



The Analytic Hospitality Executive

Implementing **Data Analytics**
in **Hotels** and **Casinos**

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Foreword by Dexter E. Wood, Jr.

WILEY



From *The Analytic Hospitality Executive*.
Full book available for purchase [here](#).

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CHAPTER 1

Building a Strategic Analytic Culture in Hospitality and Gaming

I believe in intuitions and inspirations. . . . I sometimes feel that I am right. I do not know that I am.

—Albert Einstein

Hospitality executives struggle to find the balance between delivering a guest experience that fosters loyalty and repeat business, and delivering on their revenue and profit responsibilities to stakeholders, shareholders, or franchisees. If you invest too much in the guest experience, you could impact profits, but if you focus on too many cost-cutting measures to drive profits, you can negatively impact the guest experience.

Decisions made in one department of a hotel can have impacts across the organization. For example, without a good understanding of food cost, a marketing program providing restaurant discounts could affect profitability. Without understanding check-in and checkout patterns, a labor-savings initiative might create long lines at the front desk, impacting the guest experience. Today, your service mistakes are broadcast through social channels and review sites as they happen. The competition is no longer just the hotel next door, but it is also third-party distribution channels and alternative lodging providers like AirBnB, all waiting in the wings to win your guests from you. On top of all that, recent merger and acquisition activity is creating scale never before seen in this industry, and global economic conditions continue to be unstable.

When the stakes are this high, you need something to help shore up that balance between delivering an excellent guest experience and meeting profit obligations. Analytics can be that thing. Tarandeep Singh, Senior Director, Revenue Performance and Analytics, Asia, Middle East, and Africa says, “Analytics is like GPS—it helps you be on track, and even pings you when you go off.” Fostering a culture of fact-based decision making ensures that the organization can find the right direction, understand the trade-offs, hedge against risk, know the next best action, and stand the best chance to be competitive in an increasingly crowded marketplace.

Einstein reminds us in his quote at the beginning of this chapter that there is still room for intuition and inspiration in this vision. Your

intuition can be backed up by the data, getting you closer to “knowing” you are right. Inspiration for the right action can come from what the numbers tell you. Intuition and inspiration are even more powerful when paired with curiosity and questioning. David Schmitt, former director of Interactive Marketing Operations and Analytics for IHG, says in his blog, “The questions from the business are our North Star, the guidance and direction that provide clarity to analytics efforts.”¹

The goal is to cultivate a culture of asking good questions and letting the data provide the answers. There are so many examples today of companies who have successfully, and sometimes famously, derived insight from their data assets through analytics, which helped to create a huge competitive advantage or some remarkable innovation. This could be you. Let’s talk about the characteristics of a strategic analytic culture first, and then I will tell you how this book can help you to build a strategic analytic culture in your own organization and set yourself up for success through analytics.

STRATEGIC ANALYTIC CULTURE

So, what does a strategic analytic culture (SAC) look like? Figure 1.1 outlines the interrelated components of a SAC.

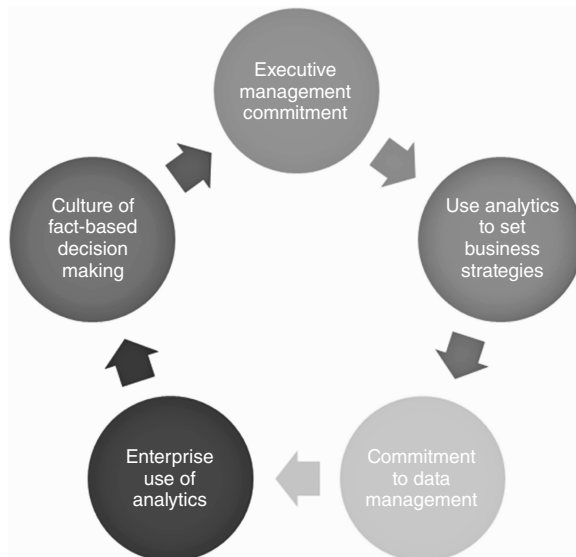


Figure 1.1 Strategic Analytic Culture Framework

A strategic analytic culture starts and ends with **executive management commitment**. This level of support is required to make the necessary investments in people, process, and technology, as well as to ensure the alignment among departments that is critical to enterprise-level thinking.

The executive management team uses **analytics to set business strategy**. Rather than being guided by individual intuition or aspiration, the data and analytics offer a fact-based pathway toward the strategy, which is based on market conditions, customer characteristics, and the company's operating circumstances.

The foundation of any analytics program is an organization-wide **commitment to data management**. Data management programs include:

- Data governance to provide data definitions and guidelines for storing and accessing information
- Data integration to ensure that data from disparate systems is matched and consolidated
- Data quality programs to ensure data is cleansed before being used in analytics
- Data storage infrastructure that facilitates access for analytics and reporting

An all-encompassing data management strategy facilitates **enterprise use of analytics**. Most organizations have isolated pockets of analytic capability, whether it be in revenue management, marketing, or finance. Enterprise use of analytics brings these siloed departments together, ensuring that decision making is not done in isolation.

Mark Lomanno, partner and senior advisor for Kalabri Labs, in an interview in the blog *The Analytic Hospitality Executive*, said that the role of analytics is becoming increasingly centralized in hospitality. "Traditionally the role of analytics has been more in the financial metrics measurement category, to some degree in the operations category, and in the marketing category; however, in the future all those will come together," Mark said. He predicted that over time, online hotel reviews and comments in social media will replace traditional guest satisfaction measures as the primary gauge of customer satisfaction, and that

companies will be able to start predicting occupancy and rates by the quality and nature of the hotel's consumer comments and reviews. "This will force operations and marketing to work very closely together to react very quickly to what the consumer is saying," Mark said.

Mark's prediction points to the need to break down silos, improve communication, and synchronize decision making. When the entire enterprise is aligned around analytics, it creates a **culture of fact-based decision making**. You've probably heard the saying "In God we trust, all others must bring data."² Companies with a SAC back up all of their decisions with data and analytics, rather than instinct and internal influence. This doesn't mean that you stifle creativity. It means that creative thought is supported by an analysis to back up conclusions or reinforce decision making. In fact, strategic use of analytics can help organizations become more creative and more agile when it uncovers insights that were not apparent on the surface.

Ted Teng, President and CEO at The Leading Hotels of the World provided this perspective in a video interview for SAS and the Cornell Center for Hospitality Research: "We are an industry of emotional decisions. We badly need analytics and good data for us to make the right decisions." Ted explained that the hospitality market has completely changed and industry operators can no longer rely on how they did things 20 years ago. "There's a lot of talk about big data out there. I am happy with just small data—some data—that allows us to make better decisions that are based on facts rather than based on our emotions."

Where is your organization in this cycle? Are you getting stuck at executive commitment? Perhaps it's been too difficult to build a data management infrastructure? Is analytic competency still residing in pockets across the organization? This book is designed to help you achieve the SAC vision from the ground up, or from the top down if you are fortunate enough to have that kind of power and influence!

MOVING AHEAD AND STAYING AHEAD WITH PRESCRIPTIVE DECISION MAKING³

Most hospitality organizations today recognize the need for data-driven decision making, and they are making strides in that direction, or at least planning for it. In marketing, managers want to understand the

customer better to improve targeting and value calculations. Operations knows that demand forecasting can support better staffing and ordering decisions, and finance recognizes that performance analysis drives opportunities for efficiencies and strategic growth. As organizations embrace data, analytics, and visualizations, they evolve from “gut-feel” reactive decision makers to more proactive, forward-looking decision makers.

I believe that hotels and casinos are at a turning point in data and analytics. Most hospitality companies have implemented some level of data management and business intelligence, or at least are on the path. Many hotels and casinos have made investments in predictive analytics solutions for revenue management or marketing. All organizations have at least some desire to provide access to the right information at the right time to the right resources to make the right decisions. If organizations successfully build out their data and analytic infrastructures, they will be part of the way there. If they are able to successfully leverage the analytic results across their organizations, they will get ahead and stay ahead.

Analytic solutions are simply decision support tools. They must be used by managers who have the experience to interpret the results and take the appropriate actions. Revenue management systems, for example, drive revenue because the revenue manager can interpret the price and availability recommendations and implement them as part of a broader pricing strategy. The jobs of the revenue management system and the revenue manager are not the same. A hotel cannot simply hook up the revenue management recommendations to the selling system and walk away. At the same time, a revenue manager can't process the millions of pieces of information required to understand market opportunity by hand. However, a great revenue management system managed by a business-savvy revenue manager is a winning combination.

An executive from a large hotel brand told me that one of the driving factors for their business analytics investments is to get better information into the hands of their senior executives faster. “Imagine how much more effective smart and charismatic leaders would be in an investment negotiation or even an internal meeting if they had instant access to performance metrics, to support whatever questions they happen to get asked,” he told me. “We have great, highly

experienced leadership, they are doing a good job today, but I'm sure they could drive much more revenue with better information at their fingertips the moment they need it." It's not that the information doesn't exist, or that there aren't standard sets of reports available. The difference is in the flexibility of the data structure and speed of access to the information. To be able to access information in the right format at the speed of a business conversation, no matter what is needed at the time, is beyond the technical capabilities of most organizations today.

Once again, these systems are not supposed to replace the experience and ability of a top-performing executive, but rather, they should provide information to better interpret a situation, respond more quickly to a question, reinforce or demonstrate a point, convince an investor, or make a key business decision faster. This should be the goal not only at the senior leadership level, but also replicated throughout the organization. It will take the right decision support tools, backed by credible data and advanced analytics, and it will also take the right person in the role of interpreter and decision maker.

This is why I argue that we are at a turning point in hospitality and gaming. We are moving through the chain of analytic maturity, perhaps at different rates organization by organization or department by department within organizations. We are getting to the point where we will need a different type of business analyst and a different type of manager to move ahead and stay ahead. As the needs of the business change, the skill sets and competencies of analysts and managers in analytical roles will need to change, as will the organizational structures, incentive plans, and scope of responsibilities.

The evolution of the scope of decision making in hospitality can be thought of in three stages, based on the ability to access and analyze data. As I mentioned previously, different departments in the organization may be at different stages, but the goal is to evolve everyone to the final stage.⁴

1. **Descriptive.** At the first stage of analytic evolution, it is the best that organizations can do to develop and interpret historical reports. This is the descriptive phase. The organization could know that occupancy ran about 80% last month, or that

40% of reservations book in the week before arrival. Past revenue is tracked to identify historical trends. Decisions are based on this historical snapshot, which primarily involves reacting (i.e., putting out fires). Reports come from disparate systems, often are built in Excel, and pass through multiple hands before being finalized. Creating these reports is time consuming and prone to mistakes. Still, the business at least has some visibility into operating conditions and can report performance to executives—even if it takes a couple of days (or months) to pull together the information. As organizations evolve through this phase, they start to look at building out enterprise data warehouses and investing in business intelligence tools to improve the speed and accuracy of reporting. As more information gets into the hands of decision makers, they are able to react faster. For example, alerts are set up around key metrics so that managers can be made aware when they drop below, or rise above, certain critical levels.

2. **Predictive.** In the next state of analytical evolution, organizations begin to deploy advanced analytic techniques that allow them to anticipate trends and take advantage of opportunities. They start to apply forecasting, predictive modeling, and optimization algorithms to existing data, typically either in marketing with predictive modeling on patron data, or in revenue management using forecasting and optimization to set pricing. These models produce results like occupancy will be 80% next month, the marketing campaign will result in a 2% lift, or revenue is expected to trend down for the next several months. Organizations then prepare themselves to manage through these now expected events. They can be more proactive in their approaches, setting up the right staffing levels to meet expected demand, adjusting price to take advantage of peak periods, or deploying marketing campaigns at the right time to get the best forecasted responses.
3. **Prescriptive.** The final stage of analytic evolution is all about “what are we going to do about it?” In this phase, organizations are heavily supported by techniques like optimization,

which provides the best possible answer given all business constraints, or simulation, a “what-if” technique in which a complex scenario with multiple moving parts is modeled so that parameters and options can be tested to determine the impact on key outcomes. For example, marketing optimization might give you the best possible set of contact lists for all of your promotions that will provide the highest response rate, but still respect budgets and patron contact preferences. Simulation lets you test the impact of a particular pricing strategy on demand and revenue generation, or the lift associated with spending a little more on a marketing campaign.

Advanced analytic techniques like forecasting, predictive modeling, optimization, and simulation are valuable because they provide a vision into the future or a decision point to consider, but the true mark of a prescriptive organization is that analysts and managers have the business acumen to both ask and answer the question “what are we going to do about it?” It’s fine to know that occupancy was 80% and it will be 90% next month. However, the true prescriptive manager can use that information, with their knowledge of the market and the operations, to build a plan to get to 95%. The skill set associated with this manager is different than the skills required in the descriptive or predictive phase, but clearly it is one that can move the organization forward—replicating the instincts, charisma, and acumen of the executive I described previously across all functional areas.

MAKING IT HAPPEN

For many organizations, this evolution in decision making will happen first in individual departments. The goal is to move the entire organization toward prescriptive decision making, supported by data and analytics. Success in a small area can become the inspiration that facilitates broad growth of analytical capabilities.

The point is that knowing what happened and what will happen is no longer enough. We need to build a culture of “what are we going to do about it?” in which the whole team uses the organization’s data and analytics to make fact-based decisions that move the organization forward.

Focus Areas for a Strategic Analytic Culture⁵

Moving your organization toward a strategic analytic culture requires more than just investments in analytic technology. Building a SAC starts with people, process, organization, and technology, in three focus areas within your organization.

1. Business analytics skills and resources
2. Data environment and infrastructure
3. Internal analytic processes

Focus Area 1: Business Analytics Skills and Resources

Find the right balance of resources. Building a strategic analytic culture is not simply hiring a bunch of analytic modelers and letting them play with your data, but rather striking the balance between analytic rigor and business application. Your best revenue managers understand their markets and their business, sometimes even better than they understand the forecasting and optimization algorithms underlying the revenue management system. And that's okay. It is their ability to interpret the analytic results and apply them to their markets that makes them successful. Think about how to achieve this business acumen supported by analytic rigor across the organization.

To accomplish this, organizations may need to move to a structure where the advanced, predictive analytic models are created and managed by a central team of trained and experienced analysts, who work closely with counterparts in the business. The analyst's role is to build the model with the guidance of and questions from the business, and then the business interprets the results through their experience and business acumen. When there is a shortage of analytical talent, this structure ensures analytic rigor is maintained, but also puts power in the hands of decision makers to access the right information when they need it to move the business forward. It releases the requirement that managers be highly analytical, but requires them to be analytical enough to interpret the numbers and savvy enough to read market conditions. In other words, it allows them to become prescriptive managers. I provide more detail about organizing an analytics department in Chapter 11.

Make analytics more approachable. Analytical skills are in short supply. In fact, in the United States it is estimated that demand for deep analytical resources will be 50% higher than supply by 2018.⁶ Organizations will need to figure out a way to make analytics more approachable. Highly visual, wizard-driven tools enable nontechnical users to explore and share “aha moments” without having to be PhD statisticians. They say a picture is worth a thousand words, and that’s true in analytics as well. Graphics are accessible and easy for executives to consume quickly. This ease of access will help to foster the commitment to fact-based decision making. Enabling business users to create and share insights will further the mission of enterprise use of analytics, while simultaneously freeing the limited supply of analytical resources to focus on the more rigorous analysis. In Chapter 3, I talk about visual analytics applications that can help move the organization to approachable analytics and self-service data visualization.

Focus Area 2: Information Environment and Infrastructure

Without a strong foundation of reliable and accurate data, analytic results will be suspect, and buy-in becomes impossible. You can spend all meeting, every meeting arguing about whether revenue per available room should include the out-of-service rooms, or instead spend the time making strategic decisions about price position relative to the competitive set. A sound data management strategy gets you on the road to analytic success, and away from the need to confirm and reconfirm the data. Here’s how to establish the foundation for a commitment to data management:

1. **Establish a data governance discipline.** As data and analytics become centralized, data governance ensures consistency in data definitions, data integration guidelines, and data access rules. This is crucial to establishing a “single version of the truth” in results and reporting, as well as to building a sustainable process for continuing to advance organizational data acquisition.
2. **Upgrade your data architecture.** In order to effectively leverage the insights trapped in today’s fast moving, diverse volumes of data, you need a modern data infrastructure that can support enterprise-class analytics and dynamic visualizations.

3. **Bridge the gap between IT and the business.** A strong partnership between IT and the business must be built to ensure that the infrastructure described previously facilitates exploration and fact-based decision making. A key new resource to add to the organization could be the “translator” between IT and the business—someone who understands how to interpret the business requirements into an IT context, and vice versa.
4. **Capitalize on advanced analytics, not reporting.** Any SAC relies on forward-looking analysis to stay ahead of trends and proactively identify opportunities. This requires moving from descriptive analytics that simply illustrate where you are today, to the use of predictive analytics like forecasting and optimization, which can identify what could happen and help you determine the best possible response in advance.

Chapter 2 of this book will demystify data management so that you can work with your peers and IT to establish a strong, credible data platform as the foundation of your analytics efforts.

Focus Area 3: Internal Processes

Enterprise use of analytics is not as simple as “everyone log in and go.” With limited personnel and technology resources, organizations will need processes in place to ensure access to critical analytical or IT resources. Then, the organization can better identify, prioritize, and address analytical requirements—whether it be deploying a new retention model or investing in a new analytical tool.

Manage analytics as an ongoing process, not a one-off project. Internal processes must be designed around sustainable, long-term analytic performance throughout the analytics life cycle. You will need to think not just about developing models, but deploying them, embedding them into a business process, and monitoring and improving them over time.

Facilitate collaboration. Traditionally, hospitality, like so many other industries, has operated with siloed departments. To facilitate collaboration, the silos that prevent collaboration must be removed. Technology may be the glue that binds departments together, but true

collaboration will require realigning incentives, changing organizational structures, and breaking down barriers. Resources across the organization should be empowered and given incentives to act in the best interests of the enterprise, not just their departments.

This is not an insignificant effort in most organizations. Collaboration across the enterprise is not possible without at least one active and influential ally at the top of the organization who is able to drive change. Frequently, a grassroots effort from one department stalls out when that department is unable to gain momentum and get executives' attention. Chapter 11 describes in further detail how analytic hospitality executives can turn their grassroots efforts into an enterprise-wide initiative.

You can talk all you want about the analytics cycle, the importance of integrating data, the value of advanced analytics, but I think the most important element in any analytics program is intent. What does the business want to get out of the analysis? What do they think is the measure of success? It is easy to make assumptions during an analysis and end up delivering something that the business didn't expect, doesn't want, or can't use. Take time to clearly define the intent with the business before starting any analytics project, and you will be set up for success.

—Vivienne Tan, Vice President, Information Technology,
Resorts World Sentosa

GETTING STARTED

So, how do you get started? Read the rest of this book, obviously! In all seriousness though, building a strategic analytic culture is a journey that should be accomplished in phases. I talk again, and in more detail, about this phased approach in Chapter 11, but here is a summary to set some context (also see Figure 1.2).

1. **Establish.** The first phase is where you implement the enabling analytic technologies, create processes, and place people within key departments. Here it is most important to ensure that you have solid processes to build on, well-trained people, and

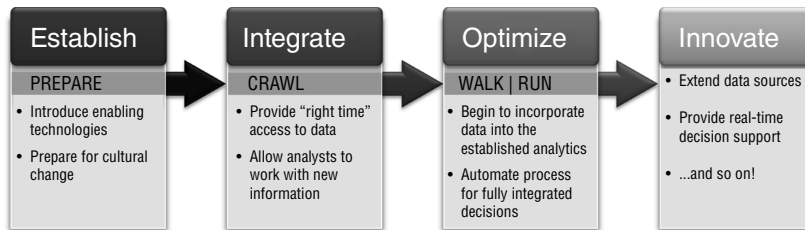


Figure 1.2 A Phased Approach

the right technology to support current operations as well as future growth.

2. **Integrate.** Next, you begin to integrate data and analytics across a few key departments. Get a cross-functional team together to define metrics and identify opportunities, then start providing analysts with manual access to new data sources. Let them get comfortable with the data, so they fully understand how it will impact results and decisions.
3. **Optimize.** As analysts become comfortable, it's time to automate. Data can be incorporated into models and results operationalized. Since the analysts are already familiar with the data, they'll be more likely to understand and accept new results and new decisions.
4. **Innovate.** When your automated processes become ingrained in organizational decision making, you've built a platform for innovation. Sometimes, innovation is simply adding a new data source or a new analytic technique. Other times, it may require starting from the beginning with the establish phase. Either way, you've got a process in place for ensuring success.

You'll need organizational buy-in to embark on this journey, and that isn't always easy to achieve. Find a project that is easy to complete and highly visible. Perhaps you start with one small initiative that is a pet project of a visible executive. It can also be helpful to find a project that bridges the gaps between two siloed pockets of analytic capability, since those departments are already comfortable with their own data. Leverage the entire cycle from data governance to automating analytics so that you can set up repeatable processes. Start small, and win big, but don't lose site of the ultimate goal—developing a high

performance organization built on a solid foundation of data management and advanced analytics.

The most immediate and important executive action is to start asking for proof. Force your teams to defend any recommendations with data. Find out if there are additional data sources or analytical tools that would help them to make better decisions, and make that happen. Encourage collaboration across departmental boundaries. As your success grows, you'll find your peers recognizing the momentum and wanting to get on board themselves!

HOW THIS BOOK CAN HELP

In the rest of this book, I provide you with information and strategies to help you identify opportunities within your organization to start on the path to a strategic analytic culture—or to help you cross the finish line if you are nearly there already! This book is intended to provide hospitality executives with the information they need to make the right decisions about analytics strategy, people, and technology, to survive and thrive in today's highly competitive market.

The foundation of a strategic analytic culture is data. Chapter 2 helps to demystify big data and describes the tools and processes available to manage it. I talk about the importance of establishing a common business language and how to set a data governance process in place that will make and keep you successful. I give you strategies for identifying data sources that could provide value to the organization, and talk about how to access, integrate, cleanse, and store that data.

Chapter 3 describes why visualizations are “worth a thousand words.” Everyone wants to be able to communicate more effectively, particularly to leadership and stakeholders. In this chapter, I discuss how to create powerful visualizations that get your point across without complicating the message. I describe the technology enablers, provide tips for creating powerful visualizations, and give examples of visualizations.

Everyone seems to be talking about analytics these days, and many companies throw that term around to describe practically any use of data. In Chapter 4, I discuss the difference between descriptive and

predictive analytics, provide a high level definition of common types of analytics (like forecasting and data mining), and explain how these analytics are typically used. I also describe considerations for executing analytics. I won't make you into a PhD statistician, but I will make sure that you can understand what a statistician is talking about (at a high level) so that you can make the case for analytic investment, and hopefully make one or two folks on the team think you know your stuff!

Chapters 5 through 10 describe how analytics can add value to the individual functional areas in hospitality and gaming (operations, marketing, sales, revenue management, performance analysis, and gaming analytics). I highlight the kinds of data that are available, or that should be gathered, and provide examples of where advanced analytics can be used. I talk about the technology investments that make sense and the resources that could support your efforts. If you run one of these functions, I'll hopefully inspire some thinking about where you can get started within your group. If you work with one of these functions, I'll help you to understand how they are thinking about analytics so that you can prepare to work with them to take advantage of joint opportunities. If you run the whole show, I'll help you understand what your functional areas should be working on, and maybe give you some inspiration about how to prioritize analytics projects.

The final chapter provides strategies for you to set up your organization so that analytics support decision making across the enterprise. I describe how to get started with analytics in your organization, as well as options for organizing analytical resources. This chapter also has a few case studies from analytic hospitality executives who have been able to advocate for the value of analytics in their organizations.

Data and analytics, and the technology that supports them, are very complicated and getting more so every day. It is easy to be distracted, confused, or intimidated. It's easy to make mistakes. I am merely scratching the surface in all of these areas in this book. My hope is to arm hospitality executives with enough information to work with peers across their organizations to set up programs that will improve organizational decision making, and to initiate, participate in, and understand conversations with IT or analysts. You should never be afraid to ask follow up questions, and persist until

you get an answer that makes sense to you. Keep in mind that a great analyst or technologist should be able to explain complex topics in plain language. You will be doing them a favor by forcing them to practice this skill.

NOTES

1. David Schmitt, “First Comes Clarity, Then Come the Tools & Data,” All Analytics, February 6, 2013, www.allanalytics.com/author.asp?section_id=2092&doc_id=258158.
2. Quote from William Edward Denning, the father of statistics—okay, maybe that’s overstating things a bit, but he was a really important, really influential American statistician, and this is a cool quote.
3. Portions of this section were taken from the fall 2015 issue of *Gaming and Leisure* magazine, “Moving Ahead and Staying Ahead with Prescriptive Decision Making,” http://gamingandleisuremagazine.com/gl_articles/moving-ahead-and-staying-ahead-with-prescriptive-decision-making/.
4. The author would like to gratefully acknowledge Tom Buoy, one of her favorite analytic hospitality executives, for inspiring this description of the evolution of analytical decision making.
5. Portions of this section were adapted from the SAS white paper “Building an Analytics Culture: A Best Practices Guide,” 2012.
6. U.S. Bureau of Labor Statistics, U.S. Census Bureau, Dun & Bradstreet company interviews, McKinsey Global Institute analysis.

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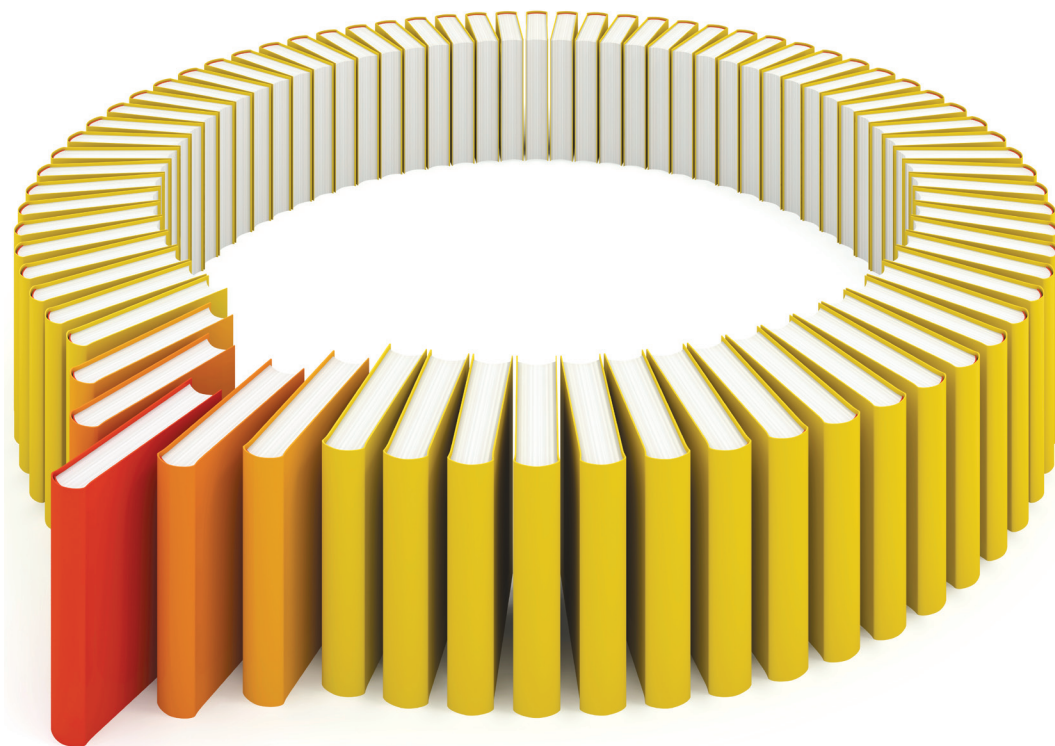
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Full book available for purchase [here](#).

About the Author

Kelly A. McGuire, PhD, is Vice President, Advanced Analytics for Wyndham Destination Network. She leads a team of data scientists and developers that builds custom analytic solutions for Wyndham Vacation Rental's companies and the RCI time-share exchange. She is an analytics evangelist, helping hospitality and gaming businesses realize the value of big data and advanced analytics initiatives, to build a culture of fact-based decision making. Prior to joining Wyndham, she led SAS's Hospitality and Travel Global Practice, a team of domain experts in hospitality, gaming, travel, and transportation. Internally at SAS, she was responsible for setting the strategic direction for the practice and defining the industry portfolio and messaging for her industries. Before taking on this role, she was the industry marketing manager for Hospitality and Gaming at SAS. She was responsible for the outbound messaging regarding SAS's Hospitality and Gaming capabilities, particularly in the areas of revenue management and price optimization. She also worked with the joint IDEaS and SAS product management team, where she was responsible for gathering requirements for ancillary revenue management solutions such as function space, spa, and food and beverage. Kelly was also responsible for defining requirements and creating the market strategy for SAS Revenue Management and Price Optimization Analytics, which is the analytics engine for IDEaS G3 Revenue Management System.

Before joining SAS, Kelly consulted with Harrah's Entertainment to develop restaurant revenue management strategies for the casinos in their major markets. Kelly was a senior consultant at Radiant Systems, working with contract food service clients on web-based administrative solutions to manage cash handling, inventory management, supply chain, and labor. She also worked for RMS (Revenue Management Solutions) on menu-item pricing strategies for chain restaurants, and designed a prototype function space revenue management system for the Westin in Singapore. She managed an upscale Creole restaurant in New Orleans, and was the general manager of a franchised Ben & Jerry's Ice Cream Shop in the French Quarter in New Orleans.

Kelly has a BS from Georgetown University and an MMH and a PhD in Revenue Management from the Cornell School of Hotel Administration, where she studied with renowned revenue management researcher Dr. Sherri Kimes. Her dissertation was on the impact of occupied wait time on customer perceptions of the waiting experience. Her research has been published in the *Cornell Hospitality Quarterly*, *Journal of Pricing and Revenue Management*, *Journal of Hospitality and Tourism Research*, and the *Journal of Service Management*. She is also a frequent contributor to industry publications and speaker at industry conferences. Kelly is also the author of *Hotel Pricing in a Social World: Driving Value in the Digital Economy*.



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