their skin and put themselves in the place of their audience with *its* values, needs, and viewpoints. As an example, a single parent, male or female, who is barely making ends meet, has a different view of life than does a high-income male executive with a wife or nanny to care for the kids. In the end, you can watch data over time and begin to improve your forecasting capability. You can also view planned actions and suggest probable responses of customers and employees.

Toward a Human Capital Financial Index

Indexes are a common and effective trending mechanism. They provide an effective base from which to risk forecasts. Since it usually takes a good deal of study, definition, and consideration of variables and relationships to set up an index, we can count on its reliability. The only caution we need to observe involves semantics. Calling something an index doesn't make it one. Sometimes the term is applied to any unconnected set of data. Making an alleged random

selection of variables into an index because they “feel right” is invalid. The dictionary offers several definitions of an index. The one that most closely suits our situation is the following one: “Something that serves to direct attention to some fact, condition, etc.”³

Underscore the word *fact*. I think of true indexes as valid and reliable sets of data, all of whose variables are focused on a given concept and are maintained over an extended period. The index must have internal validity as the central point. This means that it represents a true relationship among components. The most familiar examples of long-standing, reliable indexes are the government’s cost-of-living index and the consumer price index. These are well-established data sets that give us a good idea of how these two issues are moving. It might not have much effect on you depending on your lifestyle. So, the government does not claim perfection, and through criticism and modification, it has improved the indexes over time. An index does not purport to *prove* anything. Rather, it gives us a consistent, legitimate view of the movement of a complex phenomenon over time.

If we study the components of an index, we can understand what drove the index number up or down. Then, if we understand what affects each component, we can look into the future and plan accordingly. For example, if the cost-of-living index is rising and we see that one of the components, the price of petroleum products, is rising more than other components, how can we react? Turning to the commodities market, we can look at the futures contracts for petroleum and decide for ourselves whether the price is likely to continue to rise for the next twelve months. Then, we can look at long-range weather forecasts for the Midwest (if that is where we live) to learn if we are in for a cold winter. Coincidentally, if the weather is going to be unseasonably cold, the

cost of heating oil will rise even more. This leads to a decision about adding insulation to our homes to preserve ambient heat (or moving to Florida).

In business it is useful, if not vital, to know trends. Trends offer the astute an opportunity to view the future with a bit more certainty than their less insightful competitors. That is what separates the 20 percent at the top from the 80 percent who follow—a slight incremental advantage time after time. We read about the great leaps in the results of great companies, but we don't see and hear about the daily decisions that individually are a bit better than those of their competitors and that collectively blow them away. Managing a large-scale business is not a walk in the park. It requires great attention to detail. This means having reliable data and knowing what they truly mean. Indexes offer an advantage over single, unconnected data points in that they provide the collective result of a set of related variables. This gives us a broader view. Inside the index, we can look at the component movements.

The first hurdle in developing a human capital financial management index is the lack of longitudinal, quantitative business databases. For anyone who wishes to establish an index, the following examples may be helpful.

Human Capital Revenue Index (HCRI)

HCRI is revenue per full-time equivalent (FTE) employee. Revenue includes all sales and service income. FTE employees include all persons on payroll plus all contract, temporary, and other workers not on payroll (termed *contingent*). It does not include the personnel who work for outsource program providers. That human effort is considered to be part of general purchased services. This is an example of a productivity trend.

Human Capital Cost Index (HCCI): HCCI is the total labor cost per

FTE employee. Human capital cost includes the pay and benefits of persons on payroll, the contingent worker cost, and the cost of absence and turnover. The latter two costs are generally ignored in calculations of labor cost. However, it is logical and obvious that absenteeism and employee turnover are a cost of labor. You can include development costs if you like. This index shows movement of people costs.

Human Capital Profit Index (HCPI): HCPI is revenue less purchased services per FTE employee. Profit attributable to human capital investment is total revenue less all nonhuman expenses (everything except pay and benefits), divided by FTEs. The numerator is a standard form for calculating value added. This shows the leverage of human effort that resulted in profit. This is one of two metrics that show ROI in human capital. The other divides the numerator above by pay and benefits. That produces a profit leveraged from employee pay and benefits.

When I tracked these costs during the 1990s, it told me that the cost of people was tracking almost on top of the inflation rate. In short, job for job, there has been very little real dollar increase. This is one of the reasons why the U.S. economy through 1999 had been so robust. The cost of human capital, one of the two major costs of most companies, had barely risen in real terms. If this index had continued to the present, I believe we would have seen a significant difference with revenue outstripping costs.

The other interesting and surprising point was that human capital-leveraged profit did not track with revenue. Whereas there was an increase in revenue per FTE of nearly 29 percent over nine years, profit per FTE over those nine years increased only 16 percent. This means that either there were significant investments in technology or poor management of operating expenses other than employee costs.

Index Value

The value of having a human capital financial index is that it gives us the ability to uncover and understand the real story of human value in organizations, devoid of media or government hype. Given our knowledge of what has affected the trend, and looking ahead at those factors, we can begin to understand what the near-term future might look like. From there, we can do a much more effective job of planning a path to profitability. If we add to this type of index a human economic value-added index, we would understand in depth how much value, if any, was being added to the national economy by human capital as opposed to equipment and facilities. If a company spends \$XX million on computerizing the workforce, how much does productivity rise, and therefore what is the leverage on that investment? Productivity is a human issue. Investment in sophisticated equipment does not guarantee productivity improvement.

Paul Strassmann has written extensively about the relationship of information technology and knowledge creation. He has shown that, generally speaking, the true cost and ROI of software, in particular, are largely unknown or miscalculated.⁴ When management fails to follow up information technology investment with training, process improvement, and, most important, sound strategic moves, there is seldom economic value added.

Index Application

In what ways could the index teach us to be more effective in managing our human capital? Key questions might include:

- What contributed most to our sales and service income?

- What was the ratio of investment in equipment and facilities to people?
- What hard data evidence is there that each investment improved productivity?
- Were there visible interactive effects among the three?
- What is the competition doing to improve human capital productivity?
- How did the competition manage the ratio of contingents to regular employees, and how should we manage ours?

On the cost side, ask the following questions:

- What is the average compensation of our employees—pay plus benefits—in critical job groups (most salary surveys do not disclose actual average total compensation, only pay ranges)? How does that compare within our industry or to other human capital competitors (companies that hire away our people)?
- What is the ratio of benefits to payroll, and how is it changing?
- What are our absence and turnover rates, and where are they concentrated?
- How does our rate of compensation growth compare with revenue, productivity, and profitability?
- What is our leverage factor on human capital investment?

For the profit side, ask the following questions:

- How many dollars of profit per employee are we generating?

- Is profit per employee growing at the same rate as revenue per employee? If not, then why not?
- How does our economic value added (EVA) look compared with that of competitors in our line of business?

It should be clear that if you have the answers to these questions, you can do an effective job of forecasting.

Data Sources

Your efforts at prediction are strongly supported by the availability of public data. North American businesses are blessed with a plethora of data. In both the United States and Canada, the governments support extensive databases of population, economic, and business information. A few of the U.S. federal government sources include:

Congressional Budget Office

Department of Commerce: Bureau of Economic Analysis

Department of Labor: Bureau of Labor Statistics

Economic Reports of the President

Economic Research Service

Economic Statistics Briefing Room

Federal Reserve Board

Social Security Administration

U.S. Census Bureau

U.S. Government Printing Office

FEDSTATS (<http://www.fedstats.gov>) is a website for quick searches of these and other federal agencies with an-

nual research and publication budgets in excess of \$500,000. It lists over a hundred federal government data sources. Many states also have research services. If you are new to this type of research, you can get guidance from your local public library research section.

In Canada, Statistics Canada is an excellent central source of national population, workforce, economic, and commercial data. In addition, the Canadian Conference Board conducts and publishes ongoing business research.

A few of the commercial sources of quantitative business data include magazines such as *BusinessWeek*, *Forbes*, *Fortune*, *IndustryWeek*, *InformationWeek*, *CIO*, and *CFO*, among others. Some of the HR journals feature statistical sections as well. They provide both hard data and articles on trends and effective practices.

Prominent research organizations are:

American Productivity and Quality Center

American Society for Training and Development

Bureau of National Affairs

Corporate Leadership Council

Dun and Bradstreet

National Association of Manufacturers

Society for Human Resource Management

The Conference Board

U.S. Chamber of Commerce

In addition, there are many industry watchers, of which IDC, Yankee Group, and Gartner are representative. Internationally, there are the several United Nations bureaus: The Organization of American States in Washington, D.C.; and the *World Competitiveness Report* published by IMD in

Switzerland, which provides data on forty-seven countries and lists over fifty other sources of data worldwide.

Finally, the Internet is spawning information websites faster than we can keep up with them. By merely listing a keyword, you are likely to find several sources. The point is that there is a great deal of information available from which to identify trends, build forecasts, and even attempt predictions. Just be ready to modify your original estimates with periodic updates. The marketplace is so volatile that today's truth is tomorrow's anachronism.

Summary

The business of data management is maturing. We have moved from a reliance on accounting as our primary source of business information to literally hundreds of government and commercial sources of objective and practice databases. Some require membership, but most are available to the public either free of charge or for a reasonable fee. The trick is to learn how to interpret data and to use data to look forward as well as backward.

Success will accrue to those who can see patterns and relationships among data. The objective is to turn data into information and ultimately intelligence. This takes experience and practice. Through trial and error, anyone who has

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the energy to stay in the hunt can learn to improve his or her forecasting ability. There are four levels of data. One level is the general marketplace,

which offers everything from international demographic and economic data to industry and technology data. Internally, there are data at the enterprise, function, and human capital management levels. These naturally interact and are

interdependent. Actions at one level drive activities and outcomes at the others. Businesses are complex and dynamic environments. The wealth of data generated by business activity can be overwhelming. We must learn how to identify the factors and forces that make a difference.

Take care not to fall prey to the natural desire to draw correlations where they do not exist. Data from one activity may be moving in parallel with those of another. However, this may be more coincidence than correlation. It very seldom shows causation. Isolated, one-time events are rarely generalizable to a different population or situation. It is useful to understand the intention behind the publication and the context behind the data. Is it a desire to share useful information, or merely a thinly disguised attempt to sell you something beyond the data?

Forecasting and predicting are difficult but not impossible. All attempts at explaining the future are made under *ceteris paribus* conditions. That is, other things being equal, if one applies our assumptions, the following will have a high probability of occurring. Skill can be built and estimations made more accurately if one practices looking behind the extant data to what might be driving them. Context is absolutely essential to understanding differences.

Indexes are valid bases from which to practice forecasting. A well-designed index offers a number of components that are inherently related. This simplifies the task of prognostication. But just because someone calls a data set an index does not make it one. Look into it and ask yourself whether the alleged connections are logical and consistent. *Caveat emptor*.

References

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