Strategic HRM, Data-Driven Decision Making, and HR Analytics

2

Opening Case

Strategic HRM in Context: The Case of Strategy and HR Analytics at Chevron

Chevron is a large energy company based in San Ramon, California. In 2014, the company launched a centralized human resource analytics team, which it refers to as a talent analytics team. ***Human resource (HR) analytics*** goes by different terms, such as people analytics, workforce analytics, human capital analytics, and talent analytics; it refers to the process of collecting, analyzing, and reporting people-related data for the purpose of improving decision making, achieving strategic objectives, and sustaining a competitive advantage.

From the beginning, Chevron's analytics team made it clear that its mission is to "support Chevron's business strategies with better, faster workforce decisions informed by data." To that end, R. J. Milnor, the former head of talent analytics for Chevron, stated that "[HR] analytics is really about informing and supporting business strategy, and we do that through people data." In other words, the analytics team at Chevron understands the important role that people data can play in strategy realization. After all, people are valuable resources for companies, and making data-driven and evidence-based decisions provides companies such as Chevron with an opportunity to attract, motivate, and retain talented people with the right knowledge, skills, and abilities.

Over time, Chevron's HR analytics team has moved from running simple descriptive analytics, which represent a snapshot of the past, to more advanced predictive and prescriptive analytics, which provide a glimpse into the future. As such, managing human resources at Chevron is now more forward thinking and proactive, which allows for more strategic thinking and informed action.

As an overarching strategic objective, Chevron's HR analytics team has been tasked with improving revenue per employee. The team also consults with other units and departments, including company leadership, when it comes to major decisions such as reorganization and restructuring. With respect to workforce planning, the team built models to forecast future talent demand and supply 10 years in the future. These models identified key drivers of talent demand and supply for different geographic locations and provided estimates of future attrition (e.g., turnover) with 85% accuracy. Knowing the key drivers—or predictors—of attrition is very important when it comes to making decisions about how

Human resource (HR) analytics The process of collecting, analyzing, interpreting, and reporting people-related data for the purpose of improving decision making, achieving strategic objectives, and sustaining a competitive advantage

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to retain talented people who can help the organization achieve its strategic objectives.

In just a few short years, Chevron's HR analytics team has transformed the way the organization leverages data. By centralizing the HR analytics function, the team created an HR hub that collects data, performs data analytics, and reports findings to HR specialty areas spread across the company. Of note, centralizing the analytics function increased the productivity of analysts by approximately 30% and substantially reduced redundant HR reporting within at least one business unit.

Chevron also established a community of practice with hundreds of members, which include HR specialists, business partners, and analysts. The community of practice encourages members to discuss topics related to data analytics and data-driven decision making during virtual meetings. In doing so, HR and non-HR workers have an opportunity to learn from one another and to share different data-modeling approaches, techniques, and programs. Ultimately, this has led to an increase in the number of projects pursued by HR analysts and a decrease in the amount of time it takes to complete such projects.

In just a handful of years, the HR analytics team at Chevron has transformed the company's approach to human resource management. Merely introducing an HR analytics function, however, is by no means a panacea. In fact, failing to align HR analytics with HR and business strategy can hinder the likelihood of success. As such, an organization will be best served by using HR analytics to inform and support strategy, as Chevron has done. In other words, HR analytics should be embedded into the fabric of the organization.[1]

Case Discussion Questions

1. How has Chevron used HR analytics to inform and support organizational strategy?

2. Chevron's HR analytics team used statistical models to predict employee turnover with a high degree of accuracy. Based on your own knowledge and experiences, what are some key drivers (i.e., predictors) of employee turnover?

3. What are some different ways in which an organization might leverage HR analytics to attract, motivate, and retain talented people?

4. Chevron has established an HR-specific analytics team. From the perspective of organizational effectiveness, what are some potential advantages of having data analytics integrated directly into the HR function as opposed to a company-wide analytics team that supports HR and other functional areas?

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To learn more about HR analytics at Chevron, check out the following video: https://youtu.be/LbxGL2TXza0

S imply put, people matter. Jim Goodnight, CEO of SAS Institute Inc., is quoted as saying, "Ninety-five percent of my assets drive out the gate every evening. It's my job to maintain a work environment that keeps those people coming back every morning."[2] This chapter focuses on the role HR plays in managing people to achieve organizational success. *Strategic human resource management* is the process of aligning HR policies and practices with the objectives of the organization, including employee, operational, stakeholder, and financial outcomes. This chapter explains how strategy is combined with HRM to achieve organizational success and how organizations can make data-driven decisions that are accurate, fair, ethical, and legal—considerations that are becoming increasingly important as our society pushes forward into an era of big data.

What Is a Strategy?

Central to strategic human resource management—and to strategic management in general—is the concept of a strategy. What is a strategy? Think of a *strategy* as a well-devised and thoughtful plan for achieving an objective.[3] A strategy is inherently future oriented and is intended to provide a road map toward completion of an objective. More specifically, a strategy reflects the manner in which a unit, department, or organization coordinates activities to achieve planned objectives in both the short and long term.[4] In the opening case on Chevron, we learned how the HR analytics team leverages data analytics to inform and support business strategies. As such, strategy can be paired with data analytics to make data-driven decisions, which improve the likelihood of achieving strategic objectives and sustaining a competitive advantage. As you will learn later in the chapter, the *scientific process* offers a rigorous and useful framework for guiding the way in which HR departments collect, analyze, and interpret data in service of HR and organizational strategies.

Some firms keep their strategies relatively private, but others, like Tesla Motors Inc., announce their strategy to the world. With a mission to "accelerate the world's transition to sustainable energy," Tesla's strategy is multiphased and is referred to as the *Tesla Motors Master Plan* by provocative and often controversial company cofounder and CEO Elon Musk.[5] Musk unveiled Tesla's strategy in 2006, describing the overall purpose of the company as expediting a shift from a hydrocarbon (fossil fuel) economy to a solar-electric (clean energy) economy. For the first phase, Musk outlined the company's plan of initially producing a high-end electric car called the Tesla Roadster, which reached the market in 2006 and was rated the second-best invention by *Time* magazine in 2008. (The retail DNA test developed by 23andMe took top honors that year.)[6]

Using revenue and interest generated from the Tesla Roadster, the original plan was to develop increasingly more affordable cars and, ultimately, affordable family cars. So far, Tesla has followed through on the first-phase strategy. In 2012, a higher-end, yet more accessible, model called the Model S rolled out of production plants, and in 2017, the even more affordable Model 3 went into production, albeit with some newsworthy delays.[7] Based on these achievements, Tesla not only formulated a viable strategy but, to date, has largely followed through on the implementation of most aspects of its strategic plan. In 2016, Musk set the second phase of Tesla's strategy into motion by announcing plans for Tesla to acquire SolarCity, a company that produces solar panels.[8] By combining Tesla and SolarCity, Musk intends to stay true to the overall purpose of his company: shifting the world to clean energy. That is, when Tesla electric cars are charged with solar electric energy, they become truly clean-energy vehicles, and in the process, Tesla leaves its mark as an industry disrupter with its innovative approaches to car design and energy.[9]

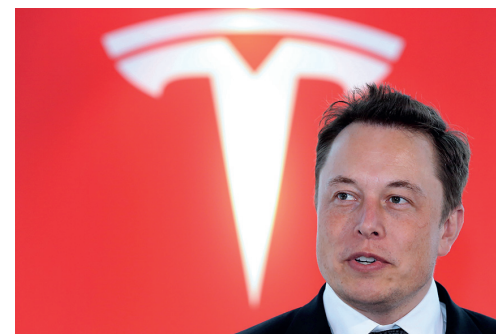### Strategy Formulation: Developing and Refining a Strategy

In adhering to its mission, Tesla illustrates two important aspects of strategy: formulation and implementation. *Strategy formulation* involves planning what to do to achieve organizational

Strategic human resource management The process of aligning HR policies and practices with the objectives of the organization, including employee, operational, stakeholder, and financial outcomes

LO 2.1 Identify the steps for formulating and implementing a strategy.

Strategy A well-devised and thoughtful plan for achieving an objective

Scientific process A method used for systematic and rigorous problem solving that is predicated on the assumption that knowledge requires evidence
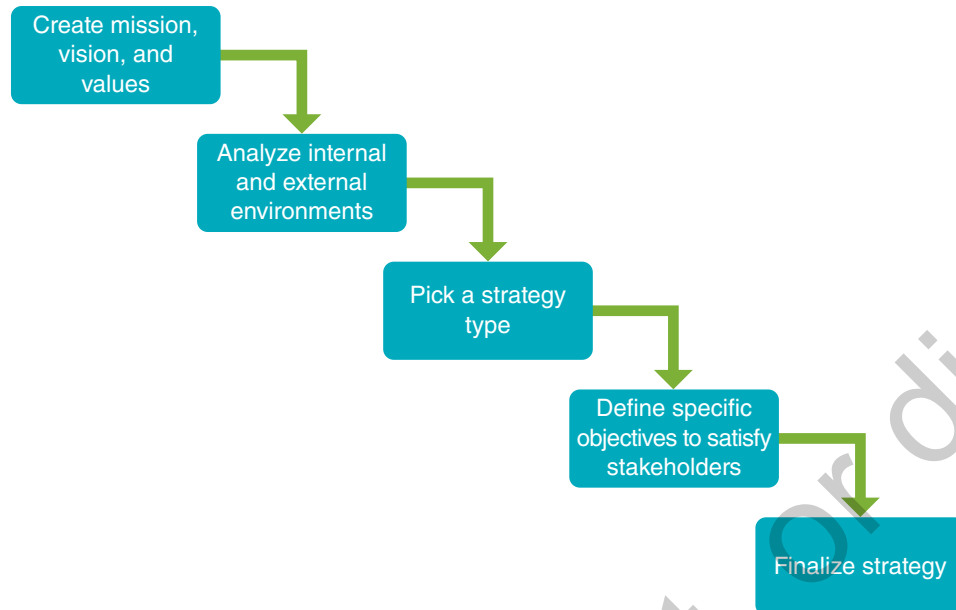

In 2016, Tesla announced its most affordable car to date—the Model 3—and, within 2 months of the announcement, had already taken deposits on over 350,000 reservations.[10] Pictured here is Elon Musk, Tesla CEO.

Yuriko Nakao/Bloomberg via Getty Images

Strategy formulation The process of planning what to do to achieve organizational objectives

■ **FIGURE 2.1** Steps for Strategy Formulation

Formulating an organization strategy requires decision making regarding the mission, vision, values, strategy type, as well as analyzing the internal and external environments, and defining objectives designed to satisfy stakeholders.

```
Create mission,
vision, and
values
    │
    ▼
Analyze internal
and external
environments
    │
    ▼
Pick a strategy
type
    │
    ▼
Define specific
objectives to satisfy
stakeholders
    │
    ▼
Finalize strategy
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objectives—or in other words, the development and/or refinement of a strategy. To achieve its overarching goal of shifting consumers toward clean-energy transportation and living solutions, Tesla formulated a rational and methodical strategy with multiple preplanned phases. In addition, Tesla demonstrated a top-down approach to strategy formulation in that the strategy originated with its CEO. With that said, strategy formulation can also occur in a bottom-up fashion, such that the strategy emerges from the pattern of many decisions that are made over time within an organization. And in many cases, strategy formulation occurs as the result of both top-down and bottom-up processes. Regardless of how a strategy originates, an organization's strategy is not set in stone; nor is an organization's approach to fulfilling the strategy. Rather, an organization should demonstrate strategic flexibility by remaining abreast of dynamic changes in the internal and external environment and by re-envisioning and reformulating a strategy as needed. Strategy formulation often follows the steps depicted in Figure 2.1, which ultimately set the stage for strategy implementation.

Create a Mission, Vision, and Set of Values

Mission A core need that an organization strives to fulfill and thus represents the organization's overarching purpose

Vision An extension of an organization's mission that describes what the organization will look like or be at some point in the future

Values Parameters and guidelines for decision making that help an organization realize its vision

A *mission* describes a core need that an organization strives to fulfill and thus represents the organization's overarching purpose—or in other words, a *raison d'être*, or reason for existence. Recall that Tesla's espoused mission is to "accelerate the world's transition to sustainable energy," and as you have probably observed, many organizations feature their mission statements prominently on their webpages. Tesla is no exception. In addition to a mission, strategy formulation also involves stating a vision and values. An organization's *vision* is an extension of the mission and describes what the organization will look like or be at some point in the future. Creating a set of core *values* provides the organization with parameters and guidelines for decision making and bringing its vision to fruition.
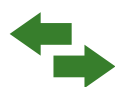
Analyze Internal and External Environments

To achieve a competitive advantage, an organization must look both internally and externally to understand how to bring its mission, vision, and values to life. That is, an organization

SPOTLIGHT ON ETHICS
Mission, Vision, and Values at The Body Shop

The Asahi Shimbun via Getty Images

The Body Shop is a global manufacturer and retailer of ethically made beauty and cosmetic products. When she founded The Body Shop in 1979, Anita Roddick believed that companies have the potential to do good and just things for the world, as evidenced by the company's *mission* statement: "To dedicate our business to the pursuit of social and environmental change." In other words, Roddick was an early supporter of *corporate social responsibility*. Roddick passed away in 2007 at 64 years of age, but her legacy lives on in the form of The Body Shop's following core *values*:

- Against animal testing
- Support community trade
- Activate self-esteem
- Defend human rights
- Protect our planet

When the company was acquired by L'Oréal in 2006, the CEO of L'Oréal, Lindsay Owen-Jones, expressed his admiration for The Body Shop's mission, vision, and core values. He described how his company's expertise and knowledge of international markets could bring The Body Shop and its ethically made products to new customers.[11]

Questions

1. How might The Body Shop's ethical values influence its HRM policies?

2. If you were a manager for a competitor of The Body Shop, how would you go about investigating the implications of corporate social responsibility for a company's success?

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must analyze the internal *strengths* and *weaknesses* that are under its control and the external *threats* and *opportunities* that are beyond its direct control—a process commonly referred to as a **SWOT analysis**.[12] By analyzing the internal environment, an organization comes up with a plan for how to leverage its strengths and improve on its weaknesses. By analyzing the external environment, an organization identifies opportunities and threats with respect to the state of its industry and competitors, as well as other external factors like the labor market, unemployment rate, and the general state of the local, national, and/or global economies. Taken together, a SWOT analysis is a systematic and methodical decision-making tool used to formulate a *viable* strategy.

SWOT analysis An analysis of the internal strengths and weaknesses of an organization and the external opportunities and threats to that organization

Pick a Strategy Type

After analyzing internal and external environments, an organization is ready to select a strategy type. A **strategy type** provides a general approach for how an organization will bring its mission, vision, and values to life, while at the same time leveraging its strengths and improving its weaknesses. Examples include the following:[13]

Strategy type A general approach for how an organization will bring its mission, vision, and values to life

- **Differentiation:** The organization creates a product or service that is different from competitors' products or services and thus warrants a higher price or more attention from consumers.

- **Cost leadership:** The organization identifies ways to produce a product or provide a service at a lower cost compared with competitors. This can help the organization increase its margin or sell the product or service at a cheaper price than competitors.

- **Focus or niche:** The organization uses differentiation or cost leadership but identifies a narrow consumer base to appeal to a specific product or service type that might not be produced or sold by competitors.

Resource-based view
Proposes that a resource holds value to the extent that it is rare and inimitable, where example resources include physical, financial, organizational, and human resources

Define Specific Objectives to Satisfy Stakeholders

The process of operationalizing a mission and general strategy type into specific objectives hinges on the needs of key stakeholders and the organization's need for a

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Resource-Based View of Apple Inc.

By adopting a ***resource-based view*** when conducting a SWOT analysis, an organization can identify the strengths and weaknesses of an organization in terms of its physical, financial, organizational, and human resources, and identify how the organization can use these resources to maximize opportunities and minimize threats in the external environment. Proponents of the resource-based view propose that a resource holds value to the extent that it is rare and inimitable. *Rare* refers to the extent to which a particular resource is scarce and relatively few (if any) competitors possess the resource, while *inimitable* refers to the extent to which it is difficult (if not impossible) for competitors to reproduce, attain, or deploy the same resource. The process of identifying rare and inimitable internal resources provides a way of anticipating whether the organization, upon applying the strategy, will be able to achieve its objectives and sustain a competitive advantage.

Justin Sullivan/Getty Images

Justin Sullivan/Getty Images

Steve Jobs (left) and Tim Cook (right): former and current CEOs at Apple. Jobs and Cook showed two distinct approaches to leading and managing human resources.

As a visionary leader, many believed that Steve Jobs (former CEO of Apple Inc.) was himself a rare and inimitable resource. For example, Walter Isaacson wrote in an authorized biography of Jobs that people were often amazed with Jobs's seemingly innate ability to envision what customers would want even before they knew they wanted it. In other words, Jobs embodied Apple's strategy and associated slogan "Think different."—even though Jobs personally despised some versions of the advertisement campaign, fearing that he might come off as an egomaniac. Leveraging Jobs as a rare and inimitable *human* resource, Apple developed the Macintosh, iMac, iPod, iTunes, and iPad under his leadership—all of which have become hallmarks of innovation. After Jobs passed away in 2011, many feared that Apple would fail to innovate moving forward. As an illustration of that fear and concern, shares in Apple dipped following the news of his death. Soon after, Tim Cook succeeded Jobs as CEO, and many have noted how Cook possesses a different management style and different capabilities. Nonetheless, under Cook's leadership, Apple's stock has more than doubled, and some attribute this success to various supply chain innovations orchestrated under Cook's leadership. Thus, while Jobs's leadership style was arguably a rare and in imitable resource for Apple that helped the company realize strategic objectives related to product innovation, Cook's leadership style—albeit different from Jobs's style—pushed Apple to achieve other critical strategic objectives. Together, the former and current CEOs of Apple illustrate just how important human resources are for the realization of strategy.[14]

sustainable competitive advantage. Ultimately, an organization formulates a strategy to meet the needs of stakeholders and—above all—to be competitive. As such, strategic objectives stemming from a mission, vision, and values and SWOT analysis should be designed to satisfy different stakeholders. *Stakeholders* include a number of different groups that an organization must appeal to, such as

- customers,
- investors and shareholders,
- employees, and
- communities.

Finalize Strategy

Once an organization defines its mission, vision, and values; analyzes the internal and external environments; chooses a general strategy type; and defines its strategic objectives, it is ready to finalize the strategy. That is, the organization must create a clear plan for the future before progressing to strategy implementation.

Strategy Implementation: Bringing a Strategy to Life

During *strategy implementation*, an organization follows through on its plan. It is during this stage that an organization builds and leverages the capabilities of its human resources (which are often referred to as *human capital* at the organizational level of analysis), as human resources will ultimately play an important role in supporting the enactment of an organization's strategy. The following section discusses how to align an organization's HR policies and practices with its strategy and how a well-designed system of HR policies and practices can improve human capital capabilities within an organization and, ultimately, performance.

Apple Inc. has consistently illustrated a differentiation strategy, and this approach is reflected in its "Think different" slogan. The iPod and iTunes revolutionized how people purchased, stored, and listened to music. At the time of their introduction, storing digital music files on a device (as opposed to inserting a CD into a disc drive) was a relatively novel concept, and Apple differentiated the iPod and iTunes from other products and services with clever advertising campaigns.

Stakeholders A number of different groups that an organization must appeal to, including customers and investors

Strategy implementation The enactment of a strategic plan

Human capital The knowledge, skills, and abilities that people embody across an organization

McDonald's long recognized the popularity of its breakfast menu. To boost sales by satisfying its customers, the company offered breakfast as part of its all-day menu, resulting in increased revenue.[15]

Contributing to Your Organization's Strategy

After the formulation stage, the strategy must be implemented, which requires the coordination and cooperation of employees and managers at all levels of the organization. As you might imagine, sometimes there are disconnects between an organization's espoused strategy and how it actually enacts the strategy. Managers who behave in their own self-interest—and not in the interest of the organization—can derail strategy implementation by delaying or reducing the quality of the implementation or even sabotaging the strategy! Here are some actions you can take as a manager to bring your organization's strategy to life.[16]

1. *Know what your organization's strategy is.* In a survey of employees from 20 major Australian corporations, only 29% of respondents were able to identify their company's strategy from a list of six choices. Take the following steps to understand your organization's strategy:

   • Review the organization's mission statement, vision, and values.

   • Ask your manager to explain how you can contribute to strategic objectives.
   • Pay attention to formal communications from the C-suite and upper management.
   • Stay on top of changes to your firm's strategy.

2. *Align your own goals with your organization's strategic objectives.* As a manager, it is important to align your self-interests with the interests of the organization, assuming the strategy aligns with your own personal ethics. Specifically, set goals that describe how you and your team can contribute to organizational objectives, such as decreasing turnover or increasing productivity.

3. *Communicate the strategy to your employees.* Explain the strategy to your employees, and engage them in activities that help them understand how they can contribute to the organization's strategic objectives. Remember, as a manager, you play an essential role in communicating company strategy to employees.

LO 2.2 Define Strategic HRM.

Strategic HRM: Linking Strategy With HRM

The beginning of this chapter defines *strategic HRM* as the process of aligning HR policies and practices with the strategic objectives of the organization, including achieving employee, operational, stakeholder, and financial outcomes to achieve and sustain a competitive advantage. Further, a central tenet of strategic HRM is that HR practices and employees are company assets that add value and not merely costs.[17] If implemented in a systematic and data-driven manner, strategic HRM can help an organization realize its strategy and objectives through the deployment of its human resource capabilities. As described in the opening case about Chevron, HR analytics represents an important tool for bringing an organization's strategy to life, as it can reveal how best to deploy HR systems, policies, and practices. When couched in the scientific-process framework, HR analytics offers a rigorous approach to attracting, motivating, and retaining talented people that are crucial for realizing strategic objectives and achieving a competitive advantage.

LO 2.3 Explain the importance of strategic HRM for realizing employee, operational, stakeholder, and financial outcomes and for sustaining a competitive advantage.

From Then to Now: The Origins of Strategic HRM

With a growing number of organizations focused on *strategic* HRM and using data to make better HR decisions, the activities associated with HRM have changed over the years. Historically, the function was labeled *personnel management*, which carried with it the implication that employees were an organizational expense.[18] Today, we use the term *human resource management*, as the function has evolved from a predominant focus on transactional and administrative

Importance of HRM for Procter & Gamble Merger

In 2005, Procter & Gamble (P&G) agreed to purchase the Gillette Company for approximately $57 billion in stock, thereby strengthening P&G's reputation as a consumer products giant. The move provided P&G with more pricing leverage with large retailers like Walmart.

To ensure the merger's success, P&G took several steps to assuage fears and to integrate Gillette employees. For instance, P&G gradually introduced Gillette employees to the P&G performance management and reward systems so that they had time to learn P&G's business strategy and objectives. In addition, although P&G had a reputation for promoting from within, management decided to replace many lower performing P&G employees with higher performing Gillette employees. This, in turn, signaled to employees that P&G valued the human capital coming from Gillette. Finally, as evidence of P&G's merger success, P&G met financial targets in the year following the merger.[19]

activities (e.g., recordkeeping) and employee relations activities to a more pronounced focus on transformational activities intended to help the organization leverage its human capital to achieve strategic organizational objectives (see Figure 2.2). This change has expanded our view of managing people from that of a cost to that of an asset and corresponds with advances in information systems and HR analytics.[20]

With the introduction of the term *strategic HRM*, the responsibilities of the HR function expanded even further. As shown in Figure 2.3, Ulrich's model of HRM indicates that strategic HRM plays the role of administrative expert, employee advocate, change agent, and

■ **FIGURE 2.2**   Evolution of HRM Activities

The amount of time spent on transactional activities has decreased over the past century as more HR functions become automated. This leaves more time for activities designed to transform the organization by strategically deploying human resources.

Historic HRM

Modern HRM

% of Time Spent on Activities

Transactional   Transformational

Automation

Transactional   Transformational
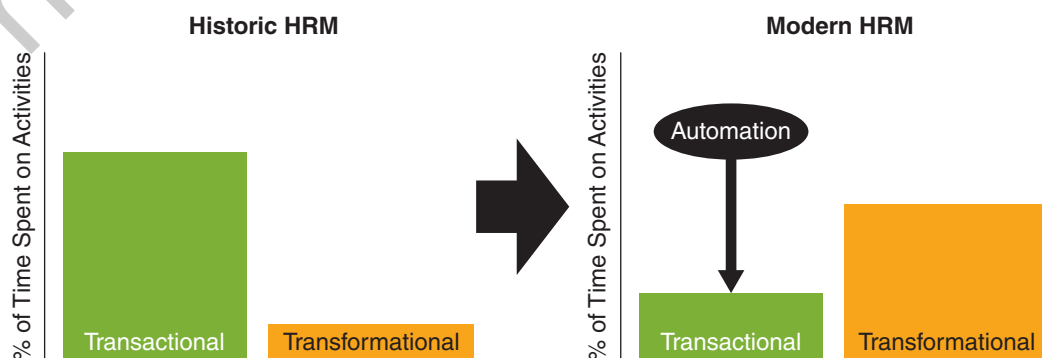
■ FIGURE 2.3 Ulrich's Model of Strategic HRM

Ulrich's model indicates that HRM should provide administrative expertise, serve as an employee advocate, be an agent of change, and serve as a strategic business partner.

Data-driven decisions
Decisions that are made based on the analysis and interpretation of relevant, accurate, and timely data

Balanced scorecard The evaluation of organizational performance based on the extent to which the organization satisfies different stakeholder needs, such as the needs of customers, investors, shareholders, employees, and the broader community

Organizational performance The extent to which employee learning and growth, internal business process efficiency, customer attitudes and behavior, and financial performance contribute to the organization's mission and strategy

business partner. Specifically, HRM has retained foundational activities related to administrative and employee relations activities while introducing additional activities related to orchestrating change and serving as a business partner. Strategic HRM has expanded the influence of the HR function, such that the deployment of HR practices and human resource capabilities can be used to realize strategic change initiatives, such as mergers, acquisitions, reorganizations, and restructurings, as well as gain a "seat at the table" during key business decisions and strategy formulation and implementation.

With the additional responsibilities of being a change agent and strategic business partner, the modern HR function now faces greater pressure to make sound and impactful decisions. As a result, data-driven decisions have become an integral part of effective strategic HRM. To achieve strategic objectives and a competitive advantage, a growing number of organizations collect, analyze, and interpret data via HR information systems and HR analytics. More specifically, technological advances have made it easier to capture and store HR data in HR information systems, and using HR analytics, these data can be used to improve HR systems, policies, and practices and, as a result, the performance and viability of the organization. With the scientific process as a road map, HR analysts test hypotheses to determine the best ways to manage people within the organization—or in other words, to arrive at **data-driven decisions** that bring the organization one step closer to meeting strategic objectives. In support of this stance, a panel of experts convened by the Society for Human Resource Management in 2012 predicted that HRM will continue moving toward a decision-based science from that of a procedures-based practice.[21]

Conceptualizing Organizational Performance: The Balanced Scorecard

Historically, organizational performance was defined in terms of financial indicators, such as return on assets, return on equity, and market return. While achieving financial outcomes is indeed a worthwhile and necessary objective, other indicators of firm performance must also be considered. The introduction of the **balanced scorecard** was a game-changer in that regard, as it made the case for considering nonfinancial indicators when defining organizational success.[22] The balanced scorecard is used to evaluate organizational performance based on the extent to which the organization satisfies different stakeholder needs, such as the needs of customers, investors and shareholders, employees, and the broader community. Accordingly, consistent with the balanced scorecard approach, we conceptualize **organizational performance** as the extent to which employee learning and growth, internal business process efficiency, customer attitudes and behavior, and financial performance contribute to the organization's mission and strategy. Additionally, the balanced scorecard approach illustrates the value of an organization differentiating its human resources relative to competitors to gain a competitive advantage.

Identifying Best Practices

Strategic HRM has roots in multiple disciplines, as it reflects the intersection of HRM and strategic management, and incorporates principles from other areas, such as industrial relations, economics, and organizational theory.[23] Together, these disciplines provide a basis for understanding how human resources can be strategically deployed in the service of organizational objectives and strategy. Understandably, they also offer different perspectives regarding how HR practices influence organizational outcomes. For instance, those working in the industrial relations and economics disciplines tend to identify HR practices that are thought to universally predict organizational outcomes regardless of context (e.g., industry, organization type, strategy type), whereas those in strategic management often focus on the context and conditions under which a *specific* bundle of HR practices predicts a given outcome or, rather, the degree to which the relation is contingent on a specific context.[24] Regarding the former, some HR practices can be thought of as *universal best practices* in that their implementation across different contexts will likely lead to favorable organizational outcomes. In HRM, evidenced-based universal best practices include enhancing perceptions of job security among employees, promoting from within the organization, providing financial incentives linked to performance, offering training, and providing flexible work arrangements.[25]

■ **FIGURE 2.4** Pfeffer's Seven Practices of Successful Organizations

Pfeffer's practices are examples of high-performance work practices that are instrumental for developing human capital capabilities across different contexts.[26]

1. *Create employment security* policies to encourage employee involvement and commitment.

2. *Selectively hire new employees* to create a highly qualified workforce that are a good fit.

3. *Organize employees into self-managed teams* to achieve higher-performing teams.

4. *Compensate employees based on performance* to attract, motivate, and retain talented employees.

5. *Train employees* to enhance the knowledge and skills necessary for high performance.

6. *Reduce status differences between employees* to leverage ideas, skills, and effort at all levels.

7. *Share information on strategy and performance* to motivate employees to contribute to the organization.

And such practices are often referred to as ***high-performance work practices***.[27] Recent meta-analytic evidence indicates that certain well-designed individual HR practices generally have positive effects on organizational outcomes.[28] For examples of evidence-based high-performance work practices, refer to Figure 2.4.

High-performance work practices Bundles of HR universal best practices, such as promoting within the organization and offering training

Considering the System and Context

In addition to identifying universal best practices, such as high-performance work practices, it is important to consider how these practices and others fit into the broader HR system. In other words, the effectiveness of some HR practices may be contingent on the context (e.g., industry,

culture) and the configuration of other HR practices that are part of a larger system.[29] Thus, in addition to identifying universal best practices, it is advisable to adopt a contextual and configural approach to strategic HRM, which is consistent with a systems perspective on HRM. Taking a *systems perspective* means considering how all of the pieces of the HR puzzle fit together and how any misalignment can be addressed to optimize the overall system of HR practices. When a system of HR practices is well designed and well integrated, certain synergies can emerge, such that the potential of the whole system may be greater than the sum of the system's parts.

Systems perspective The view of how all pieces of a system and its subsystems fit together

Synergy between bundled HR practices, however, is not guaranteed. Without consideration of the organization's strategy and without taking a systems perspective, it is unlikely that a system of HR practices will reach its full potential. For instance, imagine a company in which teamwork is integral for achieving a strategic objective. Accordingly, this company devised a selection tool to identify job applicants who are likely to be team players and an onboarding program to train new employees to work effectively in teams. Now imagine that the same company introduces a new compensation program that rewards only individual performance and not the performance of teams. Rather than interacting synergistically with the selection and training subsystems to improve team effectiveness, the reward subsystem may thwart team effectiveness by focusing individuals' efforts toward their own individual achievement, as opposed to the achievement of their team. In this hypothetical case, the whole might even be *less* than the sum of the parts when it comes to achieving the team-oriented strategic objective. Thus, to achieve desired organizational outcomes, it is important to develop HR practices with a strategic mindset and to focus on the entire system of HR practices as a whole and their potential configurations, as well as their interaction with the organization's culture and technology capabilities.

In recent decades, accumulated research findings have shown that a well-configured system of high-performance work practices that aligns with contextual factors does, in fact, improve organizational outcomes. Based on data from 968 organizations of various sizes and from a variety of industries, one study found that investing in an HR system can lead to valued organizational outcomes, such as lower turnover, higher productivity, and higher financial performance.[30] Offering additional support, a meta-analytic investigation of 92 studies showed that systems of high-performance work practices outperform well-designed individual HR practices with respect to organizational performance, which suggests that integrating different HR practices matters. Further, the meta-analytic investigation showed that the relationship between HR practices and organizational performance was stronger among manufacturing firms compared with service firms, which lends support to the argument that the context matters from an industry standpoint too. Table 2.1 provides examples of other factors that have been found to influence the effectiveness of HR practices.

SPOTLIGHT ON GLOBAL ISSUES

Strategic International HRM

Today, many organizations, such as Walmart, Marriott, and Microsoft, span international boundaries. Consequently, these multinational companies operate across national and cultural contexts and conditions, with different laws, customs, and values. Strategic international HRM requires a nuanced and intentional approach to deploying human resources to achieve strategic objectives. To be successful in the international arena, scholars have argued that organizations must show flexibility in their HR practices to adapt to and fit with the different national environments. The flexible application of HR practices, however, is not without its challenges, as multinational corporations struggle with whether to integrate HR practices in a consistent manner via a global strategy or to tailor HR practices to fit the needs of each national context via an adaptive strategy.[31]

TABLE 2.1   Factors Influencing the Effectiveness of HR Practices[32]

FACTORS	DESCRIPTION
Internal Environment	
Business Strategy	Although research findings have been mixed, some evidence indicates differentiation strategies enhance the effectiveness of HR systems in relation to certain organizational outcomes, such as reducing turnover.
Culture	Most evidence to date indicates that a positive and supportive organizational culture enhances the effectiveness of HR systems in relation to organizational outcomes.
Manager Characteristics	Research has shown that having more senior managers and managers with stronger HR backgrounds enhances the effectiveness of HR systems.
External Environment	
Industry Characteristics	The type of industry an organization operates within can influence the effectiveness of HR systems. For example, the positive effects of HR systems on organizational outcomes tends to be stronger in manufacturing industries (as opposed to service industries).

Strategic HRM, Data-Driven Decision Making, and HR Analytics

LO 2.4   Demonstrate the use of data-driven decisions in realizing organizational strategy, contrasting different HR analytics competencies and levels of HR analytics.

We live in a world with ever-increasing amounts of data and big decisions to make. Data are collected and analyzed for a variety of purposes but often with the goal of making better decisions—that is, decisions informed by evidence. For example, medicine has advanced at a rapid pace due to ongoing research using randomized clinical trials and other rigorous research designs, which are predicated upon the notion that knowledge is based on data. Further, technological advances in the form of wearable devices have made it easier for us to collect data about our own behavior, enabling us to optimize our health and recognize the extent to which we are attaining our health goals. As a society, we have grown more comfortable with the idea of using data to inform decision making. This comfort has made its way into HR departments, and in recent years, the boundaries of strategic HRM have expanded to place a greater emphasis on data-driven decision making, thereby paving the way for HR analytics. At this point, you may be thinking, "Do I have to become an expert in data analysis?" The answer is no, but we do recommend that you gain some basic familiarity with mathematical and statistical concepts and data analysis tools. To that end, the remainder of the chapter discusses the different sources of HR data, as well as how to collect, analyze, and interpret data to inform and support the pursuit of strategic objectives and, above all, how to use the scientific process as a decision-making framework.

Today, data-driven decision making is an important component of strategic HRM, and increasingly, companies like Google and Microsoft have been leading the charge regarding integrating advanced and strategically aligned data analytics into their HR function. Earlier in the chapter, we described Tesla's mission and strategy; Tesla has also embraced data to make better people decisions and to inform and support strategy. With respect to electric cars, Tesla places a big emphasis on technological innovation, such as improved vehicle performance and increased battery capacity; however, at the same time, the company strives to make models that are affordable and competitive in price with nonelectric cars. As such, Tesla requires a workforce replete with talented people

How Does a System of HR Practices Influence Organizational Outcomes?

Performance = Ability x Motivation x Opportunity

The *ability-motivation-opportunity model* proposes that a system of HR practices influences employee outcomes and, ultimately, operational and financial outcomes to the extent that the practices target three different elements: ability to perform, motivation to perform, and opportunity to perform. The first element—*ability* to perform—encapsulates employees' knowledge, skills, and abilities. In a sense, ability to perform can be thought as what an employee *can do* on the job. The second element—*motivation* to perform—refers to the work-related effort that employees exert toward goal completion and captures what employees *will do* on the job. That is, just because employees have the ability to do the work does not necessarily mean they have the motivation to do the work, and vice versa. The third element—*opportunities* to perform—entails whether employees have the chance to perform on the job. Taken together, we can conceptualize employee performance as a function of their ability, motivation, and opportunity to perform. Thus, according to this model, if ability, motivation, or opportunity falls to zero, performance will be zero. We recommend using this conceptual formula to help you wrap your mind around how employees achieve high levels of performance in the workplace, as well as how different HR practices can be designed to target each of these three elements.[33]

Ability-motivation-opportunity model A model that proposes a system of HR practices that influences employee outcomes and, ultimately, operational and functional outcomes to the extent that the practices target three different elements: ability to perform, motivation to perform, and opportunity to perform

D. J. Patil, who has worked for eBay and LinkedIn, helped coin the term *data scientist*. He became the first chief data scientist in the U.S. Office of Science and Technology Policy.

who are motivated to leverage their human resource capabilities to attain those lofty objectives, and like other large companies, Tesla's HR department uses data to inform HR decision making and manage talent. For example, Tesla HR analysts mined the company's employee referral program data and found that higher-performing employees referred higher-potential job candidates, midrange employees referred lower-performing job candidates, and lower-performing employees referred all levels of job candidates. Using these data-analytic findings, the team devised ways to improve its recruitment and selection practices to attract and attain high-potential people.[34] Thus, basing decisions on evidence helps HR departments to attract, motivate, and retain talented people, which can ultimately drive organizational outcomes, such as productivity and innovation, and reduce costs associated with turnover and counter productive behaviors.

Despite the growing popularity of data analytics as decision-support tools, many organizational leaders report that they still use their gut, or intuition, to make major decisions, instead of relying on empirical evidence to inform such decisions.[35] Therefore, using data to inform people decisions requires making a business case to organizational leaders by linking data to strategic organizational objectives. One way to garner support for HR analytics and data-driven decision making in general is to convince organizational leaders and HR professionals of the value of the scientific process. That is, organizational leaders and HR professionals must think like scientists when it comes to collecting, analyzing, and interpreting people data, but at the same time, they need business acumen to make a strong case for using science-based HR practices to improve the organization.[36] Finally, when leveraging HR analytics in this way, an overarching goal should be to provide managers with actionable evidence-based practices that improve the management of people.

SPOTLIGHT ON DATA AND ANALYTICS

Aligning Analytics With Strategy

Business analytics, in general, has received a great deal of media attention, as evidenced by *New York Times* and *Wall Street Journal* headlines such as "Data-crunching is coming to help your boss manage your time"; "Big data, trying to build better workers"; and "The algorithm that tells the boss who might quit." Despite the media and organizational attention paid to analytics and big data, some argue that analytics is overhyped, misunderstood, or misused. In a recent article by Ransbotham, Kiron, and Prentice (in collaboration with SAS Institute Inc.) for the *MIT Sloan Management Review*, the authors concluded that the *idea* of analytics is now mainstream, but analytics is still not widely practiced. Further, based on the results of a survey of over 2,000 managers, the authors found that organizations with innovative analytics programs were much more likely to have an official strategy for analytics. Although awareness of analytics has increased substantially in recent years, translating analytics into practice has remained an elusive goal in many organizations. As you will learn later in the chapter, most companies rely on a basic level of analytics called descriptive analytics. Essentially, this means that these companies have the capability to report what *has* happened in the past based on data but not to predict what *will* happen in the future. Although it is important to build analytics capabilities, particularly in the area of HR analytics, companies also need to develop strategies for using analytics. That is, using analytics to achieve a competitive advantage depends on the development of a clear plan for integrating analytics into organizational decision making and for aligning analytics strategy with organizational strategy. In fact, some have even argued that a lack of alignment between HR analytics and strategy could have damaging effects on the organization and its employees.[37]

Defining HR Analytics

Given its large focus on data and scientific decision making, HR analytics has been referred to jokingly as "HR's nerdy best friend."[38] And many would argue that HR analytics has the potential to be HR's nerdy *and valuable* best friend. As described previously, collecting, analyzing, and interpreting people data can lead to valuable insights, and the emergence of HR as a strategic business partner has paved the way for HR analytics. In general, HR analytics can provide evidence supporting the links among HR systems, policies, and practices and employee, operational, stakeholder, and financial outcomes. Advanced HR analytics can even provide prescriptive recommendations for the future.

The growth in HR analytics interest signals that more and more organizations are beginning to understand the importance of making data-driven decisions to achieve a competitive advantage. To that end, after reviewing survey responses and panel discussions, the Society for Human Resource Management (SHRM) Foundation concluded in a report that leveraging HR analytics to achieve a competitive advantage is an important area of growth for HRM.[39] The report concluded that talent shortages are on the rise and that HR must provide HR analytics to aid in strategic business decision making.

What exactly is HR analytics? We define HR analytics as the process of collecting, analyzing, interpreting, and reporting people-related data for the purpose of improving decision making, achieving strategic objectives, and sustaining a competitive advantage. In other words, HR analytics is the systematic process of applying quantitative or qualitative methods to derive insights that shape and inform people-related business decisions and strategy. Thus, HR analytics, which is also referred to as people analytics, human capital analytics, talent analytics, and workforce analytics, is intended to provide data-driven decisions that improve decision making at all levels of an organization, including among frontline managers. HR analytics can be used to understand the company-wide impact of a well-designed system of integrated HR practices on employee, operational, stakeholder, and financial outcomes.

■ **FIGURE 2.5**   Growing Interest in HR Analytics

This figure displays growth in interest in HR analytics based on Google search term use. The value 100 represents the peak popularity for the search term, whereas the value 50 represents times in which this term had half the popularity. Data were queried from Google Trends for January 1, 2006, to January 1, 2018.
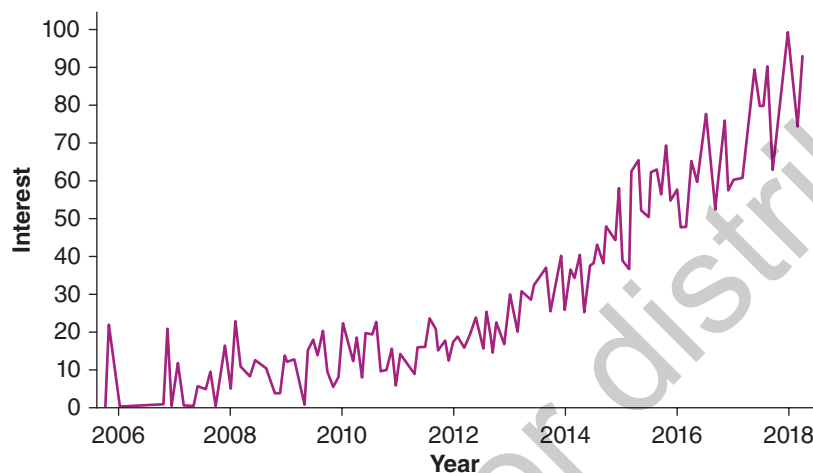
A number of organizations, including Chevron, T-Mobile, and Facebook, have expanded their internal HRM function by adding an HR analytics team. Further, companies like ADP Inc. and SAP SuccessFactors now provide products and services for analyzing people data in addition to those related to data collection and storage. These changes reflect the findings of a 2015 Deloitte survey, which showed that, on average, executives rated HR analytics as important for their business but, at the same time, reported feeling only somewhat ready to respond to the need.[40] Further, only 4% of executives reported that their company was excellent at leveraging people data to predict performance and improvement. Thus, many organizations and HR departments are in need of individuals who possess knowledge and skills related to HR analytics. Figure 2.5 shows the growing interest in HR analytics.

Identifying HR Analytics Competencies

Integrating HR analytics into the HRM function requires certain competencies that do not necessarily need to be held by a single individual. Ideally, HR analytics should be a team endeavor. Working as a team with diverse backgrounds and perspectives can facilitate sound judgments and good decision making, particularly when it comes to ethically or legally gray areas. While some HR analysts may have degrees in business or HRM, others may have backgrounds in industrial and organizational psychology, law, statistics, mathematics, data science, computer science, or information systems. Aside from educational differences among HR analysts, what matters most is that an HR analytics *team*, as a whole, is competent in the following seven areas: theory, business, data management, measurement, data analysis, employment law, and ethics (see Table 2.2).

Even if you have no desire to become an HR analyst but still wish to work in HR, developing data analysis skills, in particular, is wise. A common complaint from data analysts is that managers do not understand or recognize the value of data analysis and data-driven findings, leading to frustration. Conversely, a common complaint among managers is that data analysts fail to provide *understandable* answers to the questions that managers *actually* need answered, also leading to frustration. Thus, it is not uncommon for a rift to emerge between data analysts and managers.

TABLE 2.2   The Seven Competencies of Effective HR Analytics Teams

COMPETENCY	DESCRIPTION
Theory	Knowledge of psychological and social scientific theory is critical because findings from people data should be interpreted through the lens of human behavior, cognition, and emotion.
Business	Business knowledge and skills ensure that the activities of an HR analytics team are in the service of HR and organizational strategies and thus help the organization gain a competitive advantage.
Data Management	Data management knowledge and skills ensure that data are acquired, cleaned, manipulated, and stored in a way that facilitates subsequent analysis while maintaining data privacy and security.
Measurement	Measurement knowledge and skills provide a basis for developing sound HR metrics and measures that demonstrate sufficient reliability and validity.
Data Analysis	Knowledge and skills related to mathematics, statistics, and data analysis are critical, especially when it comes to identifying an appropriate analysis technique to address a given hypothesis or question.
Employment Law	Knowledge of employment law and HR legal issues separate an HR analytics team from a general business analytics team; teams lacking such knowledge might inadvertently violate laws when collecting data, analyze data that should not be analyzed, or use data in ways that may result in adverse consequences for protected groups.
Ethics	Knowledge of ethics helps the team navigate legally gray areas while also answering the question: "Just because we can, should we?"

In recognition of this communication issue, Tom Davenport, who is an independent senior advisor to Deloitte Analytics, wrote a blog post praising what he refers to as *light quants*.[41] Whereas a *heavy quant* would include the likes of a statistician, mathematician, or data scientist, a light quant is someone who knows enough about mathematics, statistics, and data analysis to communicate with a heavy quant and who knows enough about the business to communicate with a manager. Davenport contends that many organizations with an analytics function would benefit from hiring or training individuals who qualify as light quants, as such individuals can help managers pose better questions for heavy quants to answer and, in turn, translate the findings of heavy quants into words and ideas that are understood by managers. As such, Davenport refers to these individuals as *analytical translators*. We agree with Davenport and argue that all HR students and professionals should develop their competence in mathematics, statistics, and data analysis, at least to the point where they are able to bridge the communication divide between so-called heavy quants and managers.

Understanding the Levels of HR Analytics

There are three levels of HR analytics: descriptive, predictive, and prescriptive. ***Descriptive analytics*** focuses on understanding what has happened, which implies a focus on the past. Typically, descriptive analytics include summary statistics, such as sums, means, and percentages. Commonly reported HR metrics, such as absence rate, turnover rate, cost per hire, and training return-on-investment, are types of descriptive analytics. HR dashboards provide managers with summaries of key HR metrics and other descriptive analytics to help them understand their workforce. The Supplement discusses common descriptive HR metrics and how to calculate them. Descriptive analytics do not have to be complicated, and most involve simple arithmetic.

A more advanced form of analytics is ***predictive analytics***, which focuses on what is likely to happen in the future based on available data and therefore is more forward looking. Examples of predictive analytics include statistical and computational models. What is a *model*? Broadly speaking, a model is an approximation of reality or the way that we think things work. By extension, statistical

Descriptive analytics Focuses on understanding what has already happened, which implies a focus on the past

Predictive analytics Focuses on what is likely to happen in the future based on available data

HR dashboards are often interactive, such that managers can manipulate the data display and drill down into different teams and units, as well as conduct "what if" analyses.

Prescriptive analytics Focuses on what actions should be taken based on what is likely to happen in the future

models are mathematical approximations of reality based on data sampled from an underlying population. A common type of statistical model is a regression model. Using regression, we can evaluate the extent to which scores on one or more predictor variables are associated with scores on a particular outcome variable. For instance, in the context of selection, we might test whether applicants' level of extraversion predicts their future level of sales performance. Note that we do not expect 100% accuracy in our predictive models, as human behavior is influenced by many factors that may not be captured in the regression model. However, we strive to forecast future events and outcomes with as much accuracy as we can. As described by a SHRM Foundation report, very few companies have reached the level of predictive analytics, as the vast majority relies on descriptive analytics and basic reporting for HRM.[42]

Finally, the most advanced form of analytics is prescriptive analytics, and at this point, relatively few companies effectively apply prescriptive analytics to HR-related decision making. ***Prescriptive analytics*** focuses on what actions should be taken based on what is likely to happen in the future. By definition prescriptive analytics is forward-looking, just like predictive analytics, but prescriptive analytics build upon predictive analytics by taking data-informed predictions and translating them into different decision alternatives and courses of action. An overarching goal of prescriptive analytics is to optimize decision making to ultimately achieve the best outcome that is aligned with organizational strategy.

HR Analytics and the Scientific Process

LO 2.5   Summarize the arguments for a scientific, ethical, and legally compliant approach to HR decision making.

Regardless of whether a company uses descriptive, predictive, or prescriptive analytics, we recommend that you envision HR analytics—and data-driven decision making, in general—as a scientific endeavor. The scientific process rests firmly in empiricism, which refers to knowledge based on evidence. In essence, the scientific process can be thought of as a rigorous and rational approach to problem solving and decision making. As described in Chapter 1, the scientific process consists of the six steps shown in Figure 2.6.

Step One: Identifying the Problem

Like any problem-solving approach, the first step of the scientific process is to identify and define the problem. That is, what specifically will you try to describe, predict, explain, or understand using analytics? For example, imagine your organization has been facing a retention issue, in which employees are voluntarily leaving the organization at a concerning rate. In general, turnover is a major cost for organizations,[43] with some estimates suggesting that selecting and training a replacement employee can cost organizations between 50% and 200% of the first-year salary for each person who leaves the organization.[44] Given the cost of voluntary turnover and your organization's latest turnover rates (which represent a type of a descriptive analytics), you might define voluntary turnover as a problem for which you wish to find a solution, as failure to do so might impair the organization's ability to achieve strategic objectives.

Step Two: Doing Background Research

It is unlikely that the problem you identified is completely novel. For example, others who came before you have investigated the problem of voluntary turnover. Universities and other academic institutions employ organizational scholars and researchers who, collectively, have investigated

■ **FIGURE 2.6**   Steps in the Scientific Process

The scientific process can be thought of as a rigorous approach to problem solving and decision making.
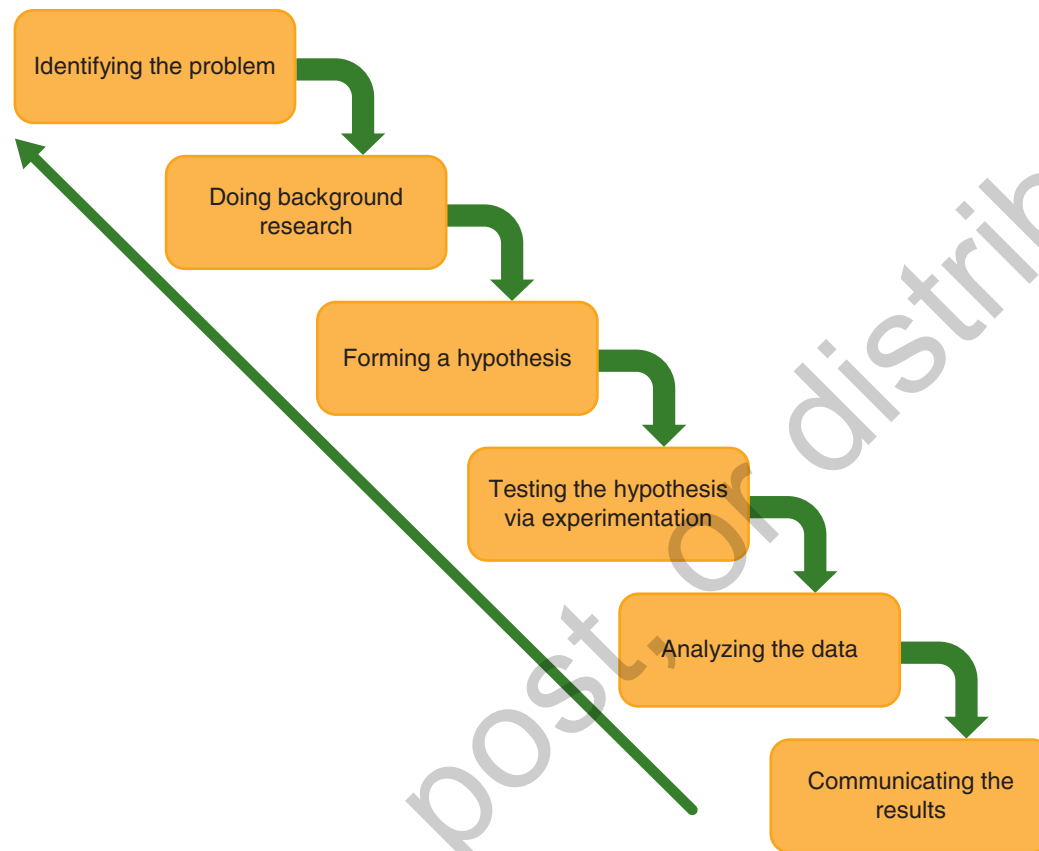
countless organizational problems. As such, before starting from scratch, look to prior theory and research to help you understand the phenomenon you wish to investigate using the scientific process. If you were to look through scholarly journal articles on the topic of voluntary turnover, for example, you would find thousands of empirical studies and theoretical explorations of the phenomenon. In doing so, you might find meta-analyses that indicate job dissatisfaction and poor person–job or person–organization fit predict voluntary turnover.[45] Never underestimate the value of a good theory to help you solve a particular problem. From a practical standpoint, doing background research can save your HR department money, as you will spend less time and energy on trying to solve a problem for which others have already found a viable solution.

Step Three: Forming a Hypothesis

A hypothesis is simply a statement of what you believe or predict to be true. In other words, it is an educated guess based on the background research you performed. We recommend stating the hypothesis as an if/then statement. For example, based on your identification of the problem and background research, you might hypothesize: "If employees perceive a low degree of fit with their job, then they will be more likely to turn over." As a suggestion, try to make your hypothesis as specific as possible by including conditional statements or qualifiers, such as "in this situation" or "for whom." For instance, you might revise your hypothesis to state: "If *new sales* employees perceive a low degree of fit with their job, then they will be more likely to turn over *within 1 year of*

hire." Remember, your hypothesis serves as a compass for enacting the remaining steps of the scientific process. First, a hypothesis informs what data you need to collect. In the turnover example, we would need to measure new sales employees' perceptions of person–job fit, as well as pull organizational turnover records for employees at 1-year post hire. Second, a hypothesis informs the type of research design you will use. In this case, we might want to measure new sales employees' perceived person–job fit within a week of being hired and then wait 1 year to record which employees left and which stayed.

Step Four: Testing the Hypothesis via Experimentation

A true experiment is one of the most rigorous designs you can use to test a hypothesis. For a true experiment, employees must be randomly assigned to either a treatment or control group. Under some circumstances it may be impractical or inappropriate to conduct a true experiment. For instance, imagine a scenario in which you developed a new onboarding module aimed at increasing new sales employees' perceived fit with the job, where *onboarding* refers to an organized process aimed at helping new hires adjust to the performance and social demands of the job.[46] Assuming the onboarding module increases person–job fit and ultimately reduces the probability of voluntarily quitting, would it be ethical to withhold the new onboarding module from those in the control group? Given the potential consequences of not participating in the new onboarding module, you may argue that a true experimental design would not be ethical in this particular scenario. Instead, you might opt for another way of testing your hypothesis, even if it means you will be less confident that participating in the onboarding module is the reason behind reduced turnover. For instance, you might conduct what are referred to as pre- or quasi-experiments, which lack a control condition or random assignment. Alternatively, you might opt for an observational design in which you survey employees or record their behavior directly through direct observation or archival organizational records. For example, to test our turnover hypothesis, we might administer a survey in which employees respond to a perceived person–job fit measure and then we gather organizational turnover records 1 year later to assess whether an employee left or stayed. Finally, regardless of how a hypothesis is tested, it is important to consider the types of data that will be collected, as the type of data informs the type of analysis.

Qualitative vs. Quantitative Data

Qualitative data Non-numeric information that includes text or narrative data, such as interview transcripts

In general, there are two types of data: qualitative and quantitative (see Table 2.3). On the one hand, *qualitative data* are non-numeric and include text or narrative data, such as interview transcripts or responses to open-ended survey questions. Additional examples of qualitative data include videos and photos. Qualitative data can be quite rich, providing important information about context and processes. Qualitative data, however, are analyzed differently than quantitative data. For instance, qualitative interview data could be content or thematically analyzed such that

TABLE 2.3 Example of Qualitative vs. Quantitative Data

This data table provides an example of a qualitative variable and quantitative variable. The performance description variable is qualitative because the associated data are non-numeric and text. The performance rating variable is quantitative because the data are numeric.

EMPLOYEE ID	PERFORMANCE RATING	PERFORMANCE DESCRIPTION
9082625	2.65	Peter performed satisfactorily. He still struggles with his TPS reports and arrives late to work at least once a week. Nonetheless, he showed glimpses of potential from time to time.
9077854	4.99	Lisa's performance was exceptional this quarter. She went above and beyond on her grant proposals and showed great teamwork when she helped get a team member back up to speed who had been on maternity leave.

the transcripts are coded for recurring themes. There are even software programs to facilitate this process, such as NVivo and ATLAS.ti. Sometimes HR analysts take qualitative data and transform them to quantitative data. As a simple example, an analyst might use a text analysis program to count the proportion of positive words relative to negative words an individual used in a 500-word block of text as part of a response to an open-ended survey question. This process would, in effect, translate non-numeric qualitative data to numeric quantitative data.

On the other hand, *quantitative data* are numeric and can be counted or measured in some way. Employee age is an example of a continuous quantitative variable, whereas employee voluntary turnover—when coded in binary as 0 = stayed and 1 = quit—is an example of a categorical variable. Statistical models are created using quantitative data.

Quantitative data Numeric data that can be counted or measured in some way

Big Data vs. Little Data

In addition to the qualitative vs. quantitative distinction, we can distinguish between big data and little data. The term *big data* has received a lot of attention in the popular press in recent years, and companies like Amazon, Facebook, and Google have built enormous reputations and revenues from leveraging data to optimize business decision making. Amazon, for example, tracks huge volumes of consumer data and, using sophisticated algorithms, can predict what consumers will buy.

In the realm of HRM, HR analysts have begun to use big data to make better people decisions. Signaling the growth in big data in HRM, the Equal Employment Opportunity Commission met in 2016 to discuss big data and analytics from a legal perspective.[47] But exactly what are big data? It turns out that the term *big data* means different things to different people. For some, big data simply mean a lot of data. For others, big data have to do with the structure of the data. For our purposes, *big data* refer to large (or massive) amounts of unstructured, messy, and sometimes quickly streaming data—often from sources that we did not originally intend to leverage for analytical purposes (e.g., scraping or coding résumé data). As shown in Figure 2.7, big data are also described in terms of four Vs: volume (i.e., amount of data), variety (i.e., different sources and forms of data), velocity (i.e., speed with which new data arrive), and veracity (i.e., trustworthiness of the data, data integrity, and certainty).[48] Together, these Vs provide an indication of the "bigness" and quality of big data.

Big data Large amounts of unstructured, messy, and sometimes quickly streaming data, which can be described in terms of volume, variety, velocity, and veracity

In contrast, *little data* are structured data that are gathered in smaller volumes, usually for a previously planned purpose. Consider an analogy involving a water fountain and a fire hydrant to illustrate the distinction between little data and big data. Working with little data is like drinking from a water fountain; the water flow is steady, clean, slow, predictable, and easy to manage. Alternatively, working with big data is like drinking from a fire hydrant spraying out untreated and unfiltered water; the water flow is voluminous, dirty, fast, largely unpredictable, and difficult to manage. Thus, working with big data requires a lot of up-front data management and restructuring, so much so that prepping big data for subsequent data analysis may require the expertise of a data scientist.

Little data Structured data that are gathered in small volumes, usually for a previously planned purpose

■ **FIGURE 2.7**   Four Vs of Big Data

The complexity and size of big data can be described according to four characteristics: volume, variety, velocity, and veracity.

Data Collection and Measurement

Regardless of how or where data are collected, sound measurement is key. Think carefully about what is being measured and how it is being measured, and distinguish between two terms: concept and measure. A *concept* is a theoretical phenomenon or construct. Job performance is a prime example. Performance on a given job entails a number of different behaviors. For instance, a sales position requires the enactment of customer service behaviors. Different *measures* can be used to assess the concept of job performance for a sales position. For instance, an HR analyst might survey customers for feedback on their experiences working with specific sales people. Or the analyst might observe and rate sales people interacting with customers. Thus, different measurement types and sources can be used to measure the same concept.

Concept A theoretical phenomenon or construct

Measure A tool used to assess the levels of a theoretical concept, such as a survey used to assess employee engagement

Step Five: Analyzing the Data

After testing your hypothesis through experimentation (or alternative research designs), which implies data collection and measurement, you are ready to analyze the data to formally test your hypothesis—that is, accept (confirm) or reject (disconfirm) the hypothesis. For hypothesis testing involving quantitative data, null hypothesis significance testing has long been the standard approach. Although not a new approach, in recent years a Bayesian approach to hypothesis testing has gained more traction. A discussion of the relative merits of these two approaches is beyond the scope of this textbook, but for curious readers, we encourage an independent investigation of the two approaches.

Qualitative Data Analysis

As mentioned previously, qualitative data can be analyzed using a variety of analytical tools; however, the notion of hypothesis testing is a bit different for qualitative data analysis. True qualitative data analysis does not produce a numeric or probability-based significance test that can be used to support whether to accept or reject a hypothesis. Instead, qualitative data analysis might rely on agreement between independent coders/analysts to determine whether a phenomenon exists and the processes underlying that phenomenon. Many people approach qualitative data analysis from a different epistemological perspective (i.e., way of knowing the world), as compared with quantitative data analysis. A full discussion of qualitative data analysis is beyond the scope of this textbook, but nonetheless, we highly recommend that you learn more about qualitative data analysis tools and techniques, as qualitative data can be a rich source of data and can answer unique questions. In fact, if you are interested in seeing a rigorous example of qualitative data analysis applied to understanding a workplace phenomenon, we recommend reading a study on interviewer impression management as found in this endnote.[49]

Quantitative Data Analysis

Regarding quantitative data analysis, a number of tools exist, and determining which one to use rests on a number of assumptions, including the type(s) of data you collected and your research design. For categorical data analysis, for example, statistical techniques, such as the chi-square test of independence, are often appropriate. For designs in which the means of two or more continuous variables are compared, such as in a true or quasi-experiment, *t*-tests and analysis of variance (ANOVA) are often used. When testing the relation between two or more continuous variables, such as job satisfaction scores in relation to job performance scores, you might use analyses such as correlation or regression. Further, when modeling change over time, growth-modeling techniques can be applied, and when modeling the structure of social network interactions, social network analysis is appropriate. With the rise of big data, some data analysts have begun to use machine learning algorithms, which refer to models that self-update and self-adjust and identify patterns in large amounts of data. This list of examples is not meant to be a comprehensive inventory of data analysis techniques; rather, it is intended to illustrate the decisions that must be made when determining how to analyze data.

Interpreting results is the final stage of the data-analysis process. Remember, data do not "speak"; they are interpreted or evaluated. That is, the act of interpretation, like other aspects of the scientific process, requires sound judgment and decision making. This also means that interpretation is susceptible to bias and error, which is addressed next.

SPOTLIGHT ON LEGAL ISSUES
Legal Implications of Big Data

Organizations can benefit from big data and analytics when it comes to key HRM functions, such as recruitment and selection. For example, algorithmic systems and analytic tools, such as those based on machine learning, can provide more accurate predictions of future performance given a number of candidate attributes (e.g., personality, experiences).

Using an algorithm or an analytic tool, however, will not necessarily result in recruitment processes and selection decisions that meet legal scrutiny. To that end, a White House report from May 2016 addressed the legal implications of big data and analytics in a variety of areas, including access to credit, higher education, criminal justice, and employment. With regard to employment, the report recognized that modern algorithmic and automated recruitment and selection systems do, in fact, have the potential to reduce bias, but the report cautions that algorithms are designed by humans. As a result, bias can inevitably find its way into algorithms and models. In fact, algorithms and models can even magnify biases in the data. Nonetheless, the report contends that the use of data-driven approaches in hiring can reduce bias if designed properly.

Thus, the major challenge to using data-driven approaches is improving decision making while also adhering to legal guidelines. When building algorithms and models to predict employee behavior and outcomes, analysts must carefully consider whether it is appropriate to include variables that are directly or indirectly linked to the protected group status of individuals. This means that analysts should proceed with caution when including variables like age or race—or variables that are likely to be strongly correlated with such variables—in their algorithms and models, unless they have a clear and defensible rationale for doing so, such as identifying sources of bias or uncovering evidence of disparate impact. Further, it is important that analysts communicate data-analytic findings to managers in a manner that ensures appropriate and legally compliant actions are taken based on the findings.

As HRM continues to evolve, big data and analytics can provide a strategic advantage. However, without careful consideration, analytics can be susceptible to bias, potentially leading to poor decisions and legal issues.[50]

Biases in Model Building, Testing, and Interpretation

We have hinted throughout this chapter that HR analytics involves many judgment calls and decisions. For instance, when building a regression model, the assumption is that you have included all necessary predictor variables to explain your outcome and no irrelevant predictor variables. This is a difficult assumption to meet, and it relies on the judgment and expertise of HR analysts to determine which variables to include and which to exclude in the model. Psychological and social-scientific theory can play a helpful role when determining which variables to measure and include in a model. At this point, we also reiterate a previous point that models are, by nature, an approximation of reality—reality as perceived by humans. That is, models are inherently subjective. To that end, prominent data scientist and mathematician Cathy O'Neil reminds us of the subjective nature of models by stating, "Models are opinions embedded in mathematics."[51]

Step Six: Communicating the Results

The manner in which you communicate the results of the scientific process depends largely on where you work and the company culture. In academia, this refers to presenting a formal research paper at a conference or publishing the results in a peer-reviewed journal. In other types of organizations, it is common to communicate findings in internal presentations, technical reports, or even white papers. Amazon, for example, is known for communicating findings in technical reports that are read silently during the first part of meetings. Many other companies rely on PowerPoint presentations in which written and oral descriptions of results are provided. In recent years, more value has been placed on creating easy-to-understand data visualizations. ***Data visualizations*** refer to pictorial and graphic representations of quantitative or qualitative data. Regardless of how you communicate the results, it is important to focus on the story you are telling. When storytelling with data, try to keep the story simple, be clear and concise, use repetition, and do not overburden
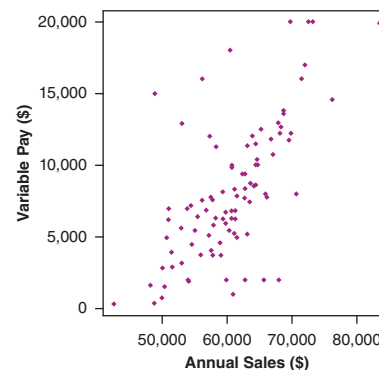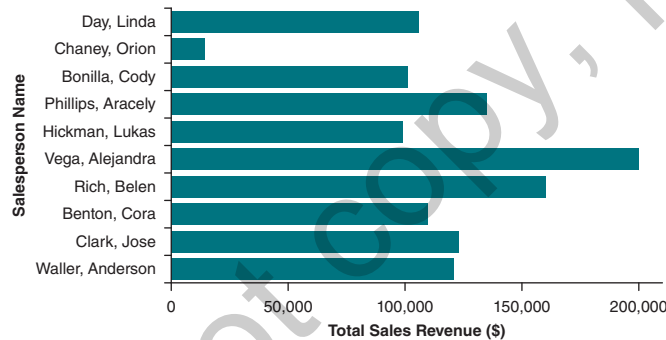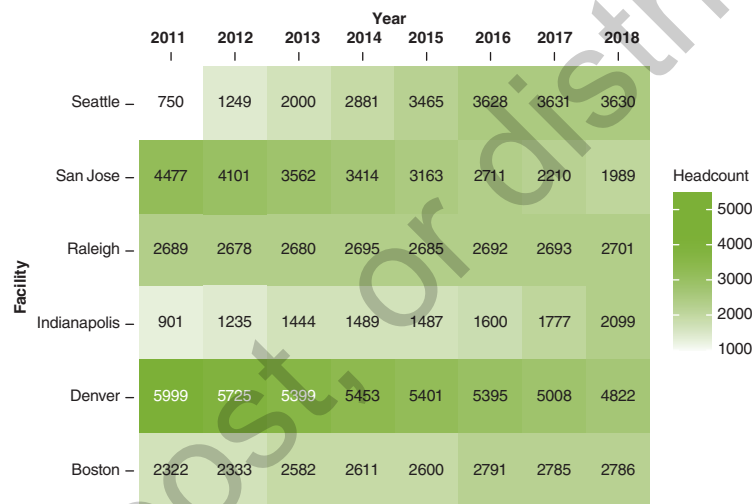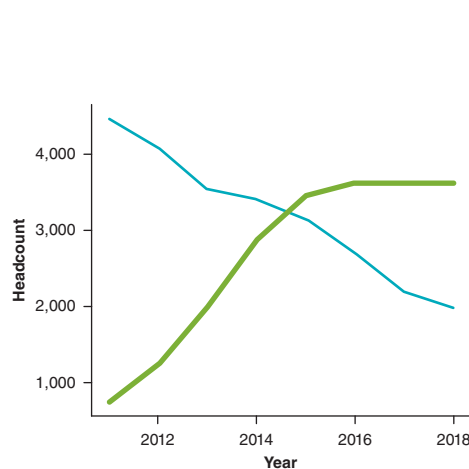
Data visualization Pictorial and graphic representations of quantitative or qualitative data

■ **FIGURE 2.8**   Examples of Different Types of Data Visualizations

Data visualizations can take different forms, from simple text to bar graphs to geographic plots. Pick the visual that best represents the data and tells the most accurate story.

76% of the employees were **satisfied with their job** in March 2018, compared to 52% in 2017.

LOCATION	AVERAGE AGE	FEMALE
Redmond	33.4	42%
Portland	37.9	52%
Las Vegas	35.1	49%
San Jose	35.3	56%

Facility \ Year	2011	2012	2013	2014	2015	2016	2017	2018
Seattle	750	1249	2000	2881	3465	3628	3631	3630
San Jose	4477	4101	3562	3414	3163	2711	2210	1989
Raleigh	2689	2678	2680	2695	2685	2692	2693	2701
Indianapolis	901	1235	1444	1489	1487	1600	1777	2099
Denver	5999	5725	5399	5453	5401	5395	5008	4822
Boston	2322	2333	2582	2611	2600	2791	2785	2786

the reader or viewer with too much information.[52] Finally, when deciding upon the specific results you wish to communicate, recognize the limitations of the data you collected and the study design you employed to test your hypothesis. In other words, take care not to overstate or exaggerate your findings. At the same time, do not understate your findings, either. See Figure 2.8 for examples of different data visualizations.

LO 2.6   Manage the components of a successful HR analytics function.

Ensuring HR Analytics Success

A sustainable HR analytics function requires the consideration of a number of important issues. First, HR analytics should be integrated and embedded into HR and organizational strategies, and this requires taking a systems perspective of the organization and its various subsystems. In the

SPOTLIGHT ON HR FOR SMALL AND MEDIUM-SIZED BUSINESSES
HR Analytics

Many of the companies featured in this chapter are quite large. But even though large companies have been early adopters of HR analytics, small and medium-sized companies can also use HR analytics to their advantage.

First, HR information systems and technologies have become more affordable, making it possible for smaller companies to purchase the platforms that are similar to those that larger companies are using. For example, ADP Inc. and SAP SuccessFactors offer different platforms designed to meet the needs of small, medium, and large companies. Not only can these platforms help smaller companies store and manage their people data, but they also provide many automated descriptive analytics, such as common HR metrics.

Second, adopting the scientific process for HR decision making and problem solving is not exclusive to large companies. Rather, small and medium-sized companies can integrate the scientific process into their HR function to help the company find, motivate, and keep the right people. Recall from earlier in the chapter that the scientific process is akin to rigorous and rational problem solving.

Finally, there is a wealth of peer-reviewed, scientific research on a variety of HR systems, policies, and practices, as well as a growing literature on strategic HRM. Subscribing to academic- and practitioner-oriented journals can provide HR professionals with a treasure trove of rigorous empirical findings from other organizations that can be used to inform and support their decision making.

opening case, we described how Chevron integrated its HR analytics team into the organization and created a community of practice to bring those interested in analytics together. HR analytics can become an integral part of the HR strategic business partnership by leveraging people data to inform and support people decisions and strategy. In other words, the HR analytics function can provide data-driven recommendations regarding the design and implementation of HR practices in order to facilitate the organization's achievement of strategic objectives. Second, HR analytics should be integrated into the culture of HR and the organization. As we previously noted, many executives continue to make major decisions based on their gut instincts, or intuition. As such, developing an HR analytics function in some organizations may be difficult, especially if the culture does not ostensibly value data and data-driven decisions. By gaining manager support and creating a culture that supports evidence-based practices, the HR analytics function will have a better chance of implementing changes. Third, and related to the second point, HR analytics must be paired with good change management, where change management refers to the "systematic process of applying knowledge, tools, and resources to transform organization from one state of affairs to another."[53] People have a natural tendency to resist change, and thus, in addition to creating a culture supportive of data-driven decision making, a culture of continuous change should be cultivated as well. Fourth, an HR analytics team must comprise the right people with the right mix of competencies. We recommended the following seven competencies earlier in the chapter: theory, business, data management, measurement, data analysis, employment law, and ethics. Deficiencies in any one of these competencies within a team may result in failure to make a contribution or, worse, may use HR analytics in ways that are illegal or unethical. Finally, we cannot overstate the importance of ethics. Today, new information technologies make it easier than ever to collect, manage, and analyse potentially sensitive people and organizational data, and with these new technologies come new ethical responsibilities. For example, some platforms allow us to systematically scrape data about our employees from social media sites. Before doing so, however, we must pause and ask this question: "Just because we can, should we?" For example, just because we can scrape employees' social media data with ease and just because that data might be predictive of employee outcomes, should we do it? The same rigor that is applied to the scientific process should also be applied to decision making surrounding what data to use, how to use data, and whether to run certain analyses. Referring back to the systems perspective once more

is important because it reminds us of the interconnectedness between ourselves and other organizational entities. In other words, a systems perspective reminds us that one decision—ethical or not—can result in a large ripple effect through the organization system and beyond.

CHAPTER SUMMARY

HRM has evolved immensely over the past century, with the development of strategic HRM, data-driven decision making, and HR analytics. Leading organizations leverage their HR function to inform and support organizational strategy; to realize employee, operational, stakeholder, and financial outcomes; and to achieve a competitive advantage. Data-driven decision making in the form of HR analytics plays an important role in strategy realization. An effective HR analytics function can be leveraged to improve the quality of decisions we make by informing the way an organization collects, manages, analyzes, and interprets its people data.

KEY TERMS

strategic human resource management   35
human resource analytics (HR analytics)   33
strategy   35
scientific process   35
strategy formulation   35
mission   36
vision   36
values   36
SWOT analysis   37
resource-based view   38
strategy type   37

stakeholders   39
strategy implementation   39
human capital   39
balanced scorecard   42
organizational performance   42
data-driven decisions   42
high-performance work practices   43
systems perspective   44
ability-motivation-opportunity model   46
descriptive analytics   49
predictive analytics   49
prescriptive analytics   50

qualitative data   52
quantitative data   53
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mean   61
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HR REASONING AND DECISION-MAKING EXERCISES

MINI-CASE ANALYSIS EXERCISE:
### ORGANIZATIONAL CULTURE AND THE SUCCESS OF HR ANALYTICS

Chapter 1 discussed the importance of organizational culture in relation to HRM. Specifically, the chapter reviewed a popular organizational culture typology called the Competing Values Framework, which characterizes different culture types by their emphasis on either collaboration, creating, controlling, or competing. The culture types are as follows: clan, adhocracy, market, and hierarchy. Given what you learned in this chapter about HR analytics and data-driven people decisions, consider how the different culture types might influence an organization's acceptance of HR analytics.

Now, you decide:

1. For which organization culture type do you think HR analytics will best integrate? Is there an ideal culture type to support HR analytics? Why?

2. Which organization culture type will be least likely to accept HR analytics as a viable part of the organization's strategy? Why?

HR DECISION ANALYSIS EXERCISE: THE CASE OF GRAVITY PAYMENTS

The CEO of Gravity Payments, Dan Price, made national headlines in 2015 when he announced that he would be increasing all employees' annual pay to $70,000 over the course of several years. Price had read a study that showed that emotional well-being improved as income increased, up until about $75,000 a year, and he was inspired to raise his employees' pay with the hope that it would lift their emotional well-being. Reportedly, he moved very quickly when making this major decision. In the months that followed his compensation announcement, Price was both cheered and jeered. His supporters touted his inspirational message, while his critics argued that it was all a publicity stunt and questioned his motives. In addition, not everyone within the company was happy with this decision. Within 3 months, two of his most-valued employees had quit, citing the fact that newer and less experienced employees would make the same amount of money. Some of his company's clients commended him, while other clients said he made their job harder because they feared they would have to justify the costs of services that might come with the pay increases.[54] Now, answer the following questions regarding what you think about Price's HRM decision making in terms of the five characteristics of effective HRM decisions depicted below.
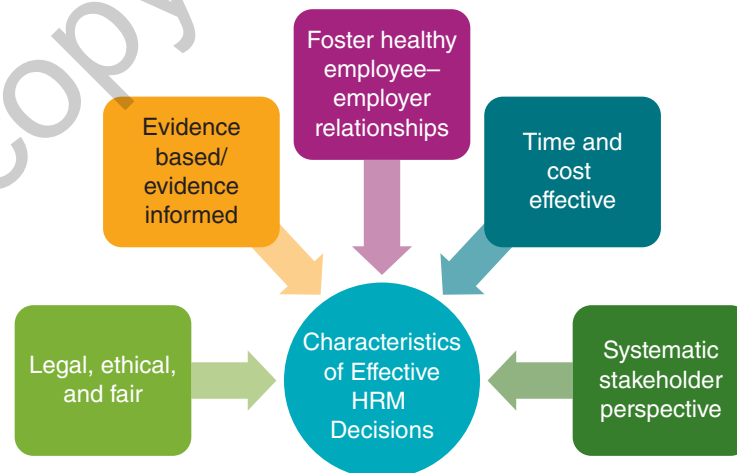
Be sure to include specific examples from the case or your own research to support your answers.

Was Dan Price's HRM decision legal, ethical, and fair?

_____
_____
_____
_____

Was it evidence based/evidence informed?

_____
_____
_____
_____

Did it foster healthy employee–employer relationships?

_____
_____
_____
_____

Was it time and cost effective?

_____
_____
_____
_____

Did it take a systematic stakeholder perspective?

_____
_____
_____
_____

Considering your analysis above, overall, do you think this was an effective decision? Why or why not?

_____
_____
_____

What, if anything, do you think should be done differently or considered to help make this decision more effective?

_____
_____

HR DECISION-MAKING EXERCISE: BUILDING YOUR HR ANALYTICS TEAM

HR analytics is an interdisciplinary field, and as a result, HR analytics teams are often composed of individuals from different disciplines, specializations, and degree programs. Critical areas of expertise in any HR analytics team include the following: theory, business, data management, measurement, data analysis, employment law, and ethics. For this exercise, work in a group to determine how you would recruit, select, and train members of an effective HR analytics team.

1. As a group, create a series of jobs for which you will ultimately recruit and select new employees. A given job may cover more than one area of expertise, and multiple jobs may overlap in terms of some areas of expertise.

2. For each job created in Step 1, identify the competencies and educational/professional experiences that are necessary for success on each job.

3. Develop a brief recruitment and selection strategy for each job. In other words, where will you recruit individuals for these positions? Why? How and why will you select and hire individuals for these positions?

DATA AND ANALYTICS EXERCISE: DESCRIBING YOUR DATA

Summarizing people data using descriptive analytics can provide valuable insights into the state of your company. Although there are a number of common HR metrics such as turnover rate and yield ratio (see Supplement for more examples and details), often it is valuable to summarize basic demographic data, survey data, and performance data using descriptive statistics like frequency, percentage, mean, median, mode, and standard deviation. Part of the challenge is determining which descriptive statistic to use to describe a particular variable. Regarding quantitative variables, one can distinguish between categorical variables and continuous variables. Although variables can be described in even more specific terms, the categorical and continuous distinction is an important one.

A *categorical variable* consists of multiple levels, but these levels do not have a particular order or inherent numeric values. For example, race is typically operationalized as a categorical variable, where the levels of the race variable correspond to the different categories of race (e.g., Asian, Black, White), in no particular order. As another example, for reporting purposes to the Equal Employment Opportunity Commission, employee sex is often reported as a dichotomous categorical variable with the following levels: male and female. When we report categorical variables, we often use frequency or percentage to describe the data. For example, imagine that a company employs 230 female and 199 male employees. We could describe sex using two frequencies: frequency of females (230) and frequency of males (199). Alternatively, we could describe each level of the gender variable as a percentage. For example, 53.6% of employees identify as female (53.6% = 230/(230 + 199) × 100), and 46.4% identify as male (46.4% = 199/(230 + 199) × 100). Data visualizations like the bar charts shown in Figures 2.9 and 2.10 facilitate the communication of such descriptive analytics findings.

Categorical variable A variable that has multiple levels, without any particular order to the levels or inherent numeric values

A *continuous variable* consists of a continuum of numerically ordered values. A classic example is employee age when measured in years. Years can be ordered such that we can say someone who is 39 years is older than someone who is 38 years, and thus, one value is larger or higher than another value. Although many survey response scales technically represent what are referred to as ordinal variables, which are distinguishable from continuous variables, we often treat them like continuous variables for the purposes of data analysis. For instance, in an employee engagement survey, you might ask employees to respond to different survey items using a 5-point response scale ranging from *strongly disagree* (1) to *neither agree nor disagree* (3) to *strongly agree* (5).

Continuous variable A variable that consists of a continuum of numerically ordered values

Mean The average of a group of numeric values

Standard deviation The amount of variation of a group of numeric values around their mean
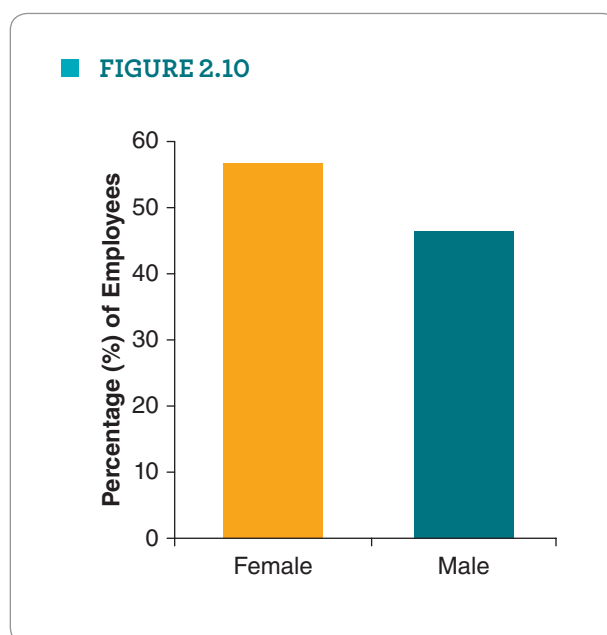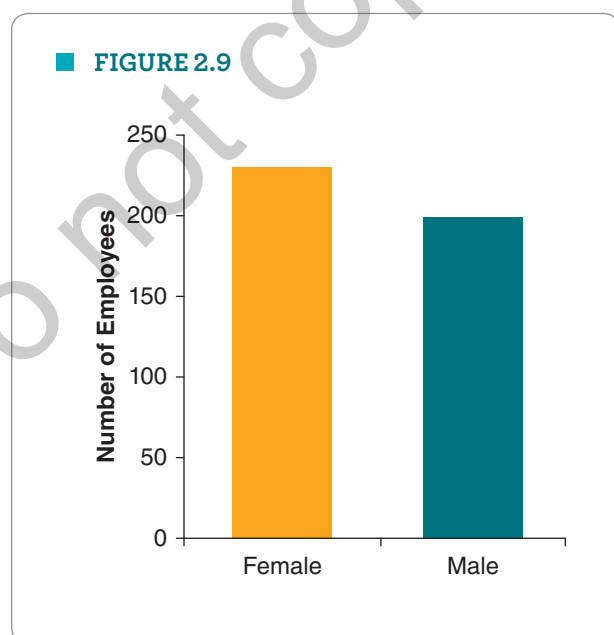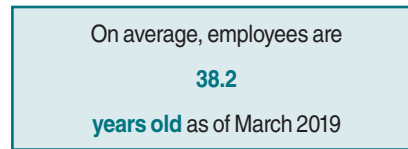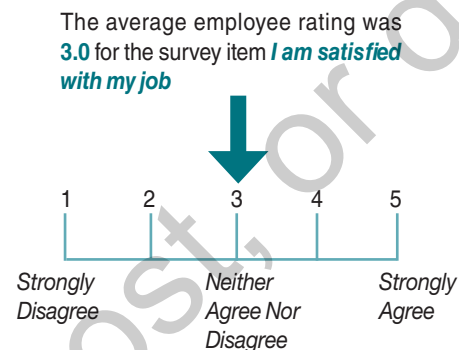
To summarize employees' ages or their responses to the item "I am satisfied with my job," you could compute descriptive statistics of central tendency and/or dispersion. For example, you might find that the **mean** (average) employee age is 38.2 years with a **standard deviation**

■ FIGURE 2.9

■ FIGURE 2.10

■ **FIGURE 2.11**

On average, employees are

38.2

years old as of March 2019

■ **FIGURE 2.12**

The average employee rating was
3.0 for the survey item *I am satisfied*
with my job

| 1 | 2 | 3 | 4 | 5 |

Strongly   *Neither*   *Strongly*
Disagree   *Agree Nor*   *Agree*
                    Disagree

of 5.4 years. This means that the center of the distribution of employee ages is 38.2 years and that about two thirds of employees' ages fall within 5.4 years of 38.2 or, in other words, 32.8 to 43.6 years. Similarly, you might find that the mean response to the job satisfaction item is 3.0, which indicates that, on average, employees neither agree nor disagree with the statement: "I am satisfied with my job." A standard deviation of 1.2 for responses on that item, however, indicates that approximately two thirds of employees' responses fall within 1.2 points above and below the mean or, in other words, 1.8 to 4.2. Thus, in that example, a large proportion of employees' responses varied anywhere from slightly dissatisfied to slightly satisfied with their job. When creating a data visualization for a mean, there are many options; Figures 2.11 and 2.12 provide examples.

In summary, descriptive analytics includes basic summary statistics and the data visualizations used to communicate those summary statistics. Identifying the difference between categorical and continuous variables is the first step toward picking the right statistic to summarize your data.

✔ EXCEL EXTENSION: NOW YOU TRY!

- On **edge.sagepub.com/bauer**, you will find an Excel exercise on descriptive analytics. Specifically, you will compute basic descriptive and summary statistics for the following variables from a sample dataset: age, gender, race, engagement, and pay.

- First, you will classify each variable as either a categorical or continuous variable.

- Second, you will select and compute appropriate descriptive and summary statistics to describe the variables.

- Third, you will create a data visualization in Excel to help communicate your findings.

CHAPTER 2 SUPPLEMENT: STEPS FOR STRATEGY FORMULATION

COMMON HR METRICS[55]

HR METRICS		
Absence rate	[(No. of days absent in mo.)/ (Ave. no. of employees during mo.) × (No. of workdays)] × 100	Measures absenteeism. Determines if your company has an absenteeism problem. Analyzes why and how to address the issue. Analyzes further for effectiveness of attendance policy and effectiveness of management in applying policy. See Hollmann (2002).
Cost per hire	(Advertising + Agency fees + Employee referrals + Travel cost of applicants and staff + Relocation costs + Recruiter pay and benefits)/No. of hires	Costs involved with a new hire. Use *EMA/Cost per Hire Staffing Metrics Survey* as a benchmark for your organization (Kluttz, 2003). Can be used as a measurement to show any substantial improvements to savings in recruitment/retention costs. Determines what your recruiting function can do to increase savings/reduce costs, etc.
Health care costs per employee	Total cost of health care/Total employees	Per capita cost of employee benefits. Indicates cost of health care per employee. For benefit data from the Bureau of Labor Statistics (BLS). See BLS's publications titled *Employer Costs for Employee Compensation and Measuring Trends in the Structure and Levels of Employer Costs for Employee Compensation* (BLS, 2008) for additional information on this topic.
HR expense factor	HR expense/Total operating expense	HR expenses in relation to the total operating expenses of the organization. In addition, determines if expenditures exceeded, met, or fell below budget. Analyzes HR practices that contributed to savings, if any.
Human capital ROI	(Revenue − (Operating expense − [Compensation cost + Benefit cost])/ (Compensation cost + Benefit cost)	ROI ratio for employees. Did organization get a return on its investment? Analyzes causes of positive/negative ROI metric. Uses analysis as an opportunity to optimize investment with HR practices, such as recruitment, motivation, training, and development. Evaluates if HR practices have a causal relationship in positive changes to improving metric.
Human capital value added	(Revenue − (Operating expense − [Compensation cost + Benefit cost])/Total no. of FTE	Value of workforce's knowledge, skill, and performance. This measurement illustrates how employees add value to an organization.
Prorating merit increases	(No. of mos. actually worked/ No. of mos. under the current increase policy) × Increase in percentage the person would otherwise be entitled to	The basic steps to calculate an employee's pay increase appropriate to the period of time worked.
Revenue factor	Revenue/Total no. of FTE	Benchmark to indicate effectiveness of company and to show employees as capital rather than as an expense. Human capital can be viewed as an investment.
Time to fill	Total days elapsed to fill requisitions/No. hired	Number of days from which job requisition was approved to new hire start date. How efficient/productive is recruiting function? This is also a process measurement. See *EMA/Cost per Hire Staffing Metrics Survey* for more information.

(Continued)

(Continued)

HR METRICS		
Training investment factor	Total training cost/Headcount	Training cost per employee. Analyzes training function further for effectiveness of training (e.g., Has productivity increased as a result of acquiring new skills and knowledge? Have accidents decreased?). If not, evaluate the causes.
Training (ROI)	(Total benefit − Total costs) × 100	The total financial gain/benefit an organization realizes from a particular training program less the total direct and indirect costs incurred to develop, produce, and deliver the training program (see white paper titled *Four Steps to Computing Training ROI* [Lilly, 2001] for more information on this topic).
Turnover costs	Total of the costs of separation + vacancy + replacement + training	The separation, vacancy, replacement, and training costs resulting from employee turnover. This formula can be used to calculate the turnover cost for one position, a class code, a division, or the entire organization. *Exit interviews* (Drake & Robb, 2002) are a useful tool in determining why employees are leaving your organization (see white paper titled *Employee Turnover Hurts Small and Large Company Profitability* [Galbreath, 2002] for more information on this topic). Implements retention efforts. Evaluates if HR practices are having a causal relationship in positive changes to improving cost of turnover.
Turnover rate (monthly)	(No. of separations during mo. / Avg. no. of employees during mo.) × 100	Calculates and compares metric with national average, using business and legal reports at www.bls.gov/jlt/home.htm. This measures the rate at which employees leave a company. Is there a trend? Has metric increased/decreased? Analyzes what has caused increase/decrease to metric. Determines what an organization can do to improve retention efforts. Evaluates if HR practices have a causal relationship in positive changes to improving metric. (See white paper titled *Employee Turnover: Analyzing Employee Movement Out of the Organization* [Ofsanko & Napier, 1990].)
Turnover rate (annual)	(No. of employees exiting the job/Avg. actual no. of employees during the period) × 12)/No. of mos. in period	Calculates and compares metric with national average, using business and legal reports at www.bls.gov/jlt/home.htm. This measures the rate at which employees leave a company. Is there a trend? Has metric increased/decreased? Analyze what has caused increase/decrease to metric. Determines what organization can do to improve retention efforts. Evaluates if HR practices have a causal relationship in positive changes to improving metric. (See white paper titled *Employee Turnover: Analyzing Employee Movement Out of the Organization* [Ofsanko & Napier, 1990].)
Vacancy costs	Total of the costs of temporary workers + independent contractors + other outsourcing + overtime − Wages and benefits not paid for vacant position(s)	The cost of having work completed that would have been performed by the former employee or employees less the wages and benefits that would have been paid to the vacant position(s). This formula may be used to calculate the vacancy cost for one position, a group, a division, or the entire organization.
Vacancy rate	(Total no. of vacant positions as of today/Total no. of positions as of today) × 100	Measures the organization's vacancy rates resulting from employee turnover. This formula can be used to calculate the vacancy rate for one position, a class code, a division, or the entire organization.
Workers' compensation cost per employee	Total WC cost for year/Average no. of employees	Analyzes and compares (e.g., Year 1 to Year 2, etc.) on a regular basis. You can also analyze workers' compensation further to determine trends in types of injuries, injuries by department, jobs, and so forth. HR practices such as safety training, *disability management*, and incentives can reduce costs. Use metric as benchmark to show causal relationship between HR practices and reduced workers' compensation costs.
Workers' compensation incident rate	(No. of injuries and/or illnesses per 100 FTE/Total hours worked by all employees during the calendar year) × 200,000	The "incident rate" is the *number of injuries and/or illnesses* per 100 full-time workers. 200,000 is the base for 100 FTE workers (working 40 hours/week, 50 weeks/year). The calculated rate can be modified depending on the *nature* of the injuries and/or illnesses. For example, if you wished to determine the lost workday case rate, you would include only the cases that involved *days away from work*.

HR METRICS		
Workers' compensation severity rate	(No. of days away from work per 100 FTE/Total hours worked by all employees during the calendar year) × 200,000	The "severity rate" is the number of days away from work per 100 FTE. To calculate the severity rate, replace the number of injuries and/or illnesses per 100 FTE from the incident rate calculation with the number of days away from work per 100 FTE. More information is available regarding the types of injuries, incident rates, and comparison with other SIC codes at www.bls.gov/iif/oshdef.htm#incidence.
Yield ratio	Percentage of applicants from a recruitment source that make it to the next stage of the selection process (e.g., 100 résumés received, 50 found acceptable = 50% yield)	A comparison of the number of applicants at one stage of the recruiting process with the number at the next stage. (*Note: Success ratio* is the proportion of selected applicants who are later judged as being successful on the job.)