

## CHAPTER ONE

# Starting the Journey

ENERGY FILLED THE ROOM, and excitement reigned. The global team was gathered for this February meeting. It was the beginning of a new year. Many of its members had worked together for years, but never met face to face. They were excited to connect. It was cold outside; but inside the room, the conversation was warm and quickly flowing, as people who previously only knew each other from e-mails shook hands and introduced themselves.

Centered in the front of the room was a flip chart. Placed on the board was a large white sheet of paper. In the center, carefully handwritten with a black marker, was a number. As people gathered over coffee they glanced at the board, and in casual conversation tried to guess what the number 77 might mean.

Joe, a leader in a major global multinational company, was hosting his annual kickoff meeting. It was the launch of his “big, hairy, and audacious goal (BHAG)” for the New Year. He rubbed his hands together as he began his talk. As he unveiled his vision, he was passionate in his argument. He believed in his mission. His speech started with great energy, but then stalled. The group was not buying his message.

The BHAG was an inventory goal. Joe wanted to finish the year with a 25 percent reduction in inventory. This translated to a target goal of 77 days

of inventory. His desire was to reduce inventory and return cash to the corporation. The company was in a growth mode, and Joe wanted to deliver on the corporate strategy. As he spoke, the team in the room felt challenged, and a little resentful. Recently the company had experienced layoffs, and today they faced rising costs, increasing demand and supply volatility, and what they felt were ever-changing business priorities. It was hard for them to focus.

As I looked around the room, the group seemed detached and dispassionate. They stared blankly forward into space, occasionally looking at their cell-phones. It was as though they had been here before. It was a new inventory goal in the list of many management programs that were being developed without asking anybody about the feasibility of meeting the targets.

I was the guest speaker. As I got up to present, the atmosphere was icy, and the team seemed broken. The mood was despondent. I ruefully went through my presentation, sharing stories and what I thought was my best research. It was difficult. As I made eye contact, I got a few laughs, but the mood was definitely down. As I finished I thought, *What do I do now? Joe is one of my favorite clients. I have known him for years, and he is a great leader. How do I help him?*

As we took a break, I drew Joe aside, put a hand on his shoulder and carefully started a dialogue. I looked him in the eye and said, "How do you know that 77 fewer days is the right inventory target? I know that this is an important meeting for you, but why is this substantial inventory reduction so important for the business? Do you know that the group is struggling with this as a goal?"

Joe returned my gaze and shrugged his shoulders as he said, "It just feels right. I want the team to have a stretch goal. Nothing is ever easy these days. As you know, the company is focused on growth right now. The reduction of inventory would give us dollars to reinvest in research and development (R&D). New products are essential to meeting our growth plan. R&D budgets are being slashed and it now costs us four times more to bring a new product to market than it did five years ago. No one has asked me to do this, but I think that it would help the company. I want to help."

"I know that actualizing the growth agenda is important to you, and no doubt about it, you are a good corporate citizen," I said empathically. "But let's step back. Where are you now? How do you know what is possible? I am just worried about the reaction that I see from your team. They have not bought into the goal."

Joe's mind was cranking on overdrive as he responded, "We have been reducing inventory over the past couple of years, but have had a tough time sustaining it." He then shook his head side to side as he said, "I know that this is a significant cut; however, when I set a stretch goal, I have such a good team

that they are able to deliver. I believe in them, and they make things happen. But, to answer your question directly, no, we have not tested to see if this goal is feasible. My thought is that by setting a stretch goal, then the team can achieve it.”

“Even so, Joe, I’m worried. How do you know if you can achieve this goal and maintain balance with your other metrics? You know that metrics are tightly interwoven as a complex system. Don’t you think that there is a reason you haven’t been able to sustain inventory levels before?” I asked quietly.

“I know that we do not have a lot of time now, but I would like to know what you mean by balance. Your concept of a complex system intrigues me. Can we talk later? I would love to know more,” Joe said with great intensity.

“Yes, we can talk later. But for now, let me give you a few thoughts. As you and I have discussed many times, the metrics in a company are tightly inter-related,” I continued. “There is an intrinsic relationship between cost, service, and inventory. Each organization has its own potential. I think that it makes sense to look at the metrics together as a system to see what this cut of inventory would impact. What do you think?”

“These are all good points. We cut inventories drastically at the end of the recession and it severely impacted customer service. How do I better understand what is possible? What do we want to do today with the group? It appears that we are stuck.” he continued.

“I am not sure,” I said. “Metrics systems need to be aligned. As a business leader, you are managing a complex system with increasing process complexity. There are finite trade-offs between metrics. Inventory is only one of the metrics in that complex system. I am worried about a goal to attack inventory in isolation. Your company is driving a growth strategy and 37 percent of your products are on product allocation. Demand is outstripping supply, and processes are unreliable. So, why did you pick inventory as the BHAG metric? Why not set a goal to reduce items on allocation as your BHAG for the New Year?”

“What if we work together to facilitate a group discussion to see what they think? With the current level of energy in the room, I think that we need to change the dynamic,” I continued, while quietly gesturing toward the group gathered over coffee. “Do you think that it would be possible to engage the group in a dialogue to see what they think of your BHAG?”

“Whoa! So many tough questions all at once. The reduction of inventory just seems easier than tackling a broader goal. No doubt about it, process reliability has been a constant struggle for us. I am game to engage the group in a dialogue to get their thoughts, but I am not willing to change my business goal.

My BHAG of 77 stands,” Joe said defiantly. “After all, this is a business, not a democracy.”

## MEET JOE

To understand my interaction with Joe and his team on this crisp winter day, let me introduce Joe. Prior to this team meeting, I had worked with Joe Samparini as a member of a divisional leadership group. This was my first meeting with Joe’s global team.

I always enjoyed our interactions. He was full of energy and I was captivated by his infectious smile. At first glance, you’d think Joe was a newspaper reporter because of his slightly disheveled appearance, the dark five o’clock shadow on his jaw, and his loosened tie, ruffled white shirt, and rolled-up sleeves. With his low-key, understated ways, it was easy to take him for granted.

He was a man of few words. Affable and curious, Joe got along with everyone, and people scrambled to be on his team. When tempers flared, he could diffuse anger with humor. It was his wit that set you back and let you laugh at the situation and humanize the people on the team. He was known as a great mentor, and as such it was hard for him to not have direct reports. In fact he was often advised by his human resources team to shed some direct reports and have the team report at multiple levels, but Joe loved people, and people loved Joe. So, currently, he had 40 direct reports. When he gathered the group together, they hung on his every word, and wanted to work hard. They did not want to tell him no. His team relished his smile, and loved to get a pat on the back from Joe when they had done a good job.

He had a lean frame, and stood a bit more than six feet tall. You could tell he was used to being the tallest person in the room by the way he leaned forward when he talked to you. As he would bend down to shake your hand, a loose curl of his dark wavy hair would flop onto his forehead. His eyes were dark brown, and he had the kind of dark circles under them that proclaimed his Mediterranean ancestry. While some people with dark eyes have a sparkle in their eyes or suggest a deep mystery, Joe’s eyes looked concerned and interested—he was always a good host.

Joe grew up in a working-class family in Pittsburgh, Pennsylvania. His grandfather was a steel worker, and his grandmother worked in a sweatshop sewing coats. His father and his six uncles and aunts were raised by their eldest sister. Joe’s father was raised with a strong work ethic, and by the time Joe came of age, the steel jobs were gone, but his father was a successful owner

of an auto dealership. Everyone in Joe's father's family had prospered as the result of hard work and perseverance, defying multiple recessions. The family worked hard, helped others, and spent money conservatively.

Like most of his cousins, Joe had the benefit of a college education. To Joe, the way to succeed was to devote your time and effort to making your employer successful. He was always looking for ways to help the company improve. This was his second company, after he had experienced a reduction in force in his prior manufacturing role just as his career was starting. He realized that the old, unwritten contract of mutual benefit between worker and company was no longer something that could be counted on, and Joe was intent on making himself so indispensable in this new job that he'd never be "downsized" again.

He was a career man. Ethical and strong, Joe could outwork most of his peers, but never wanted to take credit. As a lifelong learner, he was curious and always asked questions and provoked what he called "learning moments." He pushed his team to do well because he genuinely wanted his company to do well in the market. He was a team player, but never a boat rocker. His goal was to retire from the company at 65, and enjoy his bass boat and spend many days fly-fishing. He kept a bright red fly-fishing rod in the corner of his office to remind him that life was not all about work. He had pictures on his desk of himself and his son fishing.

Joe's personal goals centered on living and enjoying the journey. He had a large family. Joe considered himself fortunate to be a dad to nine girls and one boy. The boy was his youngest, and while Joe worked hard, he would also make it known if his son had a ballgame. He was always present at his son's games, sitting on the bleachers rain or shine, cheering and eating peanuts.

His relationship with his boss, Filipe, was tenuous. Joe wished that Filipe had a bit more humility and was more open to learn. Filipe was flamboyant and always wanted to be the center of attention. Joe was different: he knew that he didn't have all the answers and wanted to know more.

## SETTING METRICS TARGETS

The story goes on and on. It happens over and over again in corporate America. Operational leaders, like Joe, try to do the right thing but are unable to make progress in metric performance. In this story, Joe is making the mistake of looking at metrics in isolation. He lacks a basic understanding of the inter-relationship of metrics and the need to manage a balanced portfolio. This is common. Most companies lack the understanding of how to drive balance

and resiliency in metrics performance and how to improve year-over-year performance.

The examples in this book are based on a variety of experiences. They do not come from one interaction, but instead are insights gleaned from working with many companies. Joe is a fictional character who is a composite of real managers. I find that the questions that different companies ask, and sometimes forget to ask, are eerily similar.

Each leader wants to draw a road map, and they want to know where they are on their journey. There is a quest for excellence, but it is amazing how often leaders do not know *what good looks like*. There is a lack of clarity on the end state. The alignment of metrics to improve corporate performance is easier said than done. There is a struggle to align functional silos.

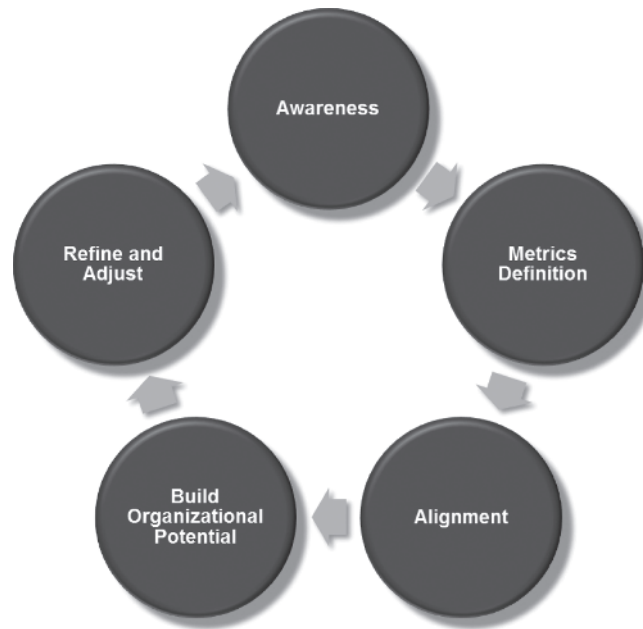
*Metrics That Matter* is written for the Joe (or Jane) in every organization who does not want to be average. They want to excel. There is a fire in the belly to understand how operational performance affects corporate performance. They are ready to start the journey and find answers to the question, “What is possible?”

## THE JOURNEY

The first step of the journey, for a guy like Joe, is to define operations excellence. The second is to identify the right metrics. The metrics chosen need to reflect all of the elements of the complex system. It is not easy. Putting together the metrics framework requires a clear definition of strategy. There are no cookie-cutter answers. The answer is slightly different for each company.

Figure 1.1 shows how the process for metrics maturity can be iterative. For teams like Joe’s, there are five steps. Progress requires continuous learning, refinement, and renewal over many years. It takes a year-over-year focus and discipline by the executive team. Change happens in small increments, not leaps and bounds.

The first step is *awareness* of the need to change. The stimulus is often failure. It could be a missed earnings call, surprises at the end of the quarter, loss of market share, a market downturn, or the loss of business. When this happens, bad news moves like a lightning bolt through the organization. The gap in performance is a wake-up call. Normally, good news will travel fast in the organization while bad news moves slowly. It is only when there is a crisis that bad news travels fast. When the organization recognizes the need for change and is ready for alignment on the metrics that matter, there is an awakening and a *call to action*.



**FIGURE 1.1** The Metrics Journey

The second step is metrics *definition*. This decision needs to be based on business strategy. It needs to be a conscious and a set of deliberate choices. The challenge is selection of a few meaningful metrics that represent all of the elements of the complex system. Most companies measure too many things and are not clear on which metrics matter. Gaining clarity is a part of the journey.

The third step is driving organizational *alignment* on the metrics system. This requires building a guiding coalition with a clear vision that needs to be cross-functional. In this step, functional metrics are aligned to corporate metrics frameworks, and targets are established to drive incentives.

The fourth step is to *build organizational potential*. A look at industry performance and accomplishments of industry peer group leaders helps to ground the discussion. The organization can then craft a road map for performance improvement.

The last step, and a very important one, is to *refine and adjust* the metrics to drive strength, balance, and resiliency, over time, in corporate performance.

It is a journey, not a sprint, and it is ongoing. Patience and discipline are essential. Most of the average Joes work in large matrixed organizations within a global company. Progress needs to be measured in millimeters, not meters. Substantial progress happens over the course of many years.

## Metrics That Matter at FMC Agricultural Solutions

In the process of writing the book, I have sent the chapters to industry leaders to get feedback. Throughout the book, I will share perspectives from these leaders. Here is an excerpt from an interview with Marty Kisliuk of FMC Agricultural Solutions:

If you don't measure the right things, you will not get better. However, if you measure them, it does not mean that you will get better. There is always tension. If you are not struggling with metrics, then you probably are not using them.

When I think about the metrics that matter, I start my thinking with business strategy. I ask myself, "What is it? And, how will we measure the success of this strategy?" I don't think that any leadership team can deal with more than five to seven metrics at the same time. There is an issue of focus and selective strategy. It varies by industry.

The metrics that matter are going to be the ones that you can take action on. There are two important words implied in the word *actionable*: *action* and *able*. I don't think that any organization can take action on all the metrics simultaneously. We need to start with two or three metrics and move them together.

After being chosen, the metrics cannot align organizations, but they can misalign them. It is only the action by leaders that can drive alignment.

A classic discussion for me is cost versus value. I want to sell value, and I define value as benefit over cost. Cost is only one side of the equation of value. As a result, you cannot have the operations team aligned for cost and the go-to-market teams of sales and marketing driving value. This is nonsense. We have to do it together.

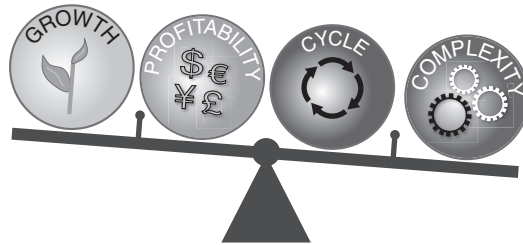
Marty Kisliuk, Director of Global Operations, FMC Agricultural Solutions

## Conquering the Effective Frontier

Joe asked me to come back the following week and we continued our talk. The BHAG discussion was still uncomfortable. He had gotten some tough feedback from his team.

As I worked with him, it became clear to me that he, like other executives I work with, was battling a list of ever-changing goals for growth, profitability, and cycles in the face of rising complexity. When this happens, frustration reigns. Arguments abound and tensions are high. Leadership teams want to do the right thing, but it just isn't clear what to do to move forward. The obstacles





**FIGURE 1.2** The Effective Frontier

are large, and the benefits are many. Each organization has a unique potential as defined by the Effective Frontier in Figure 1.2.

As we sat in Joe's office the next week, I tried to explain the concept of the Effective Frontier. "In our last conversation, you asked me about balance. Today, I want to share with you some insights from our research. We find that each company has its own unique potential. The frontier is defined by the interrelationships of growth, profitability, cycles, and complexity. The potential of the company on the Effective Frontier is determined by products, processes, technologies, markets, and channels. Within a company, there are finite trade-offs between interconnected metrics. While there are many definitions and possibilities of metrics for each part of the model, the most commonly used are these four."

I then turned and wrote the following definitions on the whiteboard in his office:

1. **Growth:** Year-over-year revenue improvements
2. **Profitability:** Operating margin (OM), cost of goods sold (COGS), and earnings before interest, taxes, depreciation and amortization (EBITDA)
3. **Cycles:** Cash-to-cash, inventory turns, and order cycle times, days of receivables, days of payables, and production cycle times
4. **Complexity:** Increase in products or channels

After replacing the eraser in its holder, and laughing with Joe about my poor handwriting on the board, I said, "Joe, companies want to power a profitable growth strategy, but often find themselves trapped at the intersection of operating margin and inventory turns. It is a battle of cost versus cash. Leaders like you must forge the operating strategy to help others understand the trade-offs."

"As complexity rises, the potential of the organization decreases. To maintain the status quo, you must constantly redesign operations. As you know,

there are many elements that affect operating complexity, like product proliferation, platform complexity, and changes in manufacturing operations.” I then paused and looked him in the eye. “As you know very well, these impacts on complexity usually have a negative effect on revenue per employee, return on assets (ROA), return on net assets (RONA), or return on invested capital (ROIC).”

Joe nodded in agreement and said, “This is our struggle. We are constantly being asked to reduce costs and improve working capital, and do more with less, while complexity escalates in the organization. We have no way to push back and manage the metrics that matter. We are not thinking about it holistically as a complex system.”

### About the Effective Frontier

It is important to note that the name of this model is not the *Efficient* Frontier. Readers who have taken economics courses may have even read it as the Efficient Frontier when speed-reading the page. This mistake is common. Often when I share this model in a lecture, someone will come up and try to correct me.

It is deliberately not named the Efficient Frontier. Why? The efficient organization is not necessarily the most effective. This is an important principle that underlies the research of this book. A singular focus on productivity or cost management can throw an organization out of balance. (An efficient organization is usually defined as one with the highest productivity per employee or the lowest cost per case.)

I had hit a nerve. I started the conversation by passing a piece of research to Joe that is shown in Table 1.1, and saying, “Today, nine out of ten companies are stuck. As shown in the table, when we analyze corporate balance sheet data for companies sorted by Morningstar sector, we find that nine out of ten companies have been unable to move forward for more than three years of sequential improvements on these two metrics. They are not stuck in a good way like a label to a bottle; instead, they are stuck in a bad way like a car in a massive traffic jam going nowhere. They may have made progress on a project, or a focus on singular metrics, but not in the delivery of a balanced metrics portfolio.”

Joe flashed his contagious grin and said, “This is certainly the case in my organization.”

“Take a look at how industries have changed,” I said, shuffling a sheaf of papers and handing to Joe what is shown in Table 1.2. “Growth is slowing;

**TABLE 1.1** Percentage of Companies Demonstrating Consecutive Improvement on Both Operating Margin and Inventory Turns for 2000–2012

Morningstar Sector	2 Years Only	3 Years Only	4 Years Only
Chemical (n = 22)	32%	9%	0%
Communications Equipment (n = 94)	33%	13%	2%
Consumer Electronics (n = 11)	18%	0%	9%
Drug Manufacturers—Major (n = 17)	12%	6%	0%
Household & Personal Products (n = 27)	37%	7%	0%
Packaged Food (n = 48)	25%	6%	2%
Packaging & Containers (n = 19)	26%	0%	0%
Semiconductors (n = 76)	33%	5%	1%
Specialty (n = 48)	31%	8%	2%

Source: Supply Chain Insights LLC.

**TABLE 1.2** Industry Growth Patterns

Industry	2000–2006	2007–2009	2010–2012
	Average	Average	Average
Medical Device Industry (n = 6)	10%	5%	4%
Consumer Packaged Goods (n = 14)	7%	7%	6%
Mass Retail Industry (n = 33)	25%	15%	7%
Chemical Industry (n = 7)	8%	5%	8%
Pharmaceutical Industry (n = 24)	13%	15%	9%
Grocery Retail Industry (n = 37)	13%	10%	10%
Hospital Industry (n = 6)	14%	12%	10%
Retail Apparel Industry (n = 3)	16%	14%	11%
Combined Food & Beverage Industry (n = 32)	10%	13%	12%
Automotive Industry (n = 39)	14%	26%	17%
Brand Apparel Industry (n = 3)	11%	9%	21%

Industry Average comprised of public companies (automotive industry: NAICS 336112), (brand apparel industry: NAICS 31522%, where % is any number from 0 to 9), (combined food & beverage industry: NAICS 3112%, where % is any number from 0 to 9, 311320, 311520, 311821, 311941 & 312111), (chemical: NAICS 325188 & 325998), (consumer packaged goods: NAICS 3256%, where % is any number from 0 to 9), (grocery retail industry: NAICS 44511), (hospital industry: NAICS 62211), (mass retail industry: NAICS 452%, where % is any number from 0 to 9), (medical device industry: NAICS 339112), (pharmaceutical industry: NAICS 325412), (retail apparel industry: NAICS 44812 %, where % is any number from 0 to 9) reporting in One Source with 2012 annual sales greater than \$5 billion.

Source: Supply Chain Insights LLC, Corporate Annual Reports 2000-2012.

and as growth slows, organizational tension for metrics improvements increases. Balance and resiliency on the Effective Frontier is tougher with slowing growth. This has been the struggle of many companies in the past three years.”

“Okay, I get it,” said Joe. “But what do I do? What is my call to action? My organization is clearly stuck, and I see that you are saying it’s a mistake to focus on only a single metric like inventory. Help me with the next step. What do I do now?”

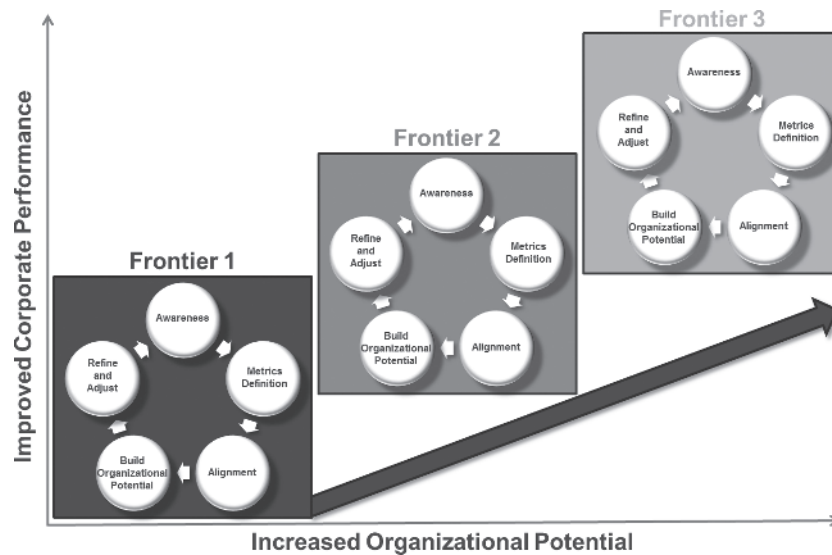
I loved Joe’s natural curiosity and openness to learn. It was something that I do not see often. I leaned forward and continued, “Getting unstuck requires the management of the Effective Frontier as a system. The metrics are interrelated. There are finite trade-offs. As you learned firsthand in your meeting the other day, the organization must resist the temptation to focus on piece parts, or a singular metric in isolation.” I shook my head, “The Effective Frontier needs to be managed as a complex system with complex processes with increasing complexity. As the business increases in complexity, the system needs to be continually redesigned.”

“As a leadership team, you must keep a focus on outputs, not just inputs. To drive change, one of the first distinctions that you need to adopt as a leadership team is the difference between functional and corporate performance metrics. This is important if you are to determine the sustainable metrics framework to improve cross-functional success.”

Joe nodded in agreement. “This is one of our major issues. We are so entrenched in functional metrics that it’s hard for us to also focus on corporate performance. Our incentives are based on what is good for the function. Our sales leader, Frank, is focused on volume while I am incented on cost; and every time that I engage with Lou, our controller, the discussion is about cash. It is impossible for us to maintain a steady course and be balanced. We want to do the right thing by our corporate objectives, and we talk about these at quarterly and annual meetings, but we are not incented to make progress on what you call the Effective Frontier. Shouldn’t this be cross-functional as a team?”

“Yes,” I said, “You are not that different from other companies that I work with. Trust me, I understand.”

“For best-performing companies, it is a series of conscious choices to improve capabilities and push to a new level of the Frontier. However, it happens slowly. It is only after achieving balance and resiliency in the current state that companies can push to a new level of performance. I define this as increasing ‘organizational potential.’ For this reason, the decision to move to a new level of the Effective Frontier is the last stage in the model,” I said, while pointing to what is shown in Figure 1.3.



**FIGURE 1.3** Moving from One Frontier to the Next

“When a company moves from one frontier to another, it requires a different type of thinking. To effectively make the transition from one level to another, companies have to adopt new mental models. They have to tackle change differently. It could be a new channel strategy or embracing new technologies and processes. Currently, the options abound. The challenge is choice, and working together to build potential cross-functionally.”

Joe interrupted. “I have a question. After selecting the right path to move the company to the next frontier, how do companies manage change? The people component is the toughest for us. If others are anything like our organization, the organization is hardwired for incremental, and continuous, improvement. The adoption of a new mental model flies in the face of conventional continuous improvement programs. We are good at the process methodologies of Six Sigma and Lean because they focus on gradual continuous improvement. How do you get the leadership team to risk disruption, to break some eggs, and then put the processes back together again to move to the next level?” Joe asked. “It sounds risky, and as you know, it’s hard to get people to agree to risk putting their job on the line.”

“People put their jobs on the line all the time, especially by not taking action when action is required,” I said. “That’s even worse, and plenty of people have lost their jobs because they failed by not even trying. You were the victim of a layoff because the management team did not have the courage to make tough choices.”

It was obvious that this point resonated, as Joe quickly retorted, “This is easier said than done. If you are stuck in the management of vertical metrics, you cannot see the big picture.”

“This is the secret to building systems with the Metrics That Matter,” I said. “You need to engage the entire team in a manner that not only gets mutual buy-in, but paves the future to deliver success. With incremental improvement, oftentimes one metric will win over another metric. Functional areas will become winners and losers. This is the power of defining a new frontier—you are all moving toward a common horizon that you’ve identified is desirable and attainable. To help you, I would like to share an interview that I recently completed with Marty Kisliuk of FMC. See if this resonates with your team. . . .”

“Good idea,” said Joe. “Why, don’t we have lunch and continue the discussion?”

## The Journey of Managing the Effective Frontier

As leaders, we must move the frontier. It must be done strategically. Many times we get trapped to move one or two metrics instead of the entire frontier. To do this, we must see progress in the metrics that we measure. The rest will be victims of entropy.

To make progress, we have to be good at root-cause analysis. The organization must find the root cause and act quickly.

We must resist the temptation to focus on one or two metrics in isolation. When we do this, we cannot move the frontier to the next level. Instead, as a leadership team, you must find balance and then push to the next level of the Effective Frontier. It is a strategic activity. It is not a week-to-week or a month-to-month initiative. It needs to be focused end-to-end throughout the organization from the customer’s customer to the supplier’s supplier on an annual basis.

I don’t think that we as business leaders recognize that we are on a frontier early enough. It is a paradox. It is the AND. You must move the metrics together while in balance and then redefine the process. Most organizations are not operating at full potential on their frontier and can make continuous improvements. However, when you reach full potential on the frontier, you must force a disruption and change the mental model.

Marty Kisliuk, Director of Global Operations, FMC Agricultural Solutions

## The Efficient Organization Is Not the Most Effective

Over faded gray trays in the company cafeteria, I continued. “Computing power and connectivity made greater productivity possible. Over the course of the past decade, the average global multinational company invested 1.7 percent of revenue on information technology.” I pulled a recent research study from my purse and pointed to the data (see Table 1.3). “The impact was a dramatic improvement in employee productivity, as defined by revenue per employee, in all manufacturing sectors.

“Technology was an enabler. For many, it was a disruptor. It permitted and empowered companies to increase potential and move to new levels of the Effective Frontier. Today, the belief that the efficient organization is the most effective defies conventional wisdom. The historic focus was to improve efficiency. The belief was that increasing efficiency would lower costs and improve performance.” The reduction in labor did not translate to an improvement in operating margin. As I showed him the chart, I said, “However, as shown here, this singular focus had an adverse effect on operating margin and inventory cycles in 7 of the 11 industry sectors.” Joe’s eyes sparkled. He loved data, and motioned for me to continue.

“In some industries, costs were shifted. Three out of the 11 industries grew sales and general administration (SG&A) expenses. In an effort to spur growth, there was a shift in spending from the back office (manufacturing, distribution, procurement and logistics) to the front office (sales and marketing). There was a belief that we could save money in the back office, and move the money to the front office to fuel growth; however, this level of thinking was flawed. It was not that easy. Teams need to align to win together. Functions need to build potential on the Effective Frontier jointly as a strategy.”

Joe asked, “So, since most companies went for improving employee productivity, why didn’t margins improve at the same time?” As I stirred my black coffee, I saw that it was as opaque as the answer to his question. “I like this line of questioning. This is something that I am doing more research on, but right now, I believe that it was a misaligned emphasis on the *input* metric (revenue per employee), not a focus on the *output* metric (operating margin). Most companies can put data into systems, but they cannot get data out to measure progress. As a result, the focus is misaligned to concentrate on input, not output. That’s why metrics matter so much! Would you agree?”

### *The Need to Focus on the Right Metrics as a Complex System*

On the walk up the stairs back to his office, Joe stated, “I get it. Companies want to increase, or accelerate, inventory turns and reduce cash-to-cash

**TABLE 1.3** Industry Progress over the Past Decade

Industry Snapshots (2000–2012)					
Industry	Operating Margin	Inventory Turns	Cash-to-Cash Cycle	Revenue per Employee (K\$)	SG&A Ratio
Pharmaceutical Industry (n = 24)	0.19 ↑ 12%	3 ↓ 8%	139 ↓ 1%	462 ↑ 98%*	27% ↑ 24%*
Medical Device Industry (n = 6)	0.16 ↓ 56%	3 ↑ 2%	141 ↓ 4%	270 ↑ 59%*	28% ↓ 3% <sup>^</sup>
Retail Apparel Industry (n = 3)	0.14 NC% <sup>''</sup>	5 ↑ 1% <sup>''</sup>	9 ↑ 627% <sup>''</sup>	532 ↓ 26% <sup>^</sup>	19% ↑ 15% <sup>^</sup>
Brand Apparel Industry (n = 3)	0.13 ↑ 44%	4 ↑ 5%	91 ↓ 15%	254 ↑ 82%*	36% ↑ 14% <sup>^</sup>
Consumer Packaged Goods (n = 14)	0.13 ↑ 17%	5 ↑ 4%	45 ↓ 45%	333 ↑ 82%*	34% ↓ 15%*
Combined Food & Beverage Industry (n = 32)	0.11 ↑ 11%	8 NC	41 ↓ 26%	455 ↑ 122%*	19% ↓ 30%*
Chemical Industry (n = 7)	0.10 ↓ 45%	5 ↑ 5%	89 ↓ 16%	458 ↑ 118%*	14% ↓ 32% <sup>^</sup>
Hospital Industry (n = 6)	0.07 ↓ 11% <sup>''</sup>	11 ↑ 53% <sup>''</sup>	-84 ↓ 3215% <sup>''</sup>	165 ↑ 68%*	12% ↓ -54%*
Mass Retail Industry (n = 33)	0.05 ↑ 20%	8 ↑ 17%	47 ↓ 17%	482 ↑ 173%*	19% ↓ 4%*
Automotive Industry (n = 39)	0.04 ↑ 67%	15 ↑ 5%	44 ↓ 37%	616 ↑ 199%*	8% ↓ 30%*
Grocery Retail Industry (n = 37)	0.04 ↓ 33%	12 ↑ 12%	-7 ↓ 88%	358 ↑ 31%*	16% ↓ 16%*

Industry Average comprised of public companies (automotive industry: NAICS 336112), (brand apparel industry: NAICS 31522%, where % is any number from 0 to 9), (combined food & beverage industry: NAICS 3112%, where % is any number from 0 to 9, 311320,311520,311821,311941 & 312111), (chemical: NAICS 325188 & 325998), (consumer packaged goods: NAICS 3256%, where % is any number from 0 to 9), (grocery retail industry: NAICS44511), (hospital industry: NAICS 62211), (mass retail industry: NAICS 452%, where % is any number from 0 to 9), (medical device industry: NAICS 339112), (pharmaceutical industry: NAICS 325412), (retail apparel industry: NAICS 44812%, where % is any number from 0 to 9), reporting in One Source with 2012 annual sales greater than \$5 billion.

<sup>''</sup>Calculated from 2001–2012 due to data availability;

\*Calculated from 2002 to 2012 due to data availability;

<sup>^</sup>Calculated from 2003 to 2012 due to data availability;

NC = no change.

Source: Supply Chain Insights LLC, Corporate Annual Reports 2000–2012.



cycles. Improving inventory turns and decreasing cash cycles improves working capital; but, an increase in complexity will decrease margin and reduce inventory turns. They are connected and interrelated. Working these metrics as a complex system while on the effective frontier enables companies to build a road map to drive business strategy. The freeing of capital enables investment. Right?”

I nodded while laughing. Joe walked up the stairs two at a time leaving me out of breath as I struggled to keep up with him while continuing the dialogue. “In the past decade, the use of technology improved the results of large companies greater than \$5 billion in revenue. While companies thought that the overall results would be greater, they improved efficiency, not the overall results that they hoped. As we discussed at lunch, it did improve revenue per employee. The adoption of processes and technologies has been slower in mid-market companies with less than \$1 billion in revenue. *Whew . . .*” I said, as I leaned my hand against the wall at the top of the stairs to get my breath.

Joe laughed and said, “Sorry, I get carried away. I am so used to the stairs and taking them two at a time that I didn’t mean to make you winded. I guess it’s just easier for a tall guy to take these stairs fast. Let’s take a moment to catch our breath. I appreciate you explaining this to me.” We stood on the stair landing for a couple of minutes and talked about his challenges.

### *Moving Forward, Not Backward*

As we walked down the hall, we continued the dialogue. Joe’s questions were getting more intense. As he peppered me with them, I stated, “Today, there are more challenges to managing metrics trade-offs while on a frontier than earlier in my career. The pace of change is rapid. Think about it. Today, businesses are larger and more global. Organizations are not aligned. As a result, there is a greater need for focus and conscious choice.”

Joe agreed. “I cannot speak for everyone, but I know for us the past decade was turbulent. Demand and supply volatility increased. Markets became more competitive. Merger and acquisition (M&A) activity was rampant. To meet the expectations of financial markets, we pushed costs and elongated the cycles of suppliers. This improved our cash-to-cash cycle by lengthening payables, but is starting to impact margin.

“It is easier to shift costs than improve internal operations,” Joe continued. “Over the past year, I had a lot of pressure from my finance team to lengthen payables. However, I keep telling them that it is a penny-wise and pound-foolish strategy, but this is hard for them to see. Pushing costs and waste backward to suppliers and lengthening payables will give short-term benefit; but, I am now

seeing that it can cause longer-term issues.” The conversation had been as fast as our walk, and we were now back in Joe’s office.

### Moving to the Next Level on the Effective Frontier

“While this makes sense to me conceptually, it is difficult to orchestrate. As a leadership team, here, we are focused on functional metrics. The concept of the Effective Frontier is a new concept. How would you suggest that we go about adopting the methodology?” asked Joe.

I thought hard and leaned back in my chair. I paused for a moment, and said, “Each organization that I work with has its own unique potential, and is operating on its own frontier. Within each organization, the functional areas also have their own unique potential. The goal is to first recognize it on a corporate level, and then on a functional level, and then define the frontier that best realizes corporate objectives at all levels. The second goal is to know when to move to the next level. This takes training.”

“I think that I am getting it. I am trying to absorb the concepts, but it is like drinking from a fire hose,” Joe said.

“I know. It’s for this reason that most organizations are treading water. It’s hard to get the attention of the leadership team. With the rise of complexity in the last decade, most organizations have made unconscious trade-offs,” I stated.

“What do you mean?” asked Joe. “Tell me more about unconscious trade-offs.”

“Sure, let me explain,” I continued. “As complexity increased—products proliferating and service expectations rising—the impact on the metrics portfolio and the potential of the organization is not known. While it can be modeled today using new technologies, most companies do not. It is not a conscious choice. The increase in complexity makes it harder to achieve the same level of operating margin and inventory turns,” I said while looking at my watch.

“Why do companies not model it and drive the outcome to maximize potential?” asked Joe.

I shrugged my shoulders and shook my head. “Isn’t it ironic that companies design factories, and work for years on the development of those factories, but do not model corporate performance systems? I think that it is because it is a new way of thinking,” I stated and stood up and started to gather my papers and pack my briefcase.

“In the face of this challenge, there is a need to drive conscious choice on metrics trade-offs. I can work with you and your team to help you understand how industry leaders that did not modify business processes and assets to drive strength and year-over-year improvement in performance have struggled to deliver a balanced portfolio with resiliency. Joe, do you think that this would

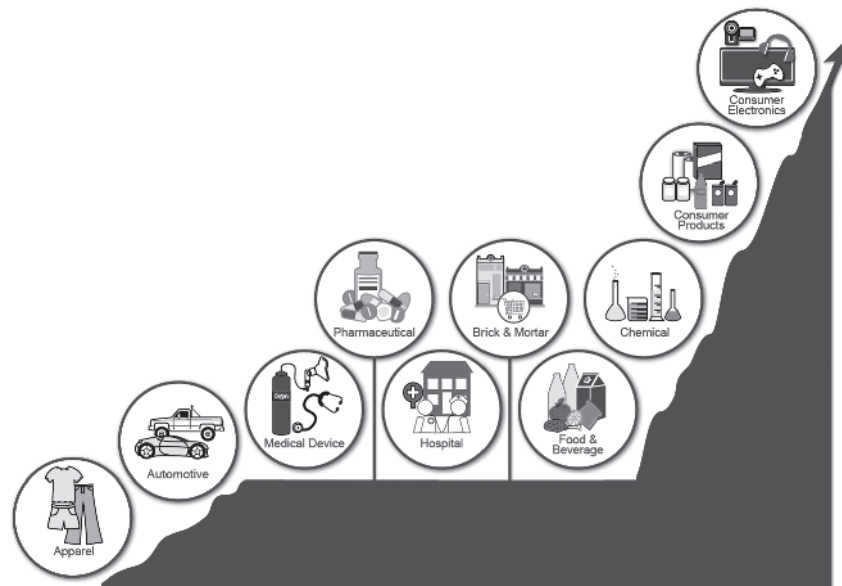
be possible?” Joe nodded his head yes, and motioned for me to continue as he said, “I know that you only promised to stay an hour, but I would like you to continue. I am finding this discussion to be very helpful.”

“Okay,” I said. “Let me make a phone call. Let’s take a quick break, and we can work together for a couple of hours.”

**Getting Off the Plateau**

“Thanks for staying,” said Joe. “It’s just that I don’t get a lot of time to think strategically, and I am finding this helpful. Can we pick up where we stopped? Why are companies stuck?” asked Joe.

“The leader of operations knows that inventory cycles and costs need to be managed together. Each industry has a different set of rhythms and cycles. When complexity increases, these change. It is an industry-specific response. Over the past decade, the progress of industries has varied. Most companies are plateaued. Progress in corporate performance is stalled. Companies in the consumer electronics and consumer packaged-goods industries have made the most progress. Other industries, like apparel and automotive, are going backward and losing ground,” I said as I showed him Figure 1.4.



**FIGURE 1.4** Performance Plateau  
 Source: Supply Chain Insights Metrics That Matter Series ([www.supplychaininsights.com](http://www.supplychaininsights.com)).

“It is easy to slip,” Joe said as he gazed into the parking lot. The sun shone brightly as the bus stopped to let children off onto the sidewalk across the street in front of his office. “One of our issues is alignment. Every meeting is like the first day in school where we’re trying to find our place. We have similar tasks but we are competing with each other.”

“Yes, I know,” I said following his gaze out the window. “To drive organizational alignment, companies need to understand the trade-offs, and what is possible, while defining the Effective Frontier and managing it as a complex system. It’s like knowing what needs to be done to graduate to the next grade. They also need to choose the right metrics. It requires going back to school to rethink the basics of business.”

**TABLE 1.4** Financial Ratios Analyzed to Understand the Effective Frontier

Financial Metrics			
Growth	Profitability	Cycle	Complexity
Common Shares	Cash	Cash-to-Cash Cycle	Altman Z
Employee Growth	Cash Change in Period	Days of Finished Goods	Capital Turnover
Employees Market Capitalization	Cash on Hand	Days of Inventory	Current Ratio
R&D Margin	Cash Ratio TIM	Days of Payables Outstanding	Quick Ratio
R&D Ratio	Cash Ratio Quarter	Days of Raw Materials	Return on Assets
R&D to COGS Ratio	Cash Ratio Year	Days of Sales Outstanding	Return on Equity
Revenue	Cost of Goods Sold	Days of Work in Progress	Return on Invested Capital
Revenue Growth	EBITDA	DPO/DSO	Return on Net Assets
Revenue Growth TIM	Free Cash Flow Ratio	Finished Goods Inventory	Revenue per Employee
Revenue TIM	Gross Margin	Inventory	Working Capital Ratio
SG&A Margin	Gross Profit	Inventory Turns	
SG&A Ratio	Net Profit Margin	Receivables Turns	
SG&A to COGS Ratio	Operating Cash Flow Ratio	Raw Materials Inventory	
	Operating Margin	Work in Progress Inventory	
	OPEX Ratio		
	Pretax Margin		

Source: Supply Chain Insights LLC.

“These trade-offs cannot be determined just by setting up a spreadsheet. It requires the use of more advanced analytics. The use of modeling techniques allows companies to determine the appropriate targets in each metrics area to align against potential. To understand the concept of metrics balance, my research team has been evaluating the progress of each industry based on peer group metrics from each of the areas of the Effective Frontier,” I said, while pushing the sheet shown in Table 1.4 across his desk. “These are available from corporate balance sheets and income statements; but we find that there are few repositories of this data to enable analysis of multiple years of data and to capture the patterns, so we’ve put together a unique data repository of our own from our research.”

“Yes,” Joe said. “I’m glad the metrics are available, but I’m too busy to try to sort out what’s relevant to us. I’d like to take a look at what you’ve put together on this so we can do some benchmarking.” The discussion then turned to a review of the research and what we could do together with his leadership team to build a guiding coalition to support the company’s expansion into Brazil. I gave him an excerpt from a new book I was writing about the Effective Frontier to read when he got a minute.

### Defining the Research Methodology to Understand Progress on the Effective Frontier

The definitions of ratios most commonly used in the analysis of corporate performance in this book are provided in the Appendix.

This book is the culmination of a three-year research project to understand effectiveness. To write this book, we built a database using public sources of information. We then grouped the data by NAICS codes, and began plotting the intersections of the Effective Frontier manually using orbit charts to understand the trends. We then began to review the patterns of the plots with industry leaders to gain insights into the drivers of the trends.

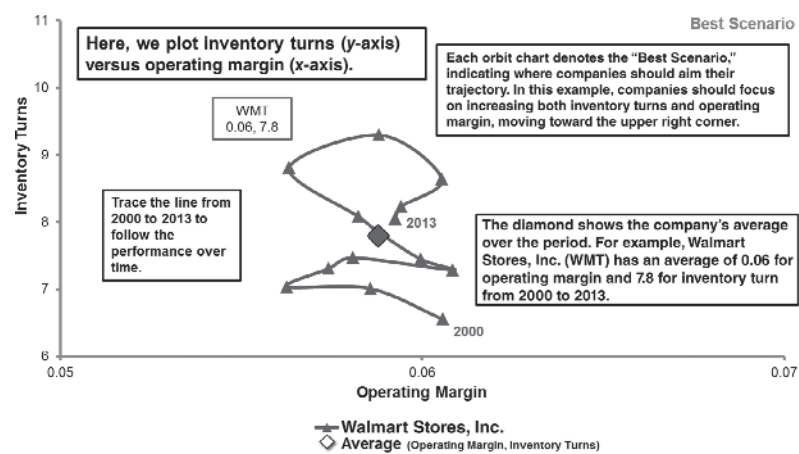
An orbit chart may seem abstract at first—like a modern art painting of wavy lines—but we have found that it is the best way to study the patterns, or progression, of operational metric performance over time.

Let’s take a closer look. Figure 1.5 is an orbit chart example. This is the pattern, or progression, for Walmart for the period of 2002–2012 at the intersection of two metrics: inventory turns and operating margin. The averages for the period are shown in the box along with the stock

*(continued)*

(continued)

ticker symbol. In each orbit chart, because the metrics can get confusing, we identify which corner of the chart points toward the best scenario. Note that Walmart has made great improvements on inventory, but not in margins. As we will see later, Walmart is an example of a company that has made great strides in improving the efficiency of operations, but not in driving overall effectiveness.



**FIGURE 1.5** Example of an Orbit Chart

Source: Supply Chain Insights LLC, Corporate Annual Reports 2000–2013 from One Source.

I continued, “Joe, as we have mined the data, we find three intersections of the financial ratios to have the most interesting patterns. Each offers a distinctly different view, and you cannot assess improvement without looking at the three together.” I wrote the three intersections on the whiteboard in his office:

1. Inventory turns versus operating margins
2. Year-over-year growth versus return on invested capital
3. Revenue per employee versus inventory turns

Joe hurriedly scribbled them down. As I worked with Joe, I found that he was writing more and more notes to himself in his black notebook. His intensity amused me. He was such an eager and willing student.

### *Details Matter: The Nitty-Gritty of the Analysis*

“It’s hard work,” I continued. “In fact, we underestimated the amount of work to do the analysis of corporate balance sheet data and the determination of the Effective Frontier. When we started the analysis, we used absolute numbers, but we ended up using financial ratios. This shift enabled the comparison of companies across currencies and enabled us to better understand the trends of companies of differing sizes. After plotting the trends, we partnered with an operations research team at Arizona State University to help define the methodology to determine balance and resiliency. The data is complex, and we wanted to define a simple methodology to translate abstract patterns into meaningful insights.”

“I have difficulty doing this type of analysis, but when I see your research, I love it. I am a fan,” said Joe. “It’s one thing to talk about corporate performance, and another to understand how it transforms a balance sheet. When I get to the point when I understand this, I will feel real pride.”

I smiled and nodded in agreement. “Let me share some insights. One of our first big insights when we started looking at performance results was the danger of using compound metrics in a vacuum. Let me explain: A compound metric is the result of a combination of individual metrics. For example, the two most commonly used compound metrics that one finds in corporate measurement systems are ‘cash-to-cash’ and ‘perfect order.’ Let’s take cash-to-cash.” I then turned to his board and wrote, “Cash-to-cash (C2C) = Days of receivables (DOR) + Days of inventory (DOI) – Days of payables (DOP) outstanding.”

Continuing, I said, “So, when you look at progress in C2C, as a leader, you must ask a series of questions:

- What drove the change?
- Did we change the policies with our customers, resulting in a change in DOR, or did we make the terms longer with our suppliers, increasing DOP? Or did we make improvements in inventory (DOI)?
- How have these three elements changed over time?”

Joe agreed, “The answer could be one, any, or even all of them. I see how a compound metric might make it hard to compare one company to another, because they could be getting a similar result for very different reasons!”

“Yes,” I said. “For example, we found that the most common driver of cash-to-cash improvements was lengthening the days of payables and paying suppliers later.”

Joe rubbed his hands and smiled, and said, “That sounds familiar. It worked for one quarter before it caught up with us. This is a difficult discussion to have with our financial team. When the push for cash is on, it sounds so simple to increase payables; but, I know that we end up eating it when our operating margin rises a couple of quarters after the change.”

“Another compound metric is the ‘perfect order.’ Do you use this for customer service?” I asked.

“We tried it a couple of years ago, but dropped it because it was too hard,” Joe said.

I continued, “I understand. This metric lacks an industry-standard definition, and varies from company to company, but many companies try to use it. The most common definition is based on an equation using three metrics.”

I wrote on his whiteboard:

$$\begin{aligned} \text{Perfect order} &= \text{Number of total orders shipped for a period} \\ &\quad - (\text{Orders that did not ship on time as per the customer's} \\ &\quad \quad \text{request date}) \\ &\quad - (\text{Number of orders that did not ship complete with the} \\ &\quad \quad \text{products ordered}) \\ &\quad - (\text{Number of orders that had damage on receipt}) \end{aligned}$$

I spun around and continued, “Similar to the cash-to-cash discussion, if there is a change in the perfect order, the answer is not obvious. Instead, companies have to ask:

- What drove the change?
- How have these three elements changed over time?
- What affected the performance in the three components of this metric over time?

As a result, companies should use caution in using compound metrics and absolute numbers. Compound numbers can drive the wrong conclusions and absolute numbers do not allow the level of comparison needed for benchmarking between companies.”

Joe was now pacing. “So much to learn. So much to do. How do we get started?” he asked.

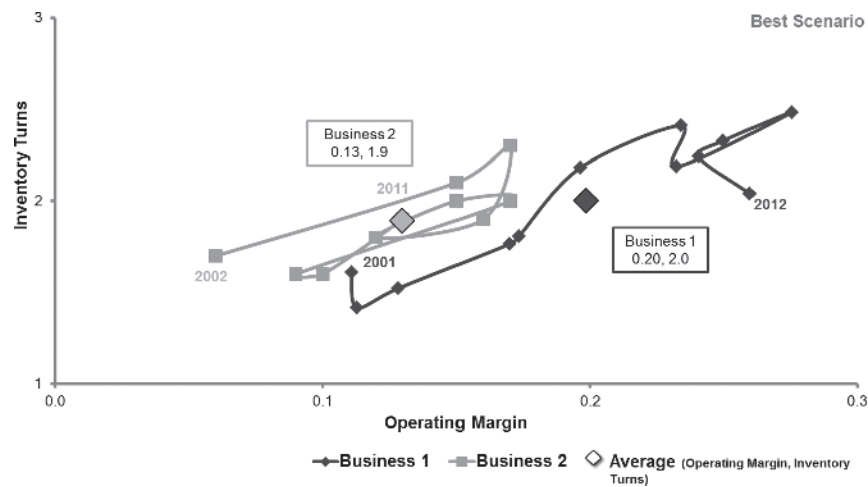


**Benchmarking Companies over Time**

“There are many ways that we could work together,” I said. “The methodology doesn’t just apply to the benchmarking the whole company. It can also yield valuable insights at a finer, more granular level by benchmarking divisions. In our work with clients, we find that segmentation of the business by division, and by geographies within the company, yields valuable insights. When we do this more detailed analysis—analyzing divisional and geographic data—the concepts are more quickly grasped by the team.”

Then, I showed him an example of this type of analysis as illustrated in Figure 1.6.

“See, Joe, in this example, the patterns of the two divisions of this company are very clear. Division 1 is operating at a higher potential and making year-over-year improvement, while Division 2 is struggling to make clear headway. The use of root-cause analysis to discover the ‘why’ can help the organization drive continuous improvement and maximize the potential of Division 2 on the Effective Frontier,” I said.



**FIGURE 1.6** Example of an Orbit Chart Comparing Two Businesses within a Corporation on Inventory Turns versus Operating Margin  
 Source: Supply Chain Insights LLC, Corporate Annual Reports 2001–2012 from One Source.

Joe then said, “I love it. I would like to talk to you about doing this type of analysis for all our divisions and geographies. I think that it could help our team. Let’s talk about how we could do this. We’ve put so many systems in place already to try to see patterns in our data, yet we’ve still not got any insight.”

### Rethinking Metrics: Using Technology to Manage the Organization in the Information Age

I looked at my watch and said, “I know we only have another hour together, but let me give you a short answer of why I think this has happened, and maybe we can pick it up when we meet again. The ability to drive data-driven decisions has improved through the use of technology. Dashboards, scorecards, in-memory reporting, and visibility technologies make it easier to manage metrics within a company, but companies have to be clear on the metrics strategies. This is the challenge for every Joe like you.”

With that, Joe laughed. “So, I am not unique? Do other organizations have the same problem?”

I nodded, saying, “Many times companies will leap to improve metrics through technology without doing the hard work of figuring out which metrics matter and how to align the key performance indicators into a metrics strategy.”

“There is also an issue of functional myopia. The views of operations and finance do not easily align. One of the problems is that financial metrics are backward-looking and transactional, while operational metrics are forward-looking based on flows. But the metrics you get from technology are based only on historical data. It’s like trying to drive a car on a winding road at 60 miles an hour while looking in the rear-view mirror to steer. Closing this gap requires descriptive, predictive, and prescriptive analytics. While descriptive analytics enable reporting and data analysis, predictive and prescriptive analytics enable the management of operational flows. In contrast, predictive analytics enable operational alerting while prescriptive technologies recommend actions to take. Robust analytics are essential to ensure metrics alignment and are an important step in driving success on a metrics journey.”

“This has certainly been one of our issues,” said Joe. “We have a guy on the sales team who’s really smart and can put together spreadsheets so we can analyze all kinds of things, but they’re all about what’s already happened, and the sales forecasts. . . . Well, you know, they’re really only good about three or four

months out, and the sales team always inflates the numbers. It's an ongoing problem."

"When embarking on a project to improve metrics, the average Joe, like you, will need to work with the information technology (IT) department to build measurement systems. This includes self-service reporting, dashboards and scorecards, and alerting systems. Analytics technologies are closely woven into a metrics project to make progress possible. It should be easy, but it is not. I would like to tell you more, but right now I really must be going. As much as I have enjoyed the discussion, I am late." I then suggested that Joe read the article that I had just completed, "Managing Metrics in the Information Age." We agreed to discuss it at our next meeting.

With that, we shook hands and I left my article on Joe's desk. Some excerpts are offered in the following feature.

## Managing Metrics in the Information Age

Today, business leaders live in the Information Age. Technologies make new ideas possible. Data flows quicker and computational power enables quicker assessment of complex problems. Decisions can be more data-driven and real-time information enables new capabilities. More and more, metrics can be measured. Targets can be assessed more quickly. However, this only adds value if the technological advancements can be successfully aligned with business outcomes. This is the challenge.

Why is there a problem? Simply put, companies are new at it. We are only 40 years into the Information Age. The adoption of technology in the Information Age followed the Industrial Revolution. The Industrial Revolution was all about mechanization. There was a shift from making things by hand to the mechanization and adoption of manufacturing processes. The focus was on the management of physical assets. It was all about the control of financial assets and liabilities.<sup>1</sup>

The Information Age started in 1975 with the widespread adoption of computers. The practices and policies were a stark contrast to those of the Industrial Revolution that stretched from 1850 to 1975. It makes possible global connectivity and new forms of analytics to drive business insights. Today, most organizations are retiring leaders from the Industrial Age while trying to maximize the potential of the Information Age. This changing of the guard is not easy.

*(continued)*

(continued)

## Impact of the Information Age on Metrics and Corporate Performance

This shift was a fundamental change at the core of the organization with intense repercussions:

*What drives value.* In the Information Age, companies are wired differently. Products and services are enhanced by data. OnStar differentiated General Motors while Pandora redefined the music experience. Around us today, digital data transmission improves the value of molecules and atoms. As a result, manufacturing is more information-intensive with less labor and capital dependency. Ironically, workers are more productive today, yet their wage rates are less. Market drivers are constantly changing. Metrics are more complex.

*Redefinition of management principles.* In the traditional management models of the Industrial Age, investments in people were the primary predictors of a new venture's future performance. This is not so today. It is now possible for a group of relatively inexperienced people—as demonstrated by Facebook, Microsoft, and Twitter—with limited capital, to succeed on a large scale. Metrics help to ignite groups of people to action.

*Global workers.* As connectivity has removed the friction from borders, workers now compete in a global economy. For example, in the United States, from January 1972 to August 2010, the number of people employed in manufacturing positions fell from 17,500,000 to 11,500,000 while manufacturing value rose 270 percent.<sup>2</sup> In the next decade this pattern will continue. Metrics have different definitions in different countries. With language and cultural issues, it is critical that the metrics are simple and clearly communicated.

*Redefinition of the office.* More and more employees telecommute. The water cooler is now a virtual experience. In 2012, 2.6 percent of the U.S. employee workforce (3.3 million people, not including the self-employed or unpaid volunteers) considers their home as their primary place of work.<sup>3</sup> As a result, it is more important for companies to have metric dashboards. Leadership teams have to focus more energy on the communication of goals and results. Organizational alignment is more difficult.

*Management of the global company.* Over the past decade companies have become global. However, companies define "global" differently. While each organization we study defines global governance models slightly differently, they will all agree that the management of a global organization is growing increasingly more difficult. The definitions of regional/global governance, and the evolution of KPIs for a global

organization, are critical elements to manage a successful global organization.

*Processes that have not caught up with the change in technology.* Our technologies are digital. Our processes are not. While the cost of computing has moved from \$222 to \$.06 per million transistors and storage costs have moved from \$569 to \$.03 per gigabyte of storage, and Internet bandwidth has improved from \$1,245 to \$23 per megabits per second, the organization's operational processes remain relatively unchanged.<sup>4</sup> Most companies have digital technologies with analog-based processes. We have not redefined metrics based on what is possible. New possibilities abound. The impact of less data latency and increasing capabilities of mobility and sensor data offer a wealth of opportunities.

*Proliferation of data and a need for insights.* We are living in the Information Age. Data abounds. Global connectivity transcends borders. Third-generation analytic systems improve workflows. Real-time data is now possible. Yet, as shown in Figure 1.7, companies struggle to use data. Employees cannot get the data that they need. It is their number-one business issue. As a result, metrics need to be defined very clearly while understanding the limitations in data availability.

Data is growing in velocity and variety. However, companies' ability to use data is limited, and the capability of the company to drive performance based on data-driven decisions aligned with metrics is even more immature. It is a limiting factor to actualizing the promise of the information economy.

### **Will New Technologies Help? Could Big Data Systems Offer Promise?**

Many think that the answer lies in new technologies. Some may also allege that the technologies associated with the current Big Data technology evolution may help. We partially agree. It is our view that we need to start with the rationalization of metrics and design of data-driven processes, while avoiding the hype about Big Data technologies.

To clarify the discussion, let's start with a definition. For the purposes of this book, we define Big Data as processes with data volume greater than a petabyte. This large data volume is often coupled with a growing variety and velocity of data.

A petabyte of data sounds like a lot of data, but how much is it, really? A petabyte of data is 1,024 terabytes. A terabyte of data is 1,024 gigabytes. In more graphical terms, a petabyte of data represents

*(continued)*

(continued)

20 million four-drawer filing cabinets filled with text or the storage of 13.3 years of HDTV video. Twenty petabytes represents the amount of data processed by Google on a daily basis. It also represents the number of hard-disk-drive spaces manufactured in 1995.<sup>5</sup>



**FIGURE 1.7** Employees within Corporations Struggle to Get the Right Data

Base: Manufacturers, Retailers, Distributors, 3PLs, and Other with EDI/XML—Total (n = 79).

When it comes to supply chain management, which of these items are the top three elements of business pain for you personally? Please select no more than three.

Source: Supply Chain Insights LLC, 828 Study (June–September 2013).

Unfortunately, the term *Big Data* is the buzzword du jour. While most companies are intrigued with Big Data concepts, companies cannot effectively use the data that they have today, and most do not have the levels of data volume that would qualify for the Big Data definition used in this book. Today, new concepts are emerging that over time could enable disruption to move companies to the next frontier. However, based on current maturity models, the focus today should be the use of technology to improve analytics to drive continuous improvement on the Effective Frontier.

## A Future View of Big Data as a Potential Disruptor

When it comes to Big Data, confusion reigns. To drive the opportunity, companies must bypass the hype. Over the next five years, Big Data concepts will become a reality; however, there are three areas of concern to focus on to maximize the value.

1. *New architectures.* Most of the value will come from new forms of data. These new forms of data do not fit well into traditional architectures. Traditional systems use only structured data. The Big Data era will make many of the investments from the last decade obsolete. As these new architectures are defined, many will forget the need to align and design metrics systems to drive data-driven decisions.
2. *Process experimentation.* Big Data offers the opportunity to redefine processes from the outside-in (from the channel back) and define customer-centric operations. This is in stark contrast to the inflexible IT investments installed over the last decade that respond inside-out based on orders and shipments.

These traditional investments improved the organization's response, but did not allow the organization to sense, shape, or orchestrate processes based on market signals, outside-in, from market-to-market. New forms of data (e.g., pictures, images, social data, sensor transmissions, input from global positioning systems (GPS), the Internet of Things, and unstructured text from e-mail, blogs, and ratings and reviews) offer new opportunities, but they also require new techniques and technologies. These initiatives are promising, but should be seen as experimental. They will slowly take shape and enable opportunities over the next five years.

3. *Skillsets.* To mobilize, companies need to train and develop people with new skills and embrace new forms of technologies. The technologies are immature and the concepts are emerging. As a result, business leaders should see the evolution of Big Data concepts as an investment in the future.

As a result, Big Data technologies are promising, but they are too immature today to help leaders fulfill the short-term promise of the Information Age. For many, it will be a distraction. For the leader, it should be seen as a long-term investment with a promising, but uncertain, outcome. In short, we cannot ignore the trend, but it does not help us today to capture the opportunity of improving the Metrics That Matter in the Information Age. Instead, companies should maximize the use of descriptive, prescriptive, and predictive analytics to improve metrics performance.

The next Monday, my phone rang. It was Joe. He was animated as he explained, “I loved your article. It makes so much sense. I am starting to understand why we are not making more progress. We are looking at technology for technology’s sake. We are not clear on how to use data. I think one of our issues is organizational alignment. Can you come back to see me and continue our discussion next week?” I checked my calendar and booked a time for Joe.

### Improving Performance

The next Tuesday, I found myself back in Joe’s office with a warm cup of black coffee in my hand. Joe was excited to tell me about his week. The team was in the middle of a major transformation to start up a new operation in Brazil and he thought I could help. As we discussed the project, we talked about the issues of organizational alignment.

“When metrics are aligned to the right data, and processes and information are aligned to drive performance, great things happen. For most companies this is the goal. Why, then, have companies stumbled? As you have seen in the case studies in my recent book, *Bricks Matter*, when metrics are well defined and data is aligned, companies outperform their peers, and the organization has greater resiliency. However, when it is done poorly, progress is stalled and metrics performance is halted,” I explained.

Joe then asked, “Why is resiliency important? Why do you put so much emphasis on it in your writing?”

“Companies want reliability in performance. Resiliency is a measurement of reliability. When given the choice between fast improvement with volatility, and slower results with more reliability, companies will choose reliability. The environment is tougher, making reliability both more important and even more difficult to achieve. Markets, with impacts from both channel and supplier relationships, are more volatile. When the organization is resilient, as the market shifts, corporate systems, where data and processes are aligned with metrics, can flex to ensure that the desired portfolio of metrics can be managed to drive year-over-year improvements. Make sense?” I asked.

Joe nodded, but I could see that he was still unsure.

**R**esiliency—the physical property of a material that can return to its original shape or position after deformation that does not exceed its elastic limit.<sup>6</sup>



“Let me give you an example. Maybe this will resonate. During the recession that started in December 2007, organizations were not resilient. The impact varied by industry, but was more pronounced on corporate maturity and metric alignment in industries further back in the value chain. In industries like chemical and plastics, factories were shuttered. Some companies like Chrysler, General Motors, and Lyondell Chemical filed for bankruptcy and survived through restructuring. Some like Smurfit-Stone, a manufacturer of corrugated paper-board, filed for bankruptcy in the middle of the 2007 recession only to trigger an 83 percent drop in stock price. The company was later sold to Rock-Tenn Corporation. It was a stress test for all. The impacts were extreme. Did you feel the impact of the last recession, Joe?” I queried.

“Yes, it was an issue. During this time, I was in the office of the CFO every day. The pressure was intense. I called it my morning thrashing. We didn’t know what was happening in the market and we were scrambling. There was a lot of finger pointing,” Joe stated.

I continued, “Most organizations lack resiliency. One of the issues is the latency of demand data. The second barrier is the ability to get to data. And the third issue is selection of the right metrics. To become more resilient requires resolving all three issues. Sadly, as companies start to build resiliency, they will be reminded that the promise of the Information Age still lies before us. Much of the data in the corporation is unused. While many will claim that manufacturing companies have been transformed by the Information Age, I take a contrarian view. I believe that companies are evolving. Businesses have changed too much over the past decade to not rethink metrics systems. In fact, the change has been so great that many executives, like you, Joe, are struggling. Did you read my recent article on Verizon?”

### Change at Verizon Wireless

Ten years ago there were two mobile phone options. One product looked like a candy bar and one resembled a clamshell. This week, we opened an experience center for customers in a major city. A lot has changed.

This year, we will see the need for micro-segmentation of inventory policy to even a greater degree. We are launching a number of new programs, including same-day delivery and Omni-channel service, and the introduction of new services creates the need for new and different

*(continued)*

*(continued)*

approaches to metrics. Our goal is to have any inventory item in the network to service any order for any channel. Making that happen is a challenge. This 10-year evolution in metrics is enormous in scope. The product has moved from being a purchasing afterthought, to being a fashion item, to trying to be a platform for life. The metrics cannot stay the same.

Anne Robinson, Verizon

Joe stood up and paced the floor, saying, “The cell phone industry is a wonderful case study to show change. I remember having one of the clamshells and exchanging it for a brick, and now I have one of these.” He opened his drawer to show me the turquoise case of an iPhone. “So much has changed in such little time. Think about the impact of this level of change on Verizon’s operations.”

### *Driving Metrics Alignment*

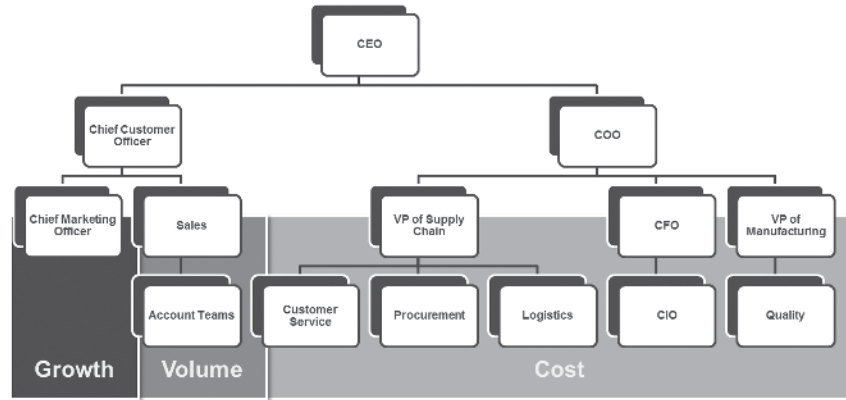
“It is difficult to take all of this in at times. It’s like change is happening so fast on the outside, and so slow on the inside,” Joe said. “We’ve had the same kinds of issues like Verizon with rapid changes in the marketplace. It causes a lot of tension, especially between sales and operations, but also finance, because we wind up with too much inventory of the wrong type. There are so many moving parts—how do we find time to talk about metrics? Everyone’s so focused on their own problems, there’s not a lot of interest in getting everyone aligned—today we’re too functional to even have that discussion!”

Alignment is the essence of management.

*Fred Smith, Federal Express*

“I know, it’s challenging,” I responded. “While many companies talk about alignment, few are able to accomplish their goal. However, when organizations are aligned, things happen more quickly. It takes less effort. People know what to do, and there is a greater bias for action. As a result, the organization can achieve higher levels of results and better withstand the pressures of demand-and-supply volatility.

“Let me share some recent research with you.” I flipped an organization chart (Figure 1.8) onto Joe’s desk and continued, “It is hard for functional goals



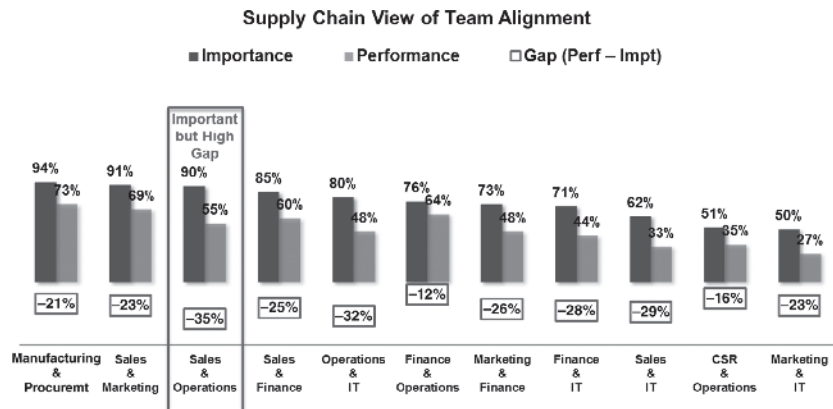
**FIGURE 1.8** Functional Goals Overpower Corporate Objectives

not to outweigh and overtake corporate objectives when you see where the bulk of the organization is focused.”

I continued, “Groups within an organization see and feel alignment issues very differently. In 2013, we studied three groups within the corporation to understand the perceived differences and similarities of organizational alignment. The three functions were supply chain, corporate finance, and information technology (IT) groups.

“In this research, we observed very different patterns in perceived alignment of the functions. In this study<sup>7</sup> of over 140 participants, we asked each respondent to rate the importance of functional alignment to a business function, and then rank their corporate performance,” I said. I shared the results of the study with Joe, shown here as Figures 1.9a, 1.9b, and 1.9c.

Joe took the three sheets of paper and taped them to his wall and sat back and stared. When he saw the pattern, he laughed. “It figures. Look at this data. The supply chain operating team feels more gaps in functional alignment than the finance and IT teams. The supply chain team, by definition, is more cross-functional in nature and feels the impact of functional misalignment more critically in day-to-day operations. The IT teams tend to overstate both their performance and the relative alignment of their business partners, and the finance teams tend to be insular to alignment problems and opportunities. I see this every day.” As he thought, he whistled a low shrill note, rubbed his hands together, and said, “This is the case for sure here, but what do we do? What steps do we take? It seems to me that we have to close these gaps if we’re going to build a cohesive metrics structure to improve corporate performance.”



**FIGURE 1.9a** Organizational Views on Alignment by Supply Chain  
 Base: Manufacturers: Supply Chain (n = 105)

Q22. In your opinion, how important is it for each of these pairs of teams to be aligned within your company? SCALE: 1 = Not at all important, 7 = Extremely important

Q23. How aligned do you believe that these same pairs of teams actually are with your company? SCALE: 1 = Not at all aligned, 7 = Extremely aligned

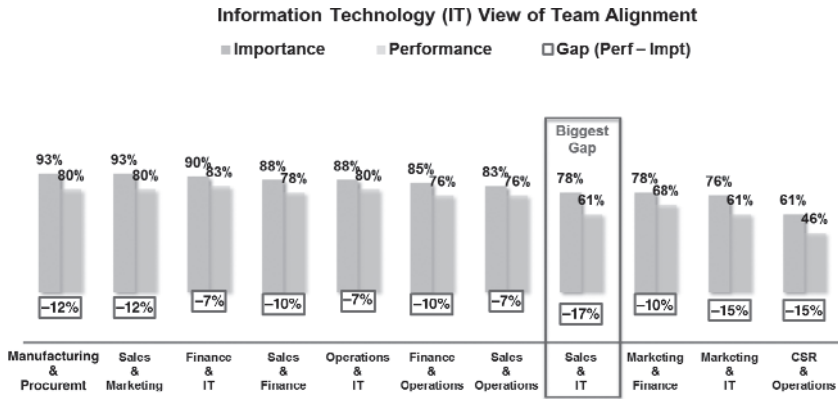
Showing: % rated 5–7 on 7-point scale.

Source: Supply Chain Insights LLC, Alignment Survey (March–May 2013).

I loved the dialogue. Joe’s natural curiosity made him a great student of research. I continued, “Better alignment happens when companies focus on five things.” I then listed these five items on the board:

1. A balanced metrics portfolio with aligned incentives.
2. Horizontal cross-functional processes aligned end-to-end against a business strategy.
3. The definition of a clear operating strategy.
4. The translation of the metrics up and down the organization to make them actionable. They need to be defined for the guy and gal on the plant floor as well as the chief operating officer (COO).
5. Alignment to incentives. Metrics and incentives are tightly woven in change management activities.

“To drive better alignment, companies need to change the conversation. The metrics need to be designed and aligned. It is not about continuous improvement of yesterday’s processes; instead, it is about aligning on new mental models within the company to focus on the future.”



**FIGURE 1.9b** Organizational Views on Alignment by IT  
 Base: Manufacturers: IT (n = 41)  
 Q22: In your opinion, how important is it for each of these pairs of teams to be aligned within your company? SCALE: 1 = Not at all important, 7 = Extremely important  
 Q23: How aligned do you believe that these same pairs of teams actually are with your company? SCALE: 1 = Not at all aligned, 7 = Extremely aligned  
 Showing: % rated 5–7 on 7-point scale  
 Source: Supply Chain Insights LLC, Alignment Survey (March–May 2013).

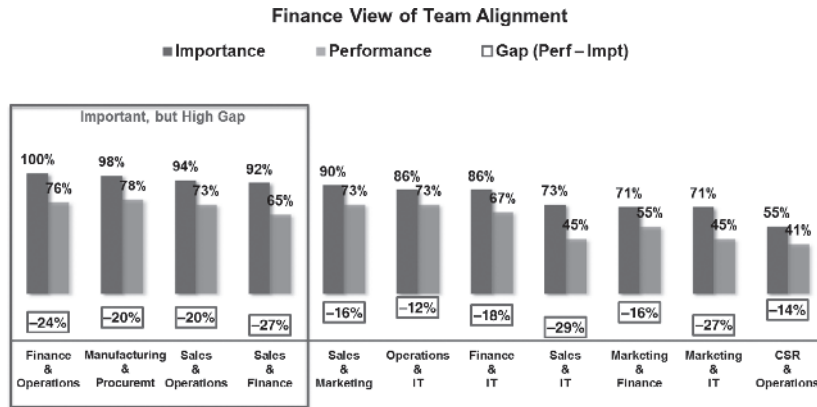
I then looked at Joe, and commented, “Does this make sense?” There was silence in the room. Joe was busy writing in his notebook.

“Absolutely! I am just thinking about how we get from here to there. My boss keeps telling me that we need to be aligned and agile, but he has not defined it. I am thinking about how to approach him with this research. Do you have anything that you could add about agility?”

**AGILITY**

“Yes, most of the time organizations will use these terms loosely and do not define them enough to make them actionable,” I continued. “To achieve metrics resiliency, companies need to improve organizational agility. In our research, we define agility as the ability to achieve the same cost, quality, and customer service given a level of demand-and-supply volatility.”

“While many companies state that they want to be ‘agile,’ they fail to define it adequately enough to make it actionable. There is no industry-standard definition. As a result, without a good definition, the company is not able to make



**FIGURE 1.9c** Organizational Views on Alignment by Finance

Base: Manufacturers—Finance (n = 49)

Q22. In your opinion, how important is it for each of these pairs of teams to be aligned within your company? SCALE: 1 = Not at all important, 7 = Extremely important

Q23. How aligned do you believe that these same pairs of teams actually are with your company? SCALE: 1 = Not at all aligned, 7 = Extremely aligned

Showing: % rated 5–7 on 7-point scale

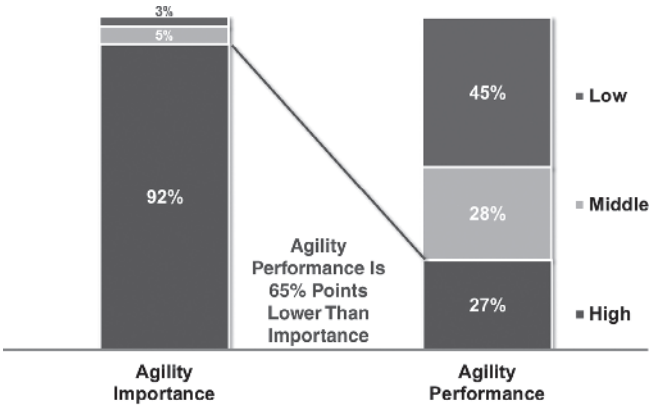
Source: Supply Chain Insights LLC, Alignment Survey (March–May 2013).

progress. We find in our study that there are trade-offs between agility and efficiency (as defined as the lowest cost per case or the lowest labor input per unit). By definition, the agile response is also not the most efficient response. The company that designs the most efficient response with the lowest cost per unit, by definition, will not have an agile output. It is about conscious choice. The definitions of a responsive, agile, and efficient response are mutually exclusive. They can be defined by the same metrics systems but require different targets. As a result, to achieve agility, the metrics’ targets need to be aligned to drive the right response.”

I passed Joe the recent research that I had completed on Agility (shown here as Figure 1.10). I continued, “Based on quantitative studies, we find that the gap in enterprise agility today is high and needs to be a key pillar in the definition of an operating strategy. The focus on the efficient organization has made the organizational response brittle, and unable to flex with market changes.”

“Is this the same thing as responsiveness? Or short cycles?” asked Joe.

I shook my head. “No. Agility also cannot be confused with responsiveness. While responsiveness is shorter cycles and a quicker response, the definition of



**FIGURE 1.10** Importance versus Current Performance on Enterprise Agility  
 Base: Manufacturers: Total (n = 92)  
 Q12. How important is it for your company’s supply chain to be “agile” in 2012? Please base your answer on however your company defines agility. SCALE: 1 = Not at all important, 7 = Extremely important  
 Q13. How would you currently rate your company’s supply chain in terms of being “agile”? SCALE: 1 = Not at all agile, 7 = Extremely agile; Low = 1–3, Middle = 4, High = 5–7  
 Source: Supply Chain Insights LLC, S&OP (April–May 2013).

agility in enterprise strategy is a much deeper concept. While responsiveness improves cycles, agility improves the potential of the system to absorb volatility and improve resiliency. It is a common misconception. A good example is a footwear company that I worked with in 2005.”

**Footwear Case Study**

We once worked with a footwear company that believed that shorter cycles could improve corporate performance. The company’s cycles were shorter than competitors’, but the margins were 18 percent higher on average, and their inventory turns were 50 percent worse. As a result, the company had successfully done the wrong things faster, throwing the system out of balance. We see this happen frequently. It is important to get very clear on the definitions of agility and responsiveness.

“My boss, Filipe, thinks that a short cycle solves everything. I would love to have you talk to him,” said Joe, laughing.

## EVOLUTION

“Let me know when Filipe is available,” I stated. “Metrics evolve over time. The portfolio of business metrics needs to be revisited as the business strategy changes. It needs to be grounded in conscious trade-offs. It needs to be managed with systems thinking so that when Filipe is thinking about defining agility, responsiveness, or driving alignment the set-points of metrics are based on the capabilities and potentials of the organization.” I then looked at the clock on the wall and commented, “I know that it’s getting late. Let me leave you with a story from my friend, Mike. He likes to create bonsai trees, but he also runs a retail store. Here is his take on the development of a metrics system.”

I love to create bonsai trees. I have taken lessons in how to create a bonsai for over 14 years. I also love metrics and the creation of metrics systems. They have a lot in common. My bonsai tree teacher says, “Let the tree speak to you as you care for it, and trim the branches, and you will have a better product.” In my view, metrics are the same. You let the metrics evolve, while letting the organization speak to you about what is important. They must evolve slowly and over time.

Interview with a Retail Supply Chain Leader

“I like that study,” Joe said, “I’m not sure if I should be proud or embarrassed. . . . I must admit, when I started in my role I was very focused on my own experiences. These were rooted in manufacturing with a commodity orientation. I was blinded by functional metrics. I did not realize then how wrong I was.

“An individual can get so easily baited into a bad set of functional metrics. We should never look at single metrics in isolation. Last month, I made a bad mistake in setting my BHAG.”

“Joe, don’t be too hard on yourself,” I continued. “There is a lot to learn, and there is also a need for continuous alignment. Look at how your organization has changed. Mergers and acquisitions, changing business policies, expansion into global markets, new markets, and channels, the expansion of new product lines, and market volatility top the list of changes. I know the list goes on and



on. All metrics can be gamed, but they drive directional alignment. Business leaders, in interviews for my new book, recommend:

- Don't overorchestrate and overthink the metrics. They will never be perfect. There is also an opportunity cost to the organization by trying to make them too perfect.
- Focus on the forward momentum that the metric drives while being aware of adverse behavior that a metric can cause.
- Balance metrics horizontally and vertically, focused on the business strategy.

"Does this make sense?" I asked.

Joe nodded and said, "I wish we could move faster as a team here in driving our strategy. Can you come back a week earlier so we can dig a little deeper? I have some projects coming up that I see now could be a disaster if we don't get the metrics right."

"Sure," I said, "But let me leave you with a thought—just like Rome wasn't built in a day, metrics need to evolve. We believe that strength, balance, and resiliency are important components of a high-performing organization, and they need to get there through organizational alignment, which means getting your whole team operating with the same perspective about these metrics. I think that you now agree."

Joe was still rapidly writing notes from our session in his journal. As he walked me to the door, I asked if I could see his notes. He got a broad-faced grin as I slowly read his writing. Sheepishly, he asked, "Did I get it right?" I gave him a warm embrace goodbye and said, "I wish that all of my students were this quick at capturing the insights." With that, I said good-bye to Joe.

### The Notes from Joe's Journal

In the implementation of metrics strategies to improve corporate performance, remember these nine recommendations:

1. Manage the metrics as a system. Design the portfolio of metrics to include the critical elements of customer service, inventory/cash cycles, profitability, and market share. Understand the interrelationships and manage the metrics portfolio as a complex system.

*(continued)*

(continued)

2. Get clear. Be concrete. Drive alignment. Terms like *flexible*, *responsive*, *agile*, *efficient*, *customer-centric*, and *demand-driven* permeate corporate strategy documents, but they mean different things to different people. Unless the terms are clearly defined and aligned to metrics, they are not actionable. Take the time to define each term and align the desired outcome to a portfolio of metrics.
3. Understand corporate potential before you set targets. Understand your company's potential within your peer group. Study the patterns of industries to determine what is possible. Then use advanced analytics to determine the potential of your division or company.
4. Drive balance in a metrics portfolio. Clearly articulate the business outcome and define a balanced portfolio of metrics to drive improvement. Hold the entire organization accountable for the same portfolio of metrics.
5. Make conscious trade-offs. In the analysis and determination of organizational potential, the interrelationships between growth, profitability, cycles, and complexity metrics will become clear. Use modeling technologies to understand the trade-offs and drive the analysis to make conscious trade-offs.
6. Evolve. Metrics evolve as organizations mature. Review metrics annually and align them with the business strategy. Embrace technology and product disruptors to move the organization to the next frontier.
7. Take care in working with compound metrics. In this chapter we discussed the danger of working with compound metrics. Use them carefully.
8. Stay the course. As a leader, avoid knee-jerk reactions and "programs of the month." Measurements should not be viewed and managed in isolation. Instead, manage individual metrics as integral pieces of a complex system.
9. Be patient. This takes time.

## CONCLUSION

As I turned the key in the ignition of my car, Joe's voice was in my head. I kept remembering snippets from our conversation: "Metrics are complex." "Organizations are not naturally aligned." "Analytics can improve measurement." "To move forward, align around a few metrics and manage them as a system, with a focus on a balanced portfolio. Stay focused on your journey."

On the drive out of the parking lot, I reflected on the past couple of days and our discussions about metrics that matter. As I thought, I concluded that as companies mature, they learn that corporate performance cannot be sustained without redesigning the enabling processes. For the organization, this is an intense change management journey. I looked forward to meeting Filipe and working with the larger organization to optimize performance on the Effective Frontier.

## Notes

1. A. D. Chandler, Jr., *The Visible Hand: The Managerial Revolution in American Business* (Cambridge, MA: Harvard University Press, 1977); and T. H. Johnson and R. S. Kaplan, *Relevance Lost: The Rise and Fall of Management Accounting* (Cambridge, MA: Harvard Business School Press, 1987).
2. "U.S. Manufacturing: Output vs. Jobs, January 1972 to August 2010," BLS and Fed Reserve graphic, in Fran Smith, "Job Losses and Productivity Gains," OpenMarket.org, October 5, 2010, [www.openmarket.org/2010/10/05/job-losses-and-productivity-gains](http://www.openmarket.org/2010/10/05/job-losses-and-productivity-gains).
3. Global Workplace Analytics, [www.globalworkplaceanalytics.com](http://www.globalworkplaceanalytics.com) (accessed January 4, 2014).
4. Deloitte, from "Exponential Technologies to Exponential Innovation," Report 2 of the 2013 Shift Index Series.
5. "How Much Is a Petabyte of Data?" *Mozy Blog*, <http://mozy.com/blog/misc/how-much-is-a-petabyte> (accessed January 4, 2014).
6. The Free Dictionary, [www.thefreedictionary.com/resiliency](http://www.thefreedictionary.com/resiliency) (accessed January 4, 2014).
7. Supply Chain Insights LLC, "Three Techniques to Improve Organizational Alignment," report published July 8, 2013, <http://supplychaininsights.com/three-techniques-to-improve-organizational-alignment>.

