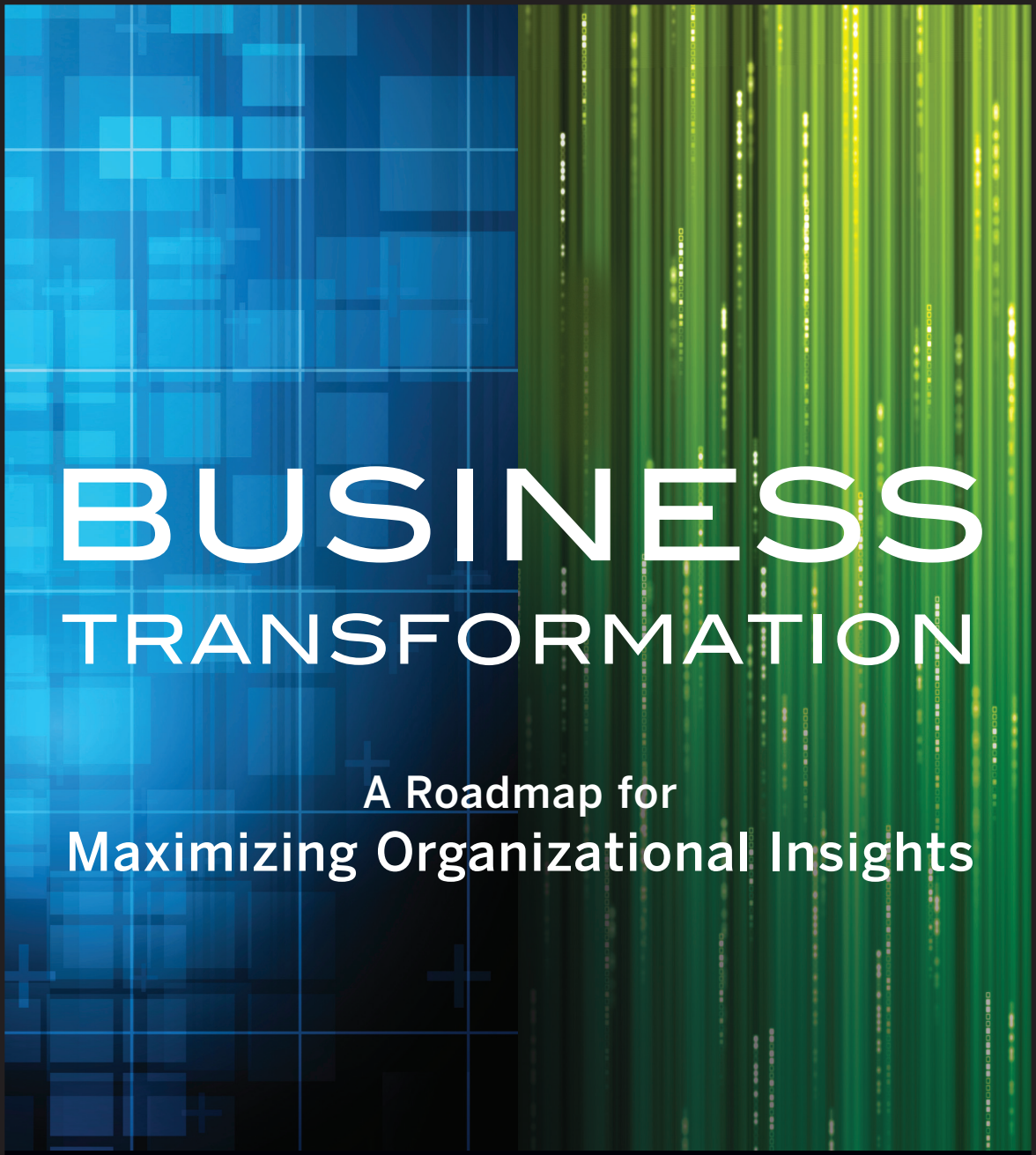


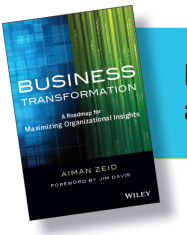
BUSINESS TRANSFORMATION

A Roadmap for Maximizing Organizational Insights

AIMAN ZEID

FOREWORD BY JIM DAVIS

WILEY



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Foreword

When *Information Revolution*[1] was published in 2006, no Chinese-based companies were among the top 10 largest companies by market capitalization. Apple didn't sell phones. Facebook was something college kids used to connect with their friends. Back then, we talked a lot about the amount of data coming in and faster processing speed.

What we believed then remains true today: Data, and the decision-making process, can be moved throughout the organization to equip every decision maker (automated, line worker, analyst, executive) to make the best choices. By operationalizing analytics, organizations can identify and quantify both opportunity and risk. *Information Revolution* highlighted SAS' Information Evolution Model, which helps organizations understand how they interact with their information and how to extract more value from it through analytics.

SO WHAT HAS CHANGED?

Business intelligence still matters. But today's global economy requires predictive analytics and forecasting to play a more active role. Insights from unstructured data now hold great promise. New ways to store, move, and process data have made big data more accessible and affordable than ever before. Delivery has moved to mobile. Many leaders run their businesses from tablets and smartphones.

A persistent myth is that technology alone enables all this. Sure, you need technology, but it's just one component: People, information processes, and culture are equally critical. That's really what this book is about—transforming your organization to harness all four components.

PUTTING THE SPOTLIGHT ON PEOPLE AND CULTURE

After *Information Revolution* was published, accelerated processing speeds gave rise to near-real-time results. More granular exploration of data became possible in ways that weren't quick or easy before. Organizations that treat their data as an asset continue to:

Invest in people with the skills to extract the insights that were hidden in the data and surface them to decision makers throughout the organizations.

Foster a culture that encourages using data to uncover new business opportunities and gain a better understanding of their customers.

Have an executive sponsor who leads the effort to find, hire, cultivate, and support individuals who embrace fact-based decision making. This executive sponsor pays particular attention to the communication challenge that data-driven decision making presents. It's important to have an executive who can articulate what the analytical insight returns can mean to the business units—and win over skeptics.

If top executives still make decisions based on gut feeling and data-driven individuals are still a separate part of the business, no amount of technology and data governance processes will make a difference. But if an organization is committed to using data successfully, one strategic hire can have a huge impact. A new type of professional, the data scientist, can bridge the communication gap that prevents an analytical culture from taking hold. Tom Davenport, in his *Harvard Business Review* article "Data Scientist: The Sexiest Job of the 21st Century,"[2] describes a data scientist this way: "It's a high-ranking professional with the training and curiosity to make discoveries in the world of big data. . . . Their sudden appearance on the business scene reflects the fact that organizations are now wrestling with information that comes in varieties and volumes never encountered before." Data scientists help organizations get the most out of their data, in part, by using business requirements to drive the information exploration and the application of analytics. Data scientists often have a background in math, statistics, and computer science, but aren't necessarily experts

in any one of those fields. They have to be very good at translating the value of data to the business and helping analysts understand what they need to do.

Internal communication and business and IT alignment continue to present challenges for organizations. Many rely on enterprise Centers of Excellence to boost business-transformation efforts.

My point is: You can't just bring in technology tools to solve your business problems and expect them to do all the work. You must have the infrastructure capabilities, the skilled people, the information processes, and the cultural commitment to derive the most value from your data.

AND SOME THINGS STAY THE SAME . . .

Some things haven't changed, and one of them is taking a structured approach to building toward the enterprise level of information maturity—and beyond. The five levels outlined in 2006 remain relevant today (though we've grouped the levels into three key categories). Unfortunately, many organizations are in a quandary about how to reach information maturity. Now here's the clincher: "By 2015, 15 percent of organizations will modernize their strategy for information management capability and exhibit a 20 percent higher financial performance than their peers," according to Gartner.[3] These are clear signs of strategic initiatives by many organizations to reach higher maturity level.

To get started, you need to understand where your organization is today before you can build toward the future. This is particularly important as it relates to purchasing technology. Organizations that say they have not received a strong return on their investment in analytic technology frequently suffer from information maturity issues and may benefit from a business-transformation effort. Assessing maturity is a process, but well worth the effort in the knowledge you will gain. It can be painful to find out your organization is not at the maturity level you assumed. But, you will have a clear picture of how to begin developing your road map to get to the next level.

A fact-based decision-making culture is no longer an option; it's a requirement spreading across industries. To stay competitive, be

proactive. Use the Information Evolution Model. Let your data give you a fresh perspective on your business—see what's working, fix what isn't, and set your sights on new opportunities.

—Jim Davis
Senior Vice President and
Chief Marketing Officer
SAS

NOTES

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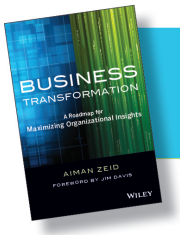

CHAPTER 1

The Critical Role of Business Insight

Have you ever asked a question that no one in your organization could answer? Or maybe someone answered it, but it turned out the information driving the answer was so flawed that you really got no answer at all. Or maybe you got multiple conflicting answers that took hours, days—or maybe even weeks to straighten out.

Have you ever wondered why—in an age when bar codes are on everything, every conversation with a customer is recorded, and the Internet is full of comments about your products and services—you don't really know who your customers are? Or what they want? Or, more important, what they might want next year? Are you frustrated because your organization isn't achieving its goals? Or are you wondering why your organization is not keeping up with the competition?

You are not alone. Information, and the business insight you can derive from it, is coming so fast, from so many sources, in so many different formats, and at such incredible volumes that it is difficult to grasp. It's not hyperbole to suggest that gaining insight from data is like drinking water from a fire hose. Business insight is derived from an organization's information by using the domain knowledge of its resources and applying analytics to mine the data for critical trends, forecast revenue, determine customer propensity to buy products and

services, and predict attrition in critical talent. Business insight is also produced by using business intelligence for querying and reporting, performance management to monitor critical business key performance indicators (KPIs) and validate strategies, and industry solutions to optimize the operations of critical business functions. Deriving business insight depends on developing an enterprise information foundation to properly integrate data from all business units in the organization. Organizations also have to take advantage of external and unstructured data to develop business insight. Yet most organizations find they can't generate the information they need (from their data)—or, if they can, it is not coming fast enough to make a difference.

Business insight adds value in several areas, ranging from a simple view of historical performance driven by the use of business intelligence to predictions of sales volumes and customer behaviors developed by the use of analytics. Successful organizations create a competitive advantage by maximizing the use of analytics to guide their decision making and strategies. This book highlights the importance of developing and aligning the organization's resources and talents, information infrastructure, and use of analytics with the required processes and culture to create business insights that strengthen its competitive advantage.

You have questions, your organization has data—but can you generate the insight you need from the data? And can you do it fast enough? You need more than technology, a team of consultants, or a visionary data guru to lead you out of the data forest. You need a comprehensive approach to evolve your current information management practices to generate more insight. You need to introduce new talent, new processes, and a new culture that will help make your organization more data-driven and analytical. You need to promote the use of analytics and insight across the organization in a repeatable and effective way, and learn how to identify a starting point and develop a strategy for getting this done. And that's what you will read about in this book.

THE DISRUPTIVE NATURE OF DATA

During the recent U.S. presidential election there was a spirited discussion around whether aggregating poll data could accurately predict

its outcome. Much of the debate related to the work of a blogger and statistician named Nate Silver (www.fivethirtyeight.com). Silver built a model that weighs and averages numerous polls based on multiple factors. Every few days, on his blog, he would update the percentage chances that Mitt Romney and Barack Obama had of winning the election. In 2008, Silver's model of the presidential election was accurate to within one percentage point of the final popular vote,[1] and he correctly predicted the race in 49 of 50 states. But at that time he was a comparatively unknown blogger. In 2010, his blog was licensed to the *New York Times*, and in the fall of 2012 he had recently published a book.[2] As his 2012 model increasingly showed a likely victory for the incumbent (it stood at 90.9 percent the day of the election), pundits began to howl. Some tried to pick apart the model, while others claimed bias. But one savvy commentator noted what was really up: Silver was a disruptive force. "Silver's work poses a threat to more traditional—and, in particular, to more excitable—forms of political punditry and horse-race journalism,"[3] explained a *Washington Post* columnist. Silver was threatening a traditional profession. And it wasn't his first time. Silver initially gained notice for forecasting professional baseball player and team performance by using less traditional statistical measures. A variation on his system was adopted by the Oakland Athletics baseball team's general manager, who hired an analyst and began selecting players based on skills that weren't as highly valued in the marketplace. The book *Moneyball*,[4] by Michael Lewis, captured the tension fueled by the general manager's decision to ditch the conventional wisdom of scouts who looked at traditional statistics. Despite regular declarations that "moneyball" is "dead,"[5] it not only survives but also continues to grow as more teams, both inside and outside of baseball, hire analysts.

AN UNCONVENTIONAL LOOK AT CONVENTIONAL WISDOM

In the business world the corollary to the pundits and scouts are those buyers and marketing gurus—even CEOs—who operate on "gut" instinct in choosing what products to launch and what business path to follow. They are often rather hostile to the Nate Silvers, who invaded their territory with analysis that suggests a different path.

Unfortunately, businesses tend to have far too many pundits and not nearly enough Nate Silvers. So even if an organization purchases software or a solution to begin to drive the business more analytically, they don't have the people who can analyze the data, or work with the business unit to decide what to analyze. Or the organization doesn't have a culture in place that will accept the analysts' work, a process in place that makes analytics a factor in everyday decisions, and a leadership that understands that gut instinct is old school.

Conventional wisdom has a way of creeping into organizations and holding them hostage. Even companies whose executives talk about their "change management" are often entrenched in approaches and ways of doing business that aren't really working. An analytic project often provides the aha moment when an organization realizes everything it thought it knew—what its customers wanted, what was most likely to sell, what was its most profitable service—was not completely accurate. Let's explore a few of those moments.

Customer value is rife with examples. We all know our best customer, right? It's the one who buys the most stuff from us. Or is it? If you want to create an offer, or provide a discount, or do anything to increase the loyalty of your best customers you don't need analytics—you just need to know who spent the most money. Many telecommunication providers certainly worked under that assumption for years, until some of the savvier ones used insight from analytics to discover that their "best" customers were actually costing them a lot of money. These were the customers who tied up customer support with questions about their plan, subscribed to a plan that was not profitable, used the service in the least profitable way to the organization, or didn't keep up with their payments and had a high delinquency rate. All that attention to those high-needs customers was hurting the bottom line. Yet this flies in the face of conventional wisdom that suggests you do anything to keep a customer happy because it costs more to gain a new one than retain one.

Another example of the use of insight from information comes from the banking industry. Banks often have three critical functions operating in silos. The marketing department focuses on customer retention, product innovation, profitability, and the proper channels to promote them. The risk team develops and monitors operational risk factors and scores customers in terms of their liabilities

and probability of default. The finance organization keeps its revenue and loss information in its own silo. Banks have operated these three critical functions in silos for years. When the information from these siloed functions is integrated, a brand new perspective provides more business insight for making better decisions and setting strategies. The actual revenue from each customer is produced from the financial side. The risk rating for each customer can be provided by the risk team, and now the marketing organization can use all it knows about the customers to identify the proper product to market to each one based on his or her risk score and total contribution to the bank's revenue. Banks can now develop a more effective strategy to grow their business with each of their customer segments based on insights derived from their information.

INNOVATING AT THE SPEED OF DATA

Both telecommunications and banking examples highlight the value of speed in working with data. It's one thing to figure out that certain customers aren't worth the effort to retain and decide not to send them an offer; it's another to do it in real time when a customer calls looking for a different rate plan or upgrade or walks into a branch to apply for a home mortgage. Does the service agent have a file that offers suggestions as to whether a discounted upgrade should be offered to the customer or whether a credit limit should be extended? Or should the agent just politely listen and ignore customers' threats to take their business elsewhere?

When organizations begin using analytical insight they challenge conventional wisdom quickly and effectively. An online floral company stopped gearing its advertising to men when it discovered most of the people buying flowers for various holidays were women. A casino directed its best discounts away from its most loyal customers (they were going to visit either way), and targeted them at the customers who were also visiting their competitors. Engineers on an oil rig use data on conditions in their environment to predict when equipment needs maintenance before a costly breakdown, rather than relying on the manufacturer's manual that had not proven effective in the past. Automobile companies predict which part may fail, and proactively replace it when a customer comes in for routine maintenance, saving

money and increasing customer perception of quality. Hospitals use analytics to predict—at admission—which patients are at risk for readmission, and then plan treatment and discharge to keep them from being readmitted.

The value of insight goes beyond the business world in ways that a businessperson can certainly relate to. If you have a child getting ready to attend college or a university you have heard time and time again that their grades and their entrance exam scores will determine how well they will do. One college discovered that grades and entrance exams weren't the determining factor at all—it was when the students signed up for classes. Those signing up late were more likely to fail or drop out.

Even when the "gut" is backed up by data, analytics helps organizations blend in other data that puts these statistics into a different context. One insurer bucked conventional wisdom by scaling back its rate increases for families insuring teenage drivers. The 17-year-olds it insured didn't suddenly lose their propensity for fender benders and speeding tickets. Instead, the insurer discovered that over the lifetime of the family (both teens and parents), increasing the rates to cover expected claims actually drove some very loyal customers away permanently—and that was more costly for the company than covering the price of a new fender.

WEIGHING RISK AND BRINGING THE BETTER PART OF GUT INSTINCT BACK INTO THE EQUATION

The insurance example drives to the heart of what analytics and the business insight it generates is about, and what it isn't meant to do. Analytics doesn't replace innovation, it helps innovation flourish. By using insight to challenge conventional wisdom and weigh the success of new approaches, organizations can feel more confident about their choices. Short of cloning the DNA of Apple founder Steve Jobs, most organizations will succeed not on the cult appeal of an innovative leader, but on the success of many decisions made by many individuals *working with sound data*. If you are reading this book and consider yourself an innovator, think of analytics as your behind-the-scenes assistant that helps you test your bold ideas and gives a view of

what the likely outcomes of your initiatives, products, and strategies may be in the future.

Analytics lets you put the gut instinct back into the discussion in a way that controls the downside. A simple example is the A/B testing in web marketing (where some visitors see the "A" page with certain recommendations and others see the "B" page with different recommendations). Test that novel idea, that catchy slogan, that interesting promotion—but do so in a controlled environment in which you can quickly, efficiently, and effectively analyze the outcome without dependence on time-consuming sampling. In a faster processing environment, you can test more granularly and run as many scenarios as you need.

There are more serious examples where innovation ran rampant without the steadying influence of business insight. The economic meltdown of the last decade certainly put a spotlight on some very innovative practices: no-doc mortgages, credit default swaps, and lots of chopping and repackaging of thinly secured debt. If the layers of oversight weren't steep enough prior to the meltdown, they're getting steeper today. Managing risk is the yin to innovation's yang. You want to manage risk without stifling innovation and without feeling beholden to the bean counters and frightened of the regulators. This is an area where analytics really shines. Use fast processing and you can manage risk more dynamically—in a way that actually drives innovation. New innovative high-performance analytics solutions are now contributing significant value to organizations in areas like risk, fraud, and others.

Credit card issuers illustrate the risk-to-innovation phenomenon in their efforts to make the proverbial lemonade from the sour stench of stolen credit cards. Forrester "estimates that globally merchants are paying between $200 billion and $250 billion in fraud losses annually, while banks and financial services organizations are losing between $12 billion and $15 billion annually."[6]

In a perfect world, issuers could stop the fraud before it happens. Easier said than done, as anyone knows who ever took that dream trip overseas without calling their credit card issuer first. The anger, frustration, fear, *embarrassment* of having a legitimate charge denied doesn't go a long way in developing a loyal lifetime customer. Pressed

between losing money or losing a customer, issuers have tried to find better ways to target fraud without angering customers. Some of these efforts worked, but not in a timely way. Who hasn't gotten a call from a credit card company asking you if you recently purchased a television at a store you've never set foot in? Or through an online website you've never heard of?

But if you apply high-performance analytics, in a fast processing environment, to big data and create models that can predict fraudulent claims during the five-second window between when the sale is recorded and the bill is paid—now that's managing risk innovatively.

Note that the example added at least one phrase we haven't spent much time talking about: fast processing. Since *Information Revolution*[7] was published, there has been a real technical revolution in processing speed at modest cost. Today's cost factor for increased processing speed should not blow up the IT budget.

The speed is there. The data is there. The cost is reasonable. What is often lacking is the analytic know-how and the cultural structure. The linchpin of the card issuer's ability to decline a charge without irritating its customer is the skill to build a model that accurately understands whether the person who owns the card is buying the television (or someone else is), the data to run the model against, and the processing speed to do it in five seconds. An organization can't simply buy a solution that will let them determine with customer-pleasing accuracy (and then stop) a fraudulent credit card transaction in the five-second window between the time the card is swiped and the sale is finalized. It can buy a solution that might temporarily stop fraud without ticking off customers—until the fraudsters find a way around it. It might buy a solution that gets it right enough of the time so that it won't chase away too many customers. But technology alone will not consistently stop fraud or please customers.

For that you need the other organizational foundations to support analytics: people, processes, and culture.

PEOPLE, PROCESS, TECHNOLOGY, AND CULTURE

The first thing a credit card issuer that is successfully combating fraud must do is have a process in place for managing the data it will use

to build a model that can tell the difference, in five seconds, between a legitimate and a fraudulent charge. *Data governance* is a term that doesn't get covered in the mainstream business press or discussed at executive board meetings. If the issuer doesn't know, for instance, that a customer on a spending binge at the local home improvement store just acquired a home mortgage from the organization's mortgage branch, the purchase of a riding lawn mower looks a little suspicious. The organization needs people who can drive this process, choosing the right data and using it in a disciplined fashion. Typically, these individuals have both business and technical knowledge and an affinity for talking to both sides of the "house." They are creative enough to use analytics to know what data (a new mortgage, credit scores, deposit movements) really matter—and which don't matter at all. And they understand how to create a consistent, replicable process that works over and over and over. If business units have the bureaucratic equivalent of armed guards patrolling outside their own information silos, and IT is rolling its eyes over the business case for analytics, then the organization will get stuck.

If you've picked up this book, you already have some general sense that analytics and business insight are something you need more of. You probably also reached the conclusion that a comprehensive business and organizational transformation is needed to generate this insight and, more important, convince the business consumers to use this insight to make decisions and validate strategies. Or you want to understand how you can expand on the business intelligence efforts that have served you well. You might have read about predictive analytics, forecasting, or high-performance analytics and you want to know how your organization can transform itself to get more deeply engaged in those processes. You might also be trying really hard to gain insight from analytics and be unable to figure out why it isn't working.

Or you might think you've got this all figured out and you're looking for validation.

Chances are your organization doesn't have it all figured out. Many organizations haven't achieved a level of maturity where the business units have called off the armed guards surrounding the information silos and the organization is taking an enterprise-wide

view of the business. Instead, most organizations have multiple ad hoc and individual analytics efforts attempting to generate insight. This approach is not very effective, is not replicable, and can result in a lot of redundancies (with their attendant costs). A well-planned business and organizational transformation is needed to make the proper changes to move from the ad-hoc approach to a more repeatable process to use analytics to derive business insight.

For organizations struggling to get started and for those that feel they need to improve, this book outlines how to approach the development of a business and organizational transformation effort. This process is an endeavor to improve organization maturity and must be guided by a structured methodology.

This book uses the Information Evolution Model, a maturity model patented by SAS,[8] to help you develop your business transformation roadmap. Figure 1.1 illustrates the five levels of information and analytical maturity that can help you assess your organization's current capabilities. Knowing where you are sets the starting point of your journey. The model will also guide you in determining where you need to go and how to get there. A special emphasis is placed on the need to reach the Enterprise level so that organizations can focus on a holistic view of their operation and understand their value chain. The book also provides guidance in identifying a starting point for focusing your initial effort and launching your organization's business transformation. This leads to a discussion of how organizations can develop a strategy for their business transformation and a roadmap to implement their strategy objectives.

STARTING THE JOURNEY

If you've weathered the recent financial upheavals with minimal disruption, or are buffeted from competitive forces by brand leadership or monopoly, there is a tendency to view analytics and the value they deliver as something not worth the bother, especially if it involves changing a culture that is working just fine. The information in this book might seem like something that doesn't apply. Eventually, though, even market leaders are challenged, barriers to entry are lowered, natural monopolies disappear. Don't wait until that happens.

Figure 1.1 The Five Levels of the Information Evolution Model

When you reach the point at which you are reacting to pressure, it will be so much more expensive and time consuming to become a proactive, strategic organization.

When *Information Revolution* was published in 2006 the concept that maximizing the value of business insight required more than technology was a tough sell. The idea that people, processes, and culture were just as important—if not more so—was somewhat revolutionary. Since that time, more organizations have begun to share this vision and are engaged in determining their maturity, and you'll learn how they are progressing. By the time you finish reading this book you should have a better understanding of where your organization is at and how to reach the level that will allow the organization to use insight in a way that helps you thrive and grow.

Let's start that journey now.

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