

DWIGHT McNEILL

President of WayPoint Health, Lead Faculty of
HEALTH Care & Life Sciences Analytics Research Council

A FRAMEWORK FOR APPLYING
ANALYTICS IN
HEALTHCARE



What Can Be Learned from the Best Practices
in Retail, Banking, Politics, and Sports

Praise for *A Framework for Applying Analytics in Healthcare*

“Dwight McNeill draws an elegant map to strengthen healthcare composed of insights drawn with wit and imagination from four different sectors. The diverse roles of the consumer, customer, member, and constituent in each sector offer new approaches to reforming healthcare that better meets the needs of patients and families.”

—**Jessie Gruman**, President and Founder, Center for Advancing Health

“Harnessing the power of health information technology can help transform our healthcare system into the high-quality, patient-centered, and efficient system we need. Dwight shows how healthcare decision makers can learn from the best practices of other industries and use the power of electronic health records and data analytics to improve care and quality.”

—**U.S. Senator Sheldon Whitehouse**, State of Rhode Island

“Sharing analytical ideas within companies is commonplace, but McNeill’s brainstorm is that healthcare analytics can benefit greatly from adopting ideas from other industries. If you’re in healthcare, you’ll find that seemingly intractable challenges have already been solved elsewhere. This book will open your eyes to a new set of possibilities.”

—**Thomas H. Davenport**, Visiting Professor, Harvard Business School

“Learning from outside your field holds an untapped potential for dramatically improving your performance. This book provides that knowledge and is practical, insightful, and a must-read for the healthcare leaders seeking to transform their organizations.”

—**Maulik Joshi**, Ph.D., President, Health Research and Educational Trust

“One of the hottest topics in business education today is how to harness big data for big business results. This book takes the reader on a journey deep into five industries and provides insights and recommendations on how to leverage analytics in very unique and productive ways.”

—**William O’Neill**, Dean of the Sawyer School of Management, Suffolk University

“The healthcare industry has a lot to learn from paying attention to the work of other industries. Dwight McNeill has given us a road map for this critical journey. His insights are fresh and compelling. His notion of a Chief Analytic Officer (CAO) is timely. Analytic power will be the fuel for the future, and Dwight’s framework provides the platform for a ready understanding of the details. Kudos to McNeill for this far-reaching work. I hope it is not too late for our industry to benefit!”

—**David B. Nash**, MD, MBA, Founding Dean, Jefferson School of Population Health,
Thomas Jefferson University

“Dwight McNeill has emerged as an important voice pushing the U.S. healthcare industry to apply innovations learned in other domains to solve some of our persistent operational challenges. In particular, the value and applications of innovative analytics have proven transformative in areas such as finance and retail. Dwight has consistently promoted the notion that healthcare can and must similarly embrace these opportunities in order to thrive through the current period of reform and change. We ignore his voice at our own peril as analytics may well prove to be a key differentiator between healthcare’s future winners and losers.”

—**Tariq Abu-Jaber**, Vice President of Medical Informatics, Harvard Pilgrim Health Care

“Dwight McNeill not only makes the cogent proposition that the path toward a more efficient, effective, and equitable healthcare system is achievable, but he offers tangible practices, tools, and processes that are immediately applicable to every healthcare decision maker. *A Framework for Applying Analytics in Healthcare* is skillfully researched and makes recommendations that are both innovative and logical. Dwight’s comparison and adaptation of analytic ‘sweet spots’ from the banking, retail, political, and sports sectors are incredibly relevant to today’s fast-paced, data-driven information culture. The Health Improvement Capabilities Scorecard (HICS) has the potential to revolutionize how we can turn our current, unsustainable ‘sick care’ system into a ‘healthcare’ system, where everyone from hospitals, health plans, physicians, governments, and, most importantly, the patient will benefit.”

—**Mark Marino**, Executive Director, Health Leads Boston

“Dwight’s model of adopting analytic strengths from diverse industries to transform healthcare holds infinite possibilities for innovation in every industry. It is the foundation for harnessing today’s big data and robust analytic platforms to develop tomorrow’s products and services that will benefit consumers while growing and transforming business.”

—**Marcia Tal**, former Executive Vice President, Citigroup, and Founder of Tal Solutions

“In this book, Dwight has achieved what others only talk about—he’s translated towering analytics successes from other industries to healthcare. In an engaging way, he walks through the current challenges in healthcare analytics and is careful not to lose you in the jargon. Next, he deftly highlights the analytics challenges of four industries, highlighting the analogs to healthcare. He ends by synthesizing these observations into adaptations for healthcare and a framework for deploying analytics innovations. This book will help us to stop just talking about applying best practices from other industries and actually do it.”

—**David Wiggin**, Program Director, Healthcare and Life Sciences, Teradata Corporation

A Framework for Applying Analytics in Healthcare

What Can Be Learned from the
Best Practices in Retail, Banking,
Politics, and Sports

Dwight McNeill

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To Joni and Jessie

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Contents

Chapter 1	Overview	1
	Introduction	1
	Analytics Innovations	2
	Discovery of Healthcare Adaptations	5
	Putting Ideas into Action	15
Chapter 2	Healthcare	19
	Introduction	19
	The Healthcare Industry Has a Unique Mission and Its Potential Contributions Are Great	20
	The Healthcare Industry Has Major Challenges	23
	Healthcare Is a Very Different Industry in Many Respects	32
	Healthcare Is a Very Similar Business on Some of the Fundamentals	35
	The Current and Future State of Health Analytics	40
	Top-Ten List of Healthcare Analytics Challenges	41
Chapter 3	Retail	57
	Introduction	57
	Industry Challenges	58
	Industry Strengths	62
	Analytics Sweet Spots	67
	Conclusions	81
Chapter 4	Politics (Presidential Election Campaigns)	83
	Introduction	83
	Industry Challenges	85
	Industry Strengths	87
	Analytics Sweet Spots	92
	Conclusions	111

Chapter 5	Banking	113
	Introduction	113
	Industry Challenges	118
	Key Business Drivers and Strengths	121
	Analytics Sweet Spots	127
	Conclusions	139
Chapter 6	Sports	141
	Introduction and Industry Challenges	141
	Key Business Drivers and Industry Strengths	143
	Analytics Sweet Spots	148
	Conclusions	164
Chapter 7	The Top Healthcare Analytics Adaptations	167
	Seven Adaptations	167
	Observations Across the Adaptations	177
Chapter 8	A Framework for Adopting Innovations	179
	The Innovation Pathway	179
	Innovation Adoption Factors Model	182
	Adoption Domains and Factors	183
	Case Study	193
	Endnotes	209
	Index	229

About the Author

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McNeill has authored many publications. His most recent are *The Value of Building Sustainable Health Care Systems: Capturing the Benefits of Health Plan Transformation* and *Building Organizational Capacity: A Cornerstone of Health System Reform*.

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1

Overview

This book is about discovering ideas in faraway places and building bridges to welcome them home.

Introduction

Ideas matter. They are the seeds from which innovations grow. Innovating to achieve competitive differentiation is the top business challenge today. And analytics is the high-octane fuel to power innovations to achieve business breakthroughs.

The premise of this book is that healthcare can learn a lot from other industries. Industries develop deep and unique strengths in certain areas and get very proficient in the associated analytics. Other industries that do not experience the same set of forces do not develop these analytics capabilities. They are blinded from them and their potential performance is constrained. This book provides a guided tour of industries that are somewhat mysterious to healthcare, including retail, banking, politics, and sports. The express purpose is to harvest some ideas and build a bridge to adapt them in healthcare. Indeed, the best analytics from these industries provide insights to address some of the most intractable challenges in healthcare.

The book is divided into three parts. The first part is the discovery process to harvest analytics sweet spots from the four industries. The second part is the distillation and interpretation of the sweet spots into the most compelling healthcare analytics adaptations. The third part provides a roadmap for putting ideas into action and a model to evaluate the adoptability of the healthcare adaptations.

Analytics Innovations

Analytics in healthcare is a paradox. On the one hand, healthcare is immersed in analytics. It is far ahead of other industries in using science, for example, to understand diseases and develop new cures and treatments. But the translation of the science into practice has been disappointingly incomplete. U.S. healthcare faces major challenges, not the least of which are its low standing in the world on key health outcomes, efficiency, cost, disparities, and affordability. And research shows that the odds of getting the right medical service are just a bit higher than 50/50.¹ In a word, the science has just not been put into clinical or business practice sufficiently.

The fact is that we know how to address these challenges, and analytics can be a tremendous support; but there's a blockage. This is due to a number of factors, including the seemingly overarching prerequisite to digitize the business before anything else can be harvested from analytics. This forestalls other forms of analytics that can lead to real benefits for business today. But it is more complicated than that. There is an amalgam of contributing barriers, including the lack of good coordination among actors in the ecosystem, a perverse payment system that does not reward value, complex products and services, ambiguity about who the customer is, professional autonomy, convoluted market dynamics, multiple vested and powerful interests, and a pervasive, risk-averse culture.

In spite of these challenges, the field must innovate to make change happen. Innovation is critical to the success of any business. A recent MIT survey of 3,000 executives across many industries and countries found that the top business challenge is "innovating to achieve competitive differentiation."² This was far ahead of the usual business challenges to grow revenue and reduce costs. Innovation rises to the top at this time because the Great Recession required businesses to address all possibilities for cost reduction, and many have developed very lean organizations. Businesses recognize that they need to grow the top line, and not just by extending the old line. And to grow the top line, they have to transform the business.

This is especially true in healthcare. For example, health insurers face commodity prices for premiums, the demand for transparency, and a flip of the business model from business-to-business to business-to-consumer, among other pressures related to healthcare reform. Similarly, providers are facing market and

government pressures to improve outcomes, lower waste, and change the underlying revenue model from fee-for-service to global payments. In response, the leading companies are dramatically changing their identities. For example, some health insurers are becoming health companies, and others are viewing claims processing as one of many product lines as they become information companies. The industry archetypes are eroding and innovation is charting a new path.

Innovation is tricky. It is a necessary but a high-risk/high-reward strategy. Companies that do not take the risk can set themselves up for a death spiral. And those that do take the risk need to overcome many challenges, not the least of which is the complexity and unpredictability of implementing innovations. Few innovations succeed. Even with good execution, the innovation might be too early or too late relative to market demand and competitor actions. Or it might prove to be too weak to produce a worthwhile benefit relative to the cost. But for those that do succeed, it can be a game changer and propel the company to new heights.

Innovation starts with creativity. Creativity, whether in art or science, involves looking at things in new and different ways that result in fresh ideas that others regard as beautiful or useful or both. It involves breaking out of established patterns and connecting and rearranging current knowledge. Steve Jobs said that “creativity is just connecting things” like one’s experience and knowledge and then “synthesizing new things.”³ There are many methods for generating new ideas, including taking on a different role, for example, of a patient in healthcare, combining ideas from different disciplines, or challenging current paradigms. And, of course, businesses in one industry can learn from businesses in another. Paul Plsek, an expert on complexity and “directed creativity,” says that “when we open up our thinking to receive ‘fresh knowledge’ from outside the healthcare system about customer flow, we may notice the concepts of drive-through windows in the fast food industry, or Internet-based services in banking. This fresh knowledge might feed a creative generation process that results in ideas about how drive-through windows and Internet sites might be used to serve patients in a new primary care clinic.”⁴

Ideas begin a process that can ultimately lead to innovations that can make a positive impact on people’s lives and the bottom line. Success depends on the wisdom of the idea, the translation of the idea into a design and related strategy to carry it out, excellence in implementing it, and eventually reinventing it.

Ideas can come from comfortable places and unfamiliar places. This book concentrates on the latter, not because they are better, but because they are often ignored. They are ignored because they do not necessarily fit our beliefs about how the world works. We tend to seek out information that confirms our positions and ignore the rest, what is referred to as confirmation bias. So outside-in thinking has an inherent hurdle at the outset. But ignoring outside-in thinking can lead to blind spots. For example, there are legions of dedicated professionals that concentrate on the problems within healthcare with the intent to improve them. The blind spot of this process might be characterized this way: “Removing the faults in a stage-coach may produce a perfect stage-coach, but it is unlikely to produce the first motor car.”⁵

When the healthcare industry has looked to other industries for ideas and solutions and subsequently adapted these to healthcare, it has often produced impressive results. For example, quality improvement leaders like Don Berwick from the Institute for Healthcare Improvement and Brent James from Intermountain Healthcare have provoked and worked relentlessly to inspire and educate the field to use process control methods from other industries including the teachings of Deming and methods like six-sigma. And they have demonstrated significant improvements. The frustration has been the slow spread of the innovations that have been proven to be so effective.

Another need for creativity, derived from connecting knowledge from other industries, is to prevent a “Kodak moment.” Perhaps you remember the old Kodak moments. These were absolutely beautiful photographs derived from Kodak film products that were published in magazines like *LIFE* decades ago. But the new Kodak moment of 2012 is a not-so-pretty picture of the company filing for bankruptcy. The bankruptcy was due in part to the disruptive technologies of the digital camera and later of smartphones that upended the company’s value proposition about its film products. Both digital technologies took good pictures, virtually eliminated cost, and ended the inconvenience of waiting for the pictures to be developed. The other reason for the bankruptcy was that Kodak thought its products were perfect and did not see or subsequently adapt to the threat. However, a competitor in the film business, Fuji, did adapt and thrive. It rethought the use of the chemicals used in the film production business and discovered that they were rich in antioxidants, which are the mainstay of facial makeup products, and it went into

the business. There are three issues pertinent to creativity: (1) the need for organizational receptivity to new ideas, (2) the ever-present danger of game-changing, new technology that can make an existing product or business obsolete, and (3) the need to adapt through innovation.

Are there Kodak moments looming for healthcare, and might these be knowable through the sensing of developments in other industries? Of course! And especially in the area of analytics. These are described throughout the book, but here is a glimpse of what's to come:

- Democratization of data, which results in the availability of new data from public “open government” databases and from private “data snatchers”
- Change in the locus of power of data due to mobile technologies and social media
- Deep reliance on predictive modeling to address behavior change
- Allegiance to the customer

Each of these insights could lead to ideas that might flower into innovations, which in turn could result in breakthroughs for business success.

Discovery of Healthcare Adaptations

The premise of the book is that healthcare can and should learn from the best analytics of other industries. Certain ideas will lead to adaptable innovations in healthcare. The process for discovering ideas from other industries used in the book is depicted in Figure 1.1. Note that this approach is based on the firmly held belief that analytics succeeds when it responds to the needs of the business and not when analytics answers—that is, technologies and methodologies—are in search of business questions.

Industry Challenges

The first stage in the discovery process is industry challenges. This stage seeks to understand the industry, goals, context, challenges, and drivers. These ingredients

mix together in a crucible that determines how an industry needs to perform to succeed by developing and honing areas of strength. For example, the banking industry suffered a disastrous plunge in trust and revenues due to its irresponsible subprime mortgage lending practices. This not only contributed to the Great Recession, which cut demand for its products, but also led to onerous regulations and oversight that constrained the business, especially in the area of lending. It subsequently developed greater strengths in risk assessment.

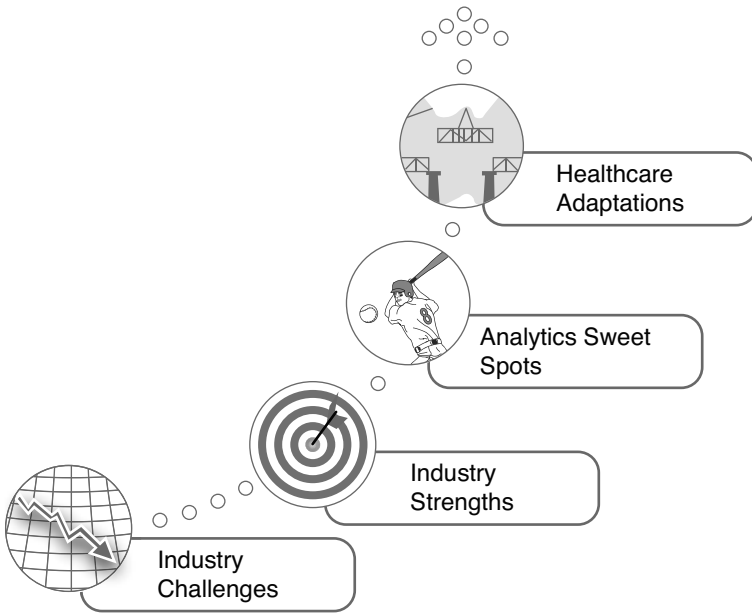


Figure 1.1 Healthcare adaptations discovery process.

The industry challenges are unique to each industry and are detailed in the chapters to follow. There are challenges common to all the industries reviewed in the book, and these are included in Figure 1.2. Note that these industry challenges do not include the generic business challenges, such as increasing revenues, reducing costs, improving the balance sheet, paying attention to customers, and so forth. Rather, these challenges reflect specific game-changing events and trends that portend new waves of threats and opportunities.

The first challenge was the Great Recession. This was not a typical, cyclical recession. In fact, it was the worst economic period since the Great Depression. It shattered customer purchasing power and the demand for products and services.

The second challenge is hyper-competition. This is partly related to the Great Recession and the need to capture dwindling purchasing dollars. But it is also an endpoint of the convergence of the cross-industry challenges described later. Hyper-competition makes demands on analytics to gather and analyze more diverse and larger volumes of data to know the customer more fully. This is most evident in the retail industry, where personal data can help predict what a customer wants to buy before the purchase. Hyper-competition is also evident in political campaigns. The overarching need to find and sway a small number of voters who could spell victory or defeat required a new winning strategy in the 2012 U.S. Presidential election. The winning strategy was to be extremely data driven.

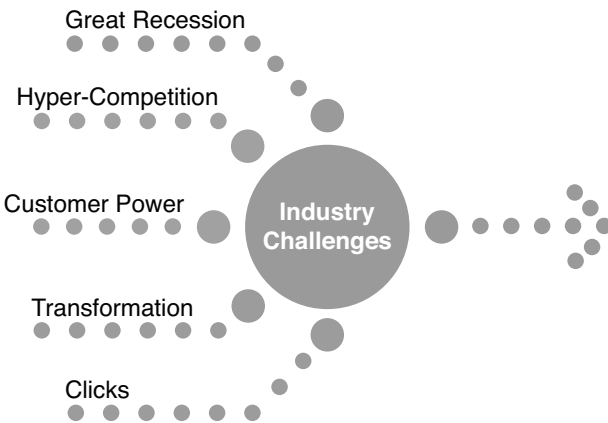


Figure 1.2 Cross-industry challenges.

The third challenge is customer power. Customers are taking the upper hand in their relationships with business because they have the data at their fingertips, in their smartphones and tablets, and they use it to make more informed purchasing decisions. The whole process of buying has been accelerated, yet made more deliberate, because of the availability of price information from multiple sellers on the Internet. Similarly, customers want to do business with companies “their way,” on their preferred devices, with access to services 24/7, and expect the business to provide flawless service across channels. Finally, customers want information that makes sense to them and on their terms, which is often obtained from peers and not from marketing departments or government agencies.

The fourth challenge is the need for transformation. There is no sitting still and the race continues to have no finish line. But the difference is that the very nature of the business has to evolve and the pace of change is accelerating. The tried-and-true ways of succeeding in banking, retail, healthcare, and even sports are up for grabs. The need for transformation creates the appetite for innovation.

The final challenge is clicks. Clicks are the sounds of doing business on computing devices. Clicks are challenging the bricks. What could be more indicative of shifting paradigms than the collapse of the structures in which people do business (bricks)? Mobile “rules” for now because it is seemingly a new organ of the body that offers new functionality, is integrated perfectly, and is appreciated. It is almost like a seventh sense for humans. Mobile will give way to the next generation of new (artificial) body parts for sensing and communicating, perhaps as Google Glass eyewear. But the point has been made. Digital devices that provide more human functionality in ways that are “natural” and improve people’s capability to sense are game changers.

Industry Strengths

The second stage of the discovery process is the understanding of industry strengths. All industries have unique strengths that, if exploited, can drive business breakthroughs to beat the competition. The unique industry strengths identified in the discovery process and distilled to their essence are summarized in Figure 1.3 and described in the following list.

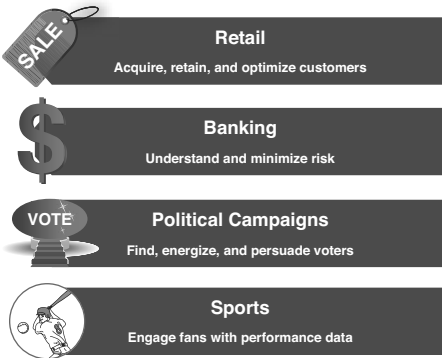


Figure 1.3 Unique industry strengths.

- For retail, it is clear that the overarching strength of the industry is to acquire, retain, and optimize customers. Marketing's customer analytics are woven into this strength.
- For banking, the unique industry strength is understanding and minimizing risk. As mentioned earlier, the industry needed to clean up its lending practices for its very survival. Risk assessment has always been a core element of the industry, but it needed to get a lot better to reduce loan defaults without crimping the volume of loans. This became an industry imperative that necessitated the refinement of the industry strength.
- The industry strength of political campaigns is the laser focus on finding, energizing, and persuading voters. This strength was made more powerful through data-driven innovations.
- Finally, sports has a very unique strength in its ability to engage fans through the full transparency of detailed performance data on its athletes and teams. Athletes are acquired, fired, and improved based on the data. The paradox for healthcare is that sports fans know much more about the athletes who entertain them than patients do about the doctors who make life-and-death decisions about them.

Analytics Sweet Spots

The third stage of the discovery process is identifying the analytics sweet spots that correspond to the industry strengths. The concept of a sweet spot comes from sports. It is the place where a combination of factors results in the maximum impact achieved relative to a given amount of effort. In baseball, for example, it is that place on the bat that produces the most powerful hit. The analogue in analytics is a solution that provides the most power to make the industry strength as successful as possible. In the case of banking, the analytic sweet spot, matched to the industry strength, is a refined FICO score that assesses the capability of a borrower to fulfill promises to repay a loan.

What we have learned is that each industry pushes the envelope in its use of specific analytics, not necessarily because it has more technical sophistication, but because the specific goals, purposes, pressures, and culture of that industry are

unique and require better flowering of certain analytic tools. These are the sweet spots that we want to translate and adapt for healthcare.

There are cross-industry analytics themes that shape the manifestation of advanced analytics generally and have a strong influence on the analytics sweet spots for each industry, as highlighted in Figure 1.4.

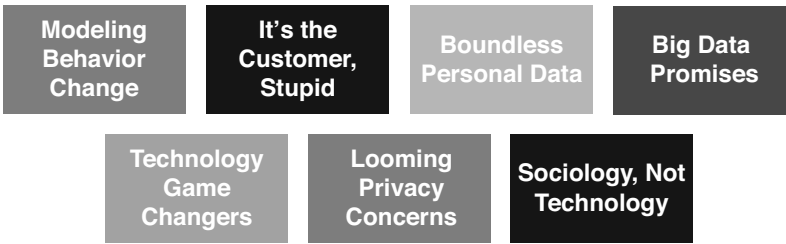


Figure 1.4 Cross-industry analytics themes.

Modeling Behavior Change

Predictive modeling to change behavior is a powerful, advanced analytics method used across the industries. Predictive modeling is commonly used for general business purposes, including forecasting, simulation, root cause analysis, and data mining. Most of the breakthrough applications of predictive modeling across industries in this book focus on understanding and changing behaviors of customers. Examples include the following:

- **Retail:** Determine the probability that a woman is pregnant and her estimated delivery date.
- **Banking:** Determine the likelihood of divorce as a major predictor of loan default.
- **Political campaigns:** Determine the messages most likely to convert an undecided voter.
- **Sports:** Determine what attributes of players contribute to team wins.

It's the Customer, Stupid

It goes without saying that customers are what make businesses thrive or die. Businesses can be distracted and focus on other priorities but do so at their peril.

The industries in this book espouse that the pathway to growth is realized by understanding customers and responding in ways to earn their business. The analytics combo of predictive modeling with “boundless personal data” allows unprecedented views into what makes customers tick.

Boundless Personal Data

We live in a surveillance society. There is a huge business and government appetite to know everything about us. For example:

- **Retail:** “If you use a credit card or a coupon, or fill out a survey, or mail in a refund, or call the customer help line, or open an e-mail we’ve sent you or visit our Web site, we’ll record it and link it to your Guest ID...and we can buy data about you...(such as) charitable giving and cars you own.”⁶
- **Politics:** “The campaigns spent over \$13 million on acquisition of data like whether voters may have visited pornography Web sites, have homes in foreclosure, are more prone to drink Michelob Ultra than Corona or have gay friends or enjoy expensive vacations.”⁷
- **Military:** The National Counterterrorism Center can use any information the government has collected on you, including “flight records, lists of Americans hosting foreign-exchange students, financial records of people seeking federally backed mortgages, health records of patients at veterans’ hospitals... this obscure agency has permission to study [any database] for patterns....”⁸

Most of the industries reviewed are using boundless personal data to feed their customer analytics engines. The new data usually come from outside the industry including “open” public databases, data “snatchers,” and Web click trackers. A growing industry of data aggregators sell the data and solutions related to it. The large increase in the diversity and volume of personal data, in combination with other analytics methods such as predictive modeling and technology game changers, has been a significant factor in solving business problems and demonstrating the value of analytics across industries.

Big Data Promises

The promise of big data is great and alluring. McKinsey & Company proclaims that “it will become the basis of competition, underpinning new waves of productivity growth, innovation, and consumer surplus.”⁹ Boundless personal data, as described previously, is a piece of it. But big data goes beyond that and looks to extract meaning from every digital signal that is emitted. It is very likely that harnessing big data will lead to a new world neural system that can measure almost anything. For example, we are told that the technology is nearly there to monitor the heartbeat of every living human being on the planet. But it appears that the technology “hows” are ahead of the business “whys” and “whats.” It is unknown how this revolution, like the Internet revolution before it, is going to play out and address business needs. But it is clear that the big promises will take a long time to keep. Lots of research needs to get done, and many hypotheses need to be developed, in order for big data to produce big business results.

Technology Game Changers

Technology advances facilitate the use of data for analytics. Three game changers have been influential:

- 1. Clicks:** The Internet has transformed the way businesses communicate, market, do commerce with customers, and collect data about them. One example is the ability to do randomized trials, or A/B testing, of alternative Web site features—for example, how to get the most contributions during a political campaign—on large samples and virtually instantaneously.
- 2. Mobile:** Earlier we described the challenges and opportunities of mobile. It is seen as the preferred platform for customer communications across industries.
- 3. Hadoop:** Hadoop is an open source software framework that allows for the distributed processing of large data sets across clusters of computers using a simple programming model. It is less expensive and easier to get up and running than commercial applications; for example, it is cloud based and works across hardware. It has greatly facilitated the analysis of boundless data.

Looming Privacy Concerns

As boundless personal data increases the utility of analytics to address business needs, it also runs the risk that the “creepy factor” will stop it dead in its tracks. Most of these data are collected and used without the consent of the individual. For example, personal data is collected from children as they traverse the Internet and then used for tailoring marketing messages to them. This concern about privacy is acknowledged but largely ignored, and the response is often to deny its existence. For example, one large technology firm said that “nobody’s sitting around sifting through data on an individual basis and intentionally targeting specific individuals.” And political campaigns have said that they are not “indiscriminately scooping up personal data on potential supporters.” The facts would suggest otherwise. The data are very valuable and, while the gate is open, there are few restrictions on its use. But a few breaches of privacy might bring on a spate of consumer complaints and Congressional action.

Sociology, Not Technology

All the analytics sweet spots across the industries are successful because they complement and support important business needs and strengths. Excellent analytics methods can be developed in a bubble outside the realities of the business. But unless they are used to solve business problems, they collect dust and are an expense and not an investment. Making things happen/change/succeed is what business is about. It’s not about the technology; it’s the sociology. What is clear from the analytics sweet spots is that the bull’s-eye for the value proposition for analytics is understanding business challenges and strengths and providing tools and expertise in the right way and at the right time to support the business.

Analytics Adaptations

The final stage in the discovery process is the translation of industry analytics sweet spots into potential adaptations in healthcare. It is hard to imagine, on the face of it, how banking is anything like healthcare. The task involves connecting dots between the industries to arrive at some revelation. It involves some logic, but is mostly about creativity. Creativity often leads to an epiphany.

The logical approach might proceed as follows: Both banking and healthcare were hit at about the same time with industry-shaking regulations for reform. And both possess a bountiful number of transactions. Indeed, banking is far ahead of healthcare in transactions processing efficiency, what with its pioneering innovations in self-service (ATMs) and its heavier regulatory compliance pressures. So one might infer that if banking does transactions better, the processes that support it should be considered for adoption by healthcare. It is certainly worth exploring, and we do so in the banking chapter, but it does not make the cut as a recommended adaptation. Replicating processes is not enough. We are looking for a sweet spot that is unique, addresses outcomes, and has a plausible bridge to addressing important concerns in healthcare as an adaptation.

Mostly, what translation requires is a creative leap. In the banking case, and reflecting on the industry strength in risk assessment, one ponders what it is about assessing customer capabilities and risks that might apply in healthcare. What is it? What emerged is that one of the most ingrained and intractable issues in healthcare is getting people to be active co-producers of their own health and thereby improve outcomes. People's behavior is the biggest influencer of health functioning followed by many social determinants. Can the risks, capabilities, and barriers to the fulfillment of doctor's orders, prescriptions, and plans that rest with the individual be measured and then managed better? This healthcare adaptation, called the Health Improvement Capability Score (HICS), is one of the seven adaptations that are distilled from the discovery process in the industry chapters of the book.

The seven healthcare analytics adaptations are listed in Figure 1.5 and are described in detail in Chapter 7, "The Top Healthcare Analytics Adaptations." The seven analytics adaptations cluster into three important areas of health and healthcare, including population health, patient engagement, and provider performance. The figure shows how each of the adaptations maps to the clusters. The adaptations for population health include obesity detection, well-being, and my dashboard. For patient engagement, the adaptations include radical personalization, and capabilities and support. Provider performance includes the adaptations of peer-to-peer provider ratings and team-centered outcomes.

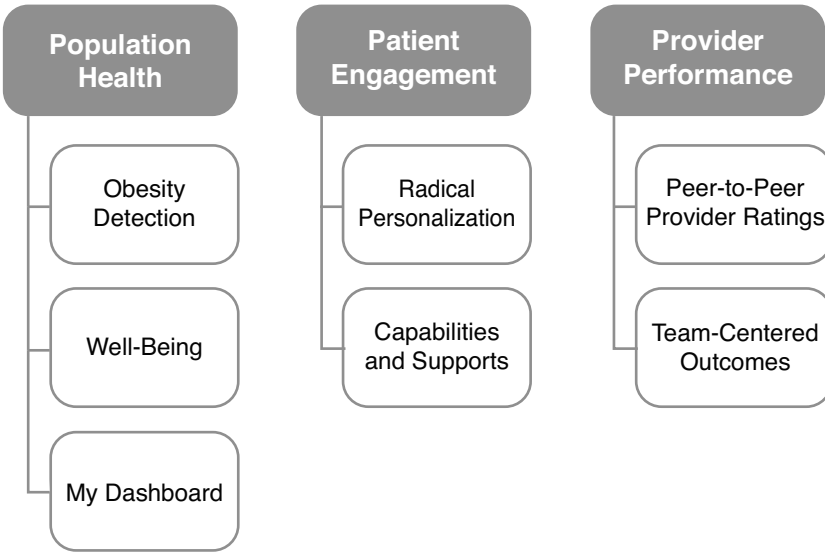


Figure 1.5 Seven healthcare analytics adaptations.

Putting Ideas into Action

We do not just leave the ideas hanging. Certainly, it is important to generate ideas and to show the way across the bridge to healthcare. But it is better to be a good steward and give the ideas their best shot to be put into action. A goal of the book is to provide a framework for the adoption of health analytics.

Ideas are fragile. Eggers and O’Leary think of ideas as seeds. Harkening back to a biblical parable, they note: “Some seeds land on rocky soil. Others are eaten by birds, and some sprout only to be choked by thorns. Only through a fortuitous combination of sun, soil, and water will a seed grow into a plant and bear fruit.”¹⁰ And progressing ideas to the endpoint of making a real difference is a long journey, and not all ideas deserve the passage.

The last chapter of this book provides a framework and tools for progressing an innovation from its early beginnings as an idea to the successful implementation of it into the operations of an organization. The Innovation Pathway (see Figure 1.6) depicts the six stages of this journey.

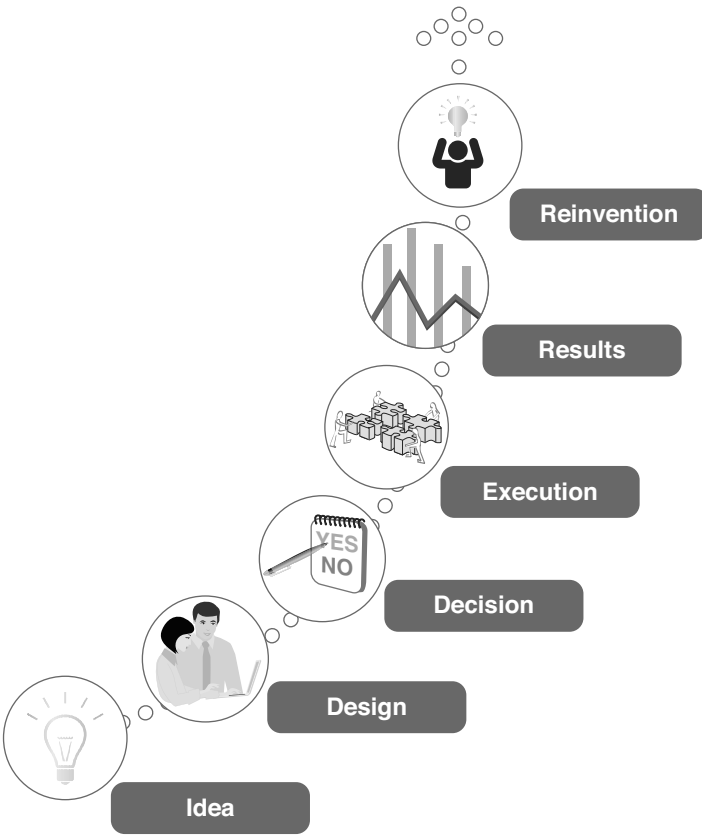
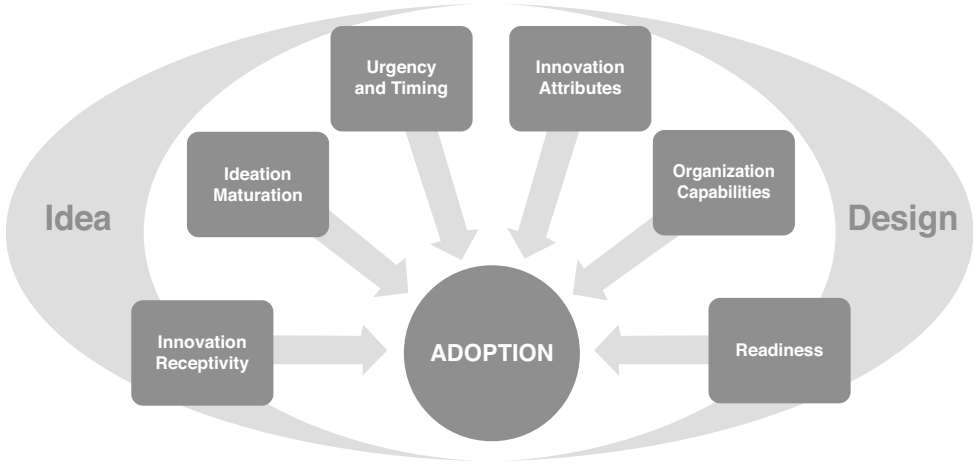


Figure 1.6 Innovation Pathway to Success.

We then concentrate on the adoption of innovations and propose an Innovation Adoption Factors Model (see Figure 1.7), which describes the six areas or domains that need to be considered and mastered in order to persuade individuals to make the decision to adopt an innovation. The Model is composed of two halves. On the left side is the idea stage and on the right is the design stage. The idea stage includes the domains of innovation receptivity, ideation maturation, and urgency/timing. The design stage includes the domains of the innovation’s attributes, the organization’s capabilities, and the readiness to position the innovation for adoption.



Adapted from Rogers on diffusion theory,¹¹ Eggers and O’Leary on getting things done in government,¹² Kingdon on agenda setting,¹³ Hasenfeld and Brock on policy implementation,¹⁴ Pressman and Wildavsky on program implementation,¹⁵ Gladwell on the tipping point model of change,¹⁶ and Plsek¹⁷ and Stacey¹⁸ on complexity theory.

Figure 1.7 Innovation Adopters Factors Model.

We then break down the six domains into 18 factors and describe each of them. (See Figures 1.8 and 1.9 for a summary.) The factors become the basis for a guidebook that can be used for evaluation and planning for an innovation adoption.

<u>Innovation Receptivity</u>	<u>Ideation Maturation</u>	<u>Urgency and Timing</u>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Comfort with new ideas	<input type="checkbox"/> Quality of the idea	<input type="checkbox"/> Burning platform
<input type="checkbox"/> Survival pressures	<input type="checkbox"/> Confirmation bias	<input type="checkbox"/> Window of opportunity
<input type="checkbox"/> Norms and beliefs	<input type="checkbox"/> Cause and effect theory	

Figure 1.8 Idea generation domains and factors.

<u>Innovation Attributes</u>	<u>Organization Capabilities</u>	<u>Readiness</u>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Relative advantage	<input type="checkbox"/> Individual's acceptance	<input type="checkbox"/> Prototype
<input type="checkbox"/> Compatibility	<input type="checkbox"/> Program theory/model	<input type="checkbox"/> Communications
<input type="checkbox"/> Complexity	<input type="checkbox"/> Skills and competencies	<input type="checkbox"/> Leadership
<input type="checkbox"/> Trialability		

Figure 1.9 Design domains and factors.

The final chapter concludes with an application of the model to one of the healthcare adaptations proposed in this book, in the Health Improvement Capability Score, through a case study. The hypothetical health plan evaluated the 18 factors of the model and summarized the results in the Adoption Decision Dashboard (see Figure 1.10).

The evaluation yielded a “yellow” rating on the overall adoption decision index. A postscript reviews how the innovation was adopted after six months of hard work to bring the index to “green” and convince the executive committee to decide in its favor.

Figure 1.8 Idea generation domains and factors.

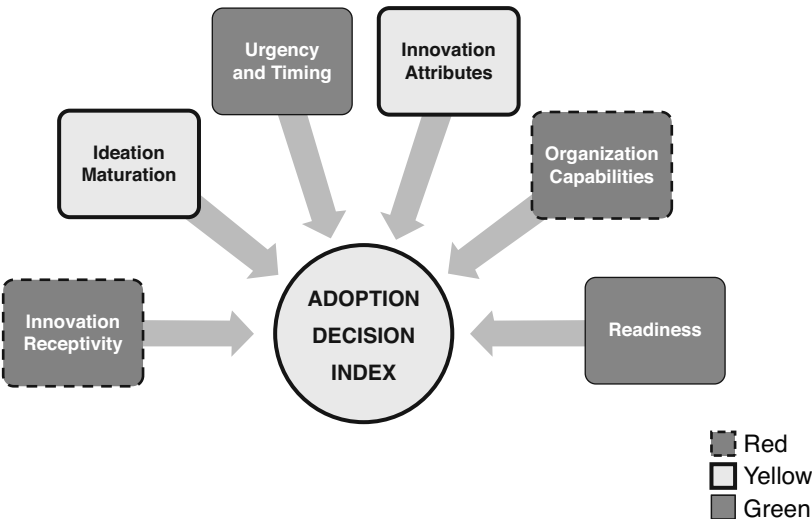


Figure 1.10 Adoption Decision Dashboard: Health Improvement Capabilities Score.

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Index

A

- acquisition cost, 83
- adaptations. *See* healthcare adaptations
- administrative system modernization
 - in banking industry, 130-132
 - in healthcare industry, 132
- Adoption Decision Dashboard, 17-18
- adoption factors. *See* Innovation Adoption Factors Model
- adoption of innovations, 15-17
 - case study, 193-207
 - Innovation Adoption Factors Model, 16-17, 182-183
 - Innovation Pathway, 15, 179-181
- Affordable Care Act (ACA)
 - analytics support in, 44-45
 - customer focus, 53
- Allen, Ray, 152
- analytics
 - customer analytics in retail industry, 63-66
 - healthcare adaptations. *See also* innovations
 - customer focus in*, 177-178
 - dashboard reporting*, 171-172
 - list of*, 167-168
 - microsegmentation*, 172-173
 - obesity detection*, 168-169
 - peer-to-peer information sharing*, 175-176
 - predictive modeling*, 173-175
 - team performance*, 176-177
 - well-being indexes*, 170-171
 - healthcare adaptations discovery process, 5-6
 - analytics adaptations*, 13-14
 - analytics sweet spots*, 9-13
 - industry challenges*, 5-8
 - industry strengths*, 8-9
 - healthcare analytics
 - challenges*, 41-55
 - current and future state of*, 40-41
 - innovations in, 2-5
 - creativity*, 3-5
 - high risk/high reward*, 3
 - importance of*, 2-3
 - in retail industry, 57-58
- analytics sweet spots, 9-13. *See also* innovations
 - in banking industry, 127-139
 - administrative system modernization*, 130-132
 - multichannel messages*, 132-133
 - predictive analytics*, 133-139
 - transaction processing*, 128-130

big data promises, 12
 customer focus, 10-11
 personal data collection, 11
 in political campaigns, 92-111
 data democratization, 107-111
 polling, 92-102
 predictive analytics, 102-107
 predictive analytics, 10
 privacy concerns, 13
 in retail industry, 67-81
 customer lifetime value (CLV),
 74-76
 market segmentation, 76-79
 predictive analytics, 68-74
 social media data collection, 79-81
 sociology of, 13
 in sports industry, 148-164
 big data promises, 160-164
 performance metrics, 149-156
 predictive analytics, 156-160
 technology game changers, 12
 ATMs (automated teller machines),
 128-129
 auto racing, predictive modeling for, 161
 Axelrod, David, 84
 Ayer, Robert, 158

B

balance sheet improvements in banking
 industry, 123-124
 “Banking for Success: Using Analytics
 to Grow Wallet Share” (IDC Financial
 Insights), 131
 banking industry
 analytics sweet spots, 127-139
 *administrative system
 modernization*, 130-132
 multichannel messages, 132-133
 predictive analytics, 133-139
 transaction processing, 128-130

challenges, 118-120
 creative adaptations from, 14
 crisis in, 113-114
 explained, 113-118
 health insurance industry comparison,
 116-117
 hierarchy of needs, 127
 logical adaptations from, 13-14
 mission of, 23
 predictive analytics, 10
 regulations, 120
 size of, 115
 strengths of, 9, 121-127
 balance sheet improvements,
 123-124
 cost-cutting initiatives, 121-123
 customer engagement, 124-127

Barea, Jose, 159

on-base and slugging percentage
 (OPS), 150

on-base percentage (OBP), 150

baseball, predictive modeling.

See also Sabermetrics

for fastballs, 159-160

for pitching and fielding, 162-163

basketball, predictive modeling for,
 158-159, 161-162

Battier, Shane, 159

Beane, Billy, 147, 150

behavior change

health and, 22, 27-29

modeling, 10, 51-52

Behavioral Risk Factor Surveillance
 System (BRFSS), 101, 171

Berwick, Don, 4, 184

Biden, Joe, 89

big data promises, 12, 48-49

in banking industry

customer engagement, 125-126

IT system modernization, 122

- in political campaigns, 83-85, 90-91
 - in retail industry, 65-66
 - in sports industry, 160-164
 - BMI (body mass index), 50, 72, 107
 - Bradley, Elizabeth, 21
 - BRFSS (Behavioral Risk Factor Surveillance System), 101, 171
 - brick and mortar
 - clicks versus, 59-60
 - repurposing
 - in banking industry, 121, 126-127*
 - in healthcare industry, 121-122*
 - Brock, Thomas, 182
 - Bryant, Kobe, 145, 152, 159
 - Bureau of Consumer Financial Protection, 120
 - burning platform, 186
 - business drivers. *See* strengths
 - business needs
 - alignment with, 53-54
 - societal needs versus, 37-38
 - buying data, 72-73
 - Bynum, Andrew, 151
- C**
- Cameron, Gordon, 135
 - Canadian Index of Well-Being (CIW), 98
 - Capra, Frank, 115
 - cause and effect theory, 186
 - challenges
 - to banking industry, 118-120
 - to healthcare adaptations discovery process, 5-8
 - to healthcare industry, 23-32
 - case study, 193*
 - customer engagement, 30*
 - inefficiency, 29-30*
 - monetization of challenges, 31-32*
 - mortality amenable to healthcare rate in U.S., 25-27*
 - outcomes, 24-25*
 - social factors in health outcomes, 27-29*
 - in political campaigns, 85-87
 - hold the base, 87*
 - swing votes, 85-86*
 - to retail industry, 58-62
 - bricks versus clicks, 59-60*
 - customer experience, 60-62*
 - economy, 59*
 - to sports industry, 141-143
 - Chandler, Tyson, 151
 - Chang, Yu-Han, 161
 - Cignifi, 136
 - CIW (Canadian Index of Well-Being), 98
 - clicks, 8, 12, 59-60
 - clinical practice
 - converting scientific research to, 25-27
 - decision support in, 45-48
 - CLV (customer lifetime value), 74-76
 - Collaborative Planning, Forecasting, and Replenishment (CPFR) systems, 63
 - communications, 191-192
 - competitive advantages in healthcare marketplace, 38-39
 - confirmation bias, 4, 178, 185-186
 - conversion rate, 64-65
 - CoreLogic, 137
 - “The Cost Conundrum” (Gawande), 29
 - Cost-cutting initiatives in banking industry, 121-123
 - costs. *See* pricing
 - cottage industry, healthcare industry as, 35-36
 - CPFR (Collaborative Planning, Forecasting, and Replenishment) systems, 63
 - creativity
 - in healthcare adaptations, 13-14
 - in innovation, 3-5
 - credit performance, improving, 123-124

CRM (customer relationship management) systems, 63

customer analytics

- in banking industry, 130-131
- in retail industry, 63-66

customer engagement

- in banking industry, 124-127
- CVS/Caremark example, 77-78
- dashboard reporting, 171-172
- by healthcare industry, 30
 - monetization of*, 31
 - polling*, 92-102
- microsegmentation, 172-173
- predictive modeling, 173-175
- in sports industry, 143-145

customer experience, retail versus healthcare industries, 60-62

customer focus, 10-11

- appreciation for, 52-53
- in healthcare adaptations, 177-178
- personal data collection, 11
- of retail industry, 58

customer lifetime value (CLV), 74-76

customer power, 7

customer relationship management (CRM) systems, 63

customer value, optimizing in retail industry, 62-63

customers

- banking industry trends, 118
- in healthcare industry, defined, 32

CVS/Caremark, customer engagement, 77-78

D

Dampier, Erick, 159

Danesis, Samantha, 161

Dantley, Adrian, 159

dashboard reporting, 45-46, 171-172

data collection. *See also* personal data collection

- in banking industry
 - customer engagement*, 125-126
 - IT system modernization*, 122
 - for predictive analytics*, 133-139
- big data promises, 12, 48-49
- buying data, 72-73
- data source optimization, 49-51
- mobile communication and, 54-55
- by political campaigns, 90-91, 105-106
- privacy concerns, 13
- in retail industry, 65-66
- in sports industry, 149-156
- technology game changers, 12
- via social media, 79-81

data democratization in political campaigns and healthcare industry, 107-111

data integration, challenges of, 42-44

data sources, optimizing, 49-51

data-driven management in sports industry, 147-148

decision stage (Innovation Pathway), 181

decision support in clinical practice, 45-48

democratization of data in political campaigns and healthcare industry, 107-111

design factors (Innovation Adoption Factors Model), 183-193

- communications, 191-192
- compatibility, 188
- complexity, 188
- individual's acceptance, 189-190
- innovation attributes, 187-189
- leadership, 192-193
- organization capabilities, 189-191
- program theory/model, 190
- prototyping, 191

readiness, 191-193
 relative advantage, 187-188
 skills and competencies, 190-191
 trialability, 188-189
 design stage (Innovation Pathway), 180
 discovery process for healthcare
 adaptations, 5-6
 analytics adaptations, 13-14
 analytics sweet spots, 9-13
 industry challenges, 5-8
 industry strengths, 8-9
 Dodd-Frank Wall Street Reform and
 Consumer Protection Act, 120

E

economic challenges to retail industry, 59
 education, performance metrics, 155-156
 efficiency
 of banking industry, improvements to,
 121-123
 of healthcare industry, 29-31
 Eggers, William, 182
 EHRs (electronic health records), data
 integration with, 42-44
 election campaigns. *See* political
 campaigns
 Emanuel, Rahm, 117
 employee salaries in sports industry,
 145-146
 EMRs, 42-44
 execution stage (Innovation
 Pathway), 181

F

Federer, Roger, 144
 Ferle, Ewan, 184
 FICO score, 134
 Field/x, 163

finance industry, performance
 metrics, 153
 Fitzgerald, Larry, 145
FiveThirtyEight Methodology
 (Silver), 102
 Formula One auto racing, predictive
 modeling for, 161
 fundraising in political campaigns, 87-89

G

gambling in sports, 143, 145
 Gandhi, Mahatma, 52
 Ganeshpillai, Gartheeban, 159-160
 Gasol, Pau, 159
 Gawande, Atul, 29
 GDP (Gross Domestic Product), 98
 Gladwell, Malcolm, 182
 Goethe, 181
 Goldsberry, Kirk, 151-152
 Great Recession, 6
 Green Dot, 119
 Gross Domestic Product (GDP), 98
 Gruman, Jesse, 53
 Gutttag, John, 159-160

H

Hadoop, 12
 Hasenfeld, Yeheskel, 182
 HCAHPS (Hospital Consumer
 Assessment of Healthcare Providers and
 Systems) surveys, 94-95
 health
 behavior change and, 22, 27-29
 defined, 20
 Health Improvement Capability Score
 (HICS), 14, 134, 138-139, 174
 health information exchange (HIE), 43

**Health Information Technology
for Economic and Clinical Health
(HITECH) Act, 42**

health insurance industry. *See* healthcare industry

Health Leads, 138-139

healthcare adaptations. *See also* innovations

- customer focus in, 177-178
- dashboard reporting, 171-172
- discovery process for, 5-6
 - analytics adaptations, 13-14*
 - analytics sweet spots, 9-13*
 - industry challenges, 5-8*
 - industry strengths, 8-9*

list of, 14, 167-168

microsegmentation, 172-173

obesity detection, 168-169

peer-to-peer information sharing,
175-176

predictive modeling, 173-175

team performance, 176-177

well-being indexes, 170-171

healthcare analytics. *See also* analytics challenges, 41-55

- big data promises, 48-49*
- business needs alignment, 53-54*
- customer focus, 52-53*
- data integration, 42-44*
- data source optimization, 49-51*
- decision support, 45-48*
- healthcare reform support, 44-45*
- mobile communication, 54-55*
- population health improvements, 48*
- predictive analytics, 51-52*

current and future state of, 40-41

healthcare industry

- administrative system
 - modernization, 132
- banking industry comparison, 116-117
- care delivery statistics, 35

challenges to, 23-32

- case study, 193*
- customer engagement, 30*
- inefficiency, 29-30*
- monetization of challenges, 31-32*
- mortality amenable to healthcare rate in U.S., 25-27*
- outcomes, 24-25*
- social factors in health outcomes, 27-29*

comparison with other industries

- differences, 32-35*
- similarities, 35-40*

as cottage industry, 35-36

customer experience, retail industry
versus, 60-62

data democratization, 107-111

expenditures in U.S., 20-22

market-oriented solutions for, 36-37

mission of, 20-23

multichannel messages in, 133

performance metrics, 153-156

polling within, 92-102

repurposing physical space, 121-122

retail industry, comparison with, 60-62,
70-71

revenues in U.S., 35

sports industry comparison, 141-143

healthcare reform

- analytics support in, 44-45
- customer focus, 53

health-risk-assessment (HRA) surveys, 72

Henehan, Aaron, 161

HICS (Health Improvement Capability Score), 14, 134, 138-139, 174

HIE (health information exchange), 43

Hill, Grant, 159

**HITECH (Health Information
Technology for Economic and Clinical
Health) Act, 42**

hold the base in political campaigns, 87

Hospital Consumer Assessment of
Healthcare Providers and Systems
(HCAHPS) surveys, 94-95
“How Companies Learn Your Secrets”
(Pole), 68
Howard, Dwight, 151
HRA (health-risk-assessment) surveys, 72
hyper-competition, 7

I

IBM's Watson technology, 47-48, 129
IDC Financial Insights, 131
idea generation factors (Innovation
Adoption Factors Model), 183-187
 burning platform, 186
 cause and effect theory, 186
 comfort with new ideas, 183-184
 confirmation bias, 185-186
 ideation maturation, 185
 innovation receptivity, 183
 norms and beliefs about change in
 general, 184-185
 quality of idea, 185
 survival pressures, 184
 urgency and timing, 186
 window of opportunity, 187
ideas
 adoption of, 15-17
 case study, 193-207
 Innovation Adoption Factors
 Model, 16-17, 182-183
 Innovation Pathway, 15, 179-181
 creativity in innovation, 3-5
Implementation (Pressman and
Wildavsky), 181
inefficiency of healthcare industry, 29-31

Innovation Adoption Factors Model,
16-17, 182-183
 case study, 193-207
 design factors, 183-193
 communications, 191-192
 compatibility, 188
 complexity, 188
 individual's acceptance, 189-190
 innovation attributes, 187-189
 leadership, 192-193
 organization capabilities, 189-191
 program theory/model, 190
 prototyping, 191
 readiness, 191-193
 relative advantage, 187-188
 skills and competencies, 190-191
 trialability, 188-189
 idea generation factors, 183-187
 burning platform, 186
 cause and effect theory, 186
 comfort with new ideas, 183-184
 confirmation bias, 185-186
 ideation maturation, 185
 innovation receptivity, 183
 norms and beliefs about change in
 general, 184-185
 quality of idea, 185
 survival pressures, 184
 urgency and timing, 186
 window of opportunity, 187
Innovation Pathway, 15, 179-181
innovations. *See also* analytics sweet spots
 adoption of, 15-17
 case study, 193-207
 Innovation Adoption Factors
 Model, 16-17, 182-183
 Innovation Pathway, 15, 179-181
 in analytics, 2-5
 creativity, 3-5
 high risk/high reward, 3
 importance of, 2-3

integration of data, challenges of, 42-44
 IT system modernization in banking industry, 122
It's a Wonderful Life (film), 115

J

James, Bill, 148
 James, Brent, 4
 Jobs, Steve, 3

K

Kennedy, John F., 180
 key business drivers. *See* strengths
 Kingdon, John, 182
 Kissinger, Henry, 192
 Kodak moments, 4-5, 39-40

L

leadership, 192-193
 Lewis, Rashard, 152
 life expectancy in U.S., 24-25
 Lin, Jeremy, 144

M

M&A (mergers and acquisitions) in banking industry, 123
 machine-enabled clinical support, 47-48
 Maheswaran, Rajiv, 161
 Majerle, Dan, 159
 management approach in sports industry, 147-148
 market segmentation
 in banking industry, 125
 in healthcare marketplace, 38-39
 in political campaigns, 90
 retail versus healthcare industries, 76-79

market-oriented solutions for healthcare industry, 36-37
 Maslow, Abraham, 20
 Maslow's hierarchy of needs, 20, 40
 math usage in political campaigns, 90-91
 McGee, JaVale, 151
 McGlynn, Elizabeth, 27
 McGrady, Tracy, 159
 McHale, Kevin, 159
 McKee, Lorna, 184
 media channels in political campaigns, 90
 merchandise (optimizing customer value), 63
 mergers and acquisitions (M&A) in banking industry, 123
 Merrill, Douglas, 136
 messaging in political campaigns, 89-90
 microlistening, 105
 microsegmentation
 in banking industry, 125
 healthcare adaptation of, 172-173
 in political campaigns, 90
 military, personal data collection in, 11
 MIT Annual Sports Analytics Conference, 158
 mobile communication, 8, 12
 in banking industry, 122-123, 132-133
 healthcare analytics and, 54-55
 in healthcare industry, 133
 personal data collection, 79-81
 in retail industry, 66-67
 mobilization of political campaigns, 91
 modeling behavior change, 10, 51-52
 money in political campaigns, 87-89
Moneyball, 144, 146, 150-151
 mortality amenable to healthcare rate in U.S., 25-27
 mortality rate in U.S., 24-25
 motivation in political campaigns, 91

multichannel messages
 in banking industry, 122-123, 132-133
 in healthcare industry, 133
 in political campaigns, 90
 my dashboard, 45-46, 171-172

N

Nash, Steve, 152
 National Institutes of Health (NIH), 20
 natural language processing, 129
 NetSpend Holdings, 119
 network power, 110
 NIH (National Institutes of Health), 20
 Nowitzki, Dirk, 152

O

Obama Campaign Dashboard, 108-109
 Obamacare. *See* Affordable Care Act (ACA)
 obesity, predictive analytics for, 72-73, 107, 168-169
 OBP (on-base percentage), 150
 O'Leary, John, 182
 online sales, retail sales versus, 59-60
 OPS (on-base and slugging percentage), 150
 optimizing
 customer value in retail industry, 62-63
 data sources, 49-51
 outcomes
 of healthcare expenditures, 24-25
 monetization of, 31
 social factors in, 27-29

P

patient engagement. *See* customer engagement
 Paxson, John, 159

PayNearMe, 119
 PECOTA (Pitcher Empirical Comparison and Optimization Test Algorithm), 157
 peer-to-peer information sharing, 175-176
 peer-to-peer lending, 120
 Pekovic, Nikola, 151
 performance improvement in sports industry, 146-147
 performance metrics
 in healthcare industry, 153-156
 peer-to-peer information sharing, 175-176
 in sports industry, 149-156
 team performance, 176-177
 personal behavior modification. *See* behavior change
 personal data collection, 11
 buying data, 72-73
 by political campaigns, 105-106
 for predictive analytics, 133-139
 privacy concerns, 13
 in retail industry, 65-66
 in sports industry, 149-156
 via social media, 79-81
 personalization. *See* microsegmentation
 Pettigrew, Andrew, 184
 physical space, repurposing
 in banking industry, 121, 126-127
 in healthcare industry, 121-122
 physician support, 46-48
 Pitcher Empirical Comparison and Optimization Test Algorithm (PECOTA), 157
 PITCHf/x, 162
 Plsek, Paul, 3, 182
 Pole, Andrew, 68-69
 political campaigns
 analytics sweet spots, 92-111
data democratization, 107-111
polling, 92-102
predictive analytics, 102-107

big data promises in, 83-85
 challenges, 85-87
 hold the base, 87
 swing votes, 85-86
 mission of, 23
 performance metrics, 153
 personal data collection, 11
 predictive analytics, 10
 strengths of, 9, 87-91
 math usage, 90-91
 media channels, 90
 messaging, 89-90
 microsegmentation, 90
 mobilization, 91
 money, 87-89
 motivation, 91
 polling, 92-102
 Pollock, Jeffrey, 86
 population health. *See also* health
 behavior change and, 27-29
 dashboard reporting, 171-172
 improving, 48
 obesity detection, 168-169
 well-being indexes, 170-171
 Prager, Richie, 117
 predictive analytics, 10, 51-52
 in banking industry, 133-139
 healthcare adaptation of, 173-175
 in political campaigns, 102-107
 in retail industry, 68-74
 in sports industry, 156-164
 presidential election campaigns.
See political campaigns
 Pressman, Jeffrey, 181-182
 pricing
 customer value optimization, 63
 in healthcare industry, 33-34, 38
 privacy, personal data collection and, 13
 profit margin in retail industry, 59

promises of big data, 12
 prototyping, 191
 provider performance. *See* performance
 metrics

Q-R

“The Quality of Health Care Delivered
 to Adults in the United States”
 (McClynn), 27
 racing, predictive modeling for, 161
 radical personalization. *See*
 microsegmentation
 radio frequency identification (RFID), 63
 range percentage, 152
 ratings. *See* performance metrics
 receptive context, 184
 regulations
 in banking industry, 120, 122
 in healthcare industry, 34
 reinvention stage (Innovation
 Pathway), 181
 repurposing brick and mortars
 in banking industry, 121, 126-127
 in healthcare industry, 121-122
 results stage (Innovation Pathway), 181
 retail industry
 analytics in, 57-58
 analytics sweet spots, 67-81
 customer lifetime value (CLV),
 74-76
 market segmentation, 76-79
 predictive analytics, 68-74
 social media data collection, 79-81
 challenges, 58-62
 bricks versus clicks, 59-60
 customer experience, 60-62
 economy, 59

healthcare industry, comparison
 with, 70-71
 mission of, 22
 personal data collection, 11
 predictive analytics, 10
 revenues in U.S., 57
 strengths of, 9, 62-67
customer analytics, 63-66
customer value optimization, 62-63
social media usage, 66-67
 “Retailing 2020: Winning in a Polarized World,” 63
 return on equity (ROE), 118
 RFID (radio frequency identification), 63
 risk measurement. *See* predictive analytics
 Rodriguez, Alex, 145
 ROE (return on equity), 118
 Rogers, Everett, 182
 Rollins, Tree, 159
 Ronaldo, Cristiano, 145
 Rowles, Sean, 127
 rugby, predictive modeling in, 163

S

Sabermetrics, 150, 157
 salaries in sports industry, 145-146
 Schroeder, Steve, 27
 scientific research, converting to clinical practice, 25-27
 security breaches with personal data in retail industry, 66
 segmentation. *See* market segmentation
 sentiment analysis, 110
 service factors (optimizing customer value), 62
 “shadow banking” system, 118-119, 124
Shaping Strategic Change: Making Change in Large Organizations (Pettigrew, Ferle, McKee), 184

The Signal and the Noise (Silver), 84
 Silver, Nate, 84, 86, 102
 SLG (slugging percentage), 150
 slugging percentage (SLG), 150
 social media usage
 in banking industry, 122-123, 132-133
 data democratization, 109-111
 in healthcare industry, 133
 peer-to-peer information sharing, 175-176
 personal data collection, 79-81
 in retail industry, 66-67
 societal needs, business needs versus, 37-38
 sociology. *See also* behavior change
 of analytics sweet spots, 13
 of health outcomes, 27-29
 sports industry
 analytics in, 141-143
 analytics sweet spots, 148-164
big data promises, 160-164
performance metrics, 149-156
predictive analytics, 156-160
 challenges, 141-143
 healthcare industry comparison, 141-143
 mission of, 23
 predictive analytics, 10
 revenues in U.S., 141-142
 strengths of, 9, 143-148
customer engagement, 143-145
data-driven management, 147-148
employee salaries, 145-146
performance improvement, 146-147
 spread percentage, 152
 store factors (optimizing customer value), 62
 Strawberry, Darryl, 149

strengths

- of banking industry, 121-127
 - balance sheet improvements, 123-124*
 - cost-cutting initiatives, 121-123*
 - customer engagement, 124-127*
 - of healthcare adaptations discovery process, 8-9
 - of political campaigns, 87-91
 - math usage, 90-91*
 - media channels, 90*
 - messaging, 89-90*
 - microsegmentation, 90*
 - mobilization, 91*
 - money, 87-89*
 - motivation, 91*
 - of retail industry, 62-67
 - customer analytics, 63-66*
 - customer value optimization, 62-63*
 - social media usage, 66-67*
 - of sports industry, 143-148
 - customer engagement, 143-145*
 - data-driven management, 147-148*
 - employee salaries, 145-146*
 - performance improvement, 146-147*
- supply chain (optimizing customer value), 63
- surveys, 92-102
- sweet spots. *See* analytics sweet spots
- swing votes in political campaigns, 85-86

T

- Target, predictive analytics at, 68-69
- Taylor, Lauren, 21
- team performance, 176-177
- technology game changers, 12, 63
- Tesco, 136
- Tier 1 ratios, 123-124
- Tolstoy Trap, 185

transaction processing in banking industry, 128-130

transformation, need for, 8

transparency in healthcare industry, 33

V

- “The Value of Building Sustainable Health Systems” (IBM), 132
- value over replacement player (VORP), 150
- VORP (value over replacement player), 150

W-Z

- Wade, Dwayne, 159
- Wall Street* (film), 114
- WARP (Wins Above Replacement Player), 157
- Watson technology (IBM), 47-48, 129
- Webber, Chris, 159
- Weinberg, Allen, 117
- well-being indexes, 97-102, 170-171
- Wildavsky, Aaron, 181-182
- window of opportunity, 187
- Wins Above Replacement Player (WARP), 157
- Wonga, 136
- Wooding, Julie, 120
- Woods, Tiger, 144
- ZestCash, 136

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