HUMAN RESOURCE INFORMATION SYSTEMS

FIFTH EDITION

BASICS, APPLICATIONS, AND FUTURE DIRECTIONS

EDITORS
RICHARD D. JOHNSON
KEVIN D. CARLSON
MICHAEL J. KAVANAGH

SAGE Publishing: Our Story

At SAGE, we mean business. We believe in creating evidence-based, cutting-edge content that helps you prepare your students to succeed in today's ever-changing business world. We strive to provide you with the tools you need to develop the next generation of leaders, managers, and entrepreneurs.

- We invest in the right AUTHORS who distill research findings and industry ideas into practical applications.
- We keep our prices AFFORDABLE and provide multiple FORMAT OPTIONS for students.
- We remain permanently independent and fiercely committed to QUALITY CONTENT and INNOVATIVE RESOURCES.

Human Resource Information Systems

Fifth Edition

To my wife, Kelley, and my daughters, Rachel and Katherine – R. D. J.

To my wife, Lisa, my daughter Melanie, and son Bryce—you have inspired me and kept me anchored –K. D. C

To my wife, Barbara, and my sons Sean, Colin, and Timothy, and especially to my granddaughter, Isabella – M. J. K.

Human Resource Information Systems

Fifth Edition

Editors

Richard D. Johnson

Washington State University

Kevin D. Carlson

Virginia Tech

Michael J. Kavanagh

University at Albany, State University of New York

SAGE

Los Angeles | London | New Delhi
Singapore | Washington DC | Melbourne

FOR INFORMATION:

SAGE Publications, Inc.
2455 Teller Road
Thousand Oaks, California 91320
E-mail: order@sagepub.com

SAGE Publications Ltd.
1 Oliver's Yard
55 City Road
London EC1Y 1SP
United Kingdom

SAGE Publications India Pvt. Ltd.
B 1/I 1 Mohan Cooperative
Industrial Area
Mathura Road, New Delhi 110 044
India

SAGE Publications Asia-Pacific Pte. Ltd.
18 Cross Street #10-10/11/12
China Square Central
Singapore 048423

Library of Congress Cataloging-in-Publication Data

Names: Johnson, Richard David editor, Kevin D. Carlson editor, Kavanagh, Michael J., editor.

Title: Human resource information systems / editors, Richard D. Johnson, Washington State University, Kevin D. Carlson, Virginia Tech, Michael J. Kavanagh, University at Albany, State University of New York.

Description: Fifth Edition. | Thousand Oaks : SAGE Publications, Inc, 2020. | Revised edition of Human resource information systems, [2018] | Includes bibliographical references. | Summary: "Human Resource Information Systems: Basics, Applications, and Future Directions is a one-of-akind book that provides a thorough introduction to the field of Human Resource Information Systems (HRIS) and shows how organizations today can leverage HRIS to make better people decisions and manage talent more effectively. Unlike other texts that overwhelm students with technical information and jargon, this revised Fifth Edition offers a balanced approach in dealing with HR issues and IT/IS issues by drawing from experts in both areas. It includes the latest research and developments in the areas of HRIS justification strategies, HR technology, big data, and artificial intelligence"– Provided by publisher.

Identifiers: LCCN 2020025063 | ISBN 9781544396743 (paperback) | ISBN 9781544396767 (epub) | ISBN 9781544396750 (epub) | ISBN 9781544396774 (ebook)

Subjects: LCSH: Personnel management–Information technology. | Personnel management—Data processing.

Classification: LCC HF5549.5.D37 H86 2020 | DDC 658.300285–dc23

LC record available at https://lccn.loc.gov/2020025063

This book is printed on acid-free paper.

Acquisitions Editor: Maggie Stanley
Sponsoring Editor: Lauren Gobell
Production Editor: Astha Jaiswal
Copy Editor: Kim Husaband
Typesetter: Hurix Digital
Indexer: Integra
Cover Designer: Candice Harman
Marketing Manager: Sarah Panella

20 21 22 23 24 10 9 8 7 6 5 4 3 2 1

BRIEF CONTENTS

DETAILED CONTENTS

PREFACE

As we move into the fifth edition of the book, we once again start with a quote from *Good to Great* by Jim Collins. In the book, he notes that "Great vision without great people is irrelevant." In a sense, this quote gets at the heart of human resources . . . attracting, hiring, motivating, training, and retaining the best people for your organization. However, to be truly successful in this mission, it is becoming critical that organizations leverage investments in technology to support all aspects of human resources management. In this fifth edition of *Human Resource Information Systems: Basics, Applications, and Future Directions*, we continue to focus on the idea of using technology to ensure that organizations can attract, hire, and retain the best talent while also meeting decision-making needs of managers and best supporting an HR strategy that aligns with that of the organization.

The fifth edition of this book has several goals. First, we want to update the text to reflect the current use of technology in organizations. The core HRIS, although still the center of any HR technology investments, is no longer the only technology supporting HR. New technologies such as mobile devices, social media, and artificial intelligence (AI) are driving changes in how organizations deploy technology in HR. Second, we wish to continue to improve the usefulness of the text for faculty and students. Third, we continue with our goals of presenting a broad-based perspective on HRIS, one that includes a focus developing and implementing these systems, an understanding of how these systems impact the practice of HR across several functions, and finally a discussion of the ongoing developments in these systems (e.g., metrics, social media, international HRM, AI). Although there have been several books on HRIS published, most authors have focused only on one aspect or dimension of the HRIS field, for example, on e-HRM, Web-based HR, or the strategic deployment of HRIS in a global context.

In the preface to the first edition of this book, we noted that Kavanagh et al. (1990) stated that "among the most significant changes in the field of human resources management in the past decade has been the use of computers to develop what have become known as human resource information systems (HRIS)" (p. v). Although this statement is now 30 years old, it is important to remember that the introduction of computers to the field of HRM during the 1980s and early 1990s was a *revolutionary* change. That is, paper systems in file cabinets were replaced by HRIS on mainframes and PCs. To keep up with these technological changes in HRM, companies were forced to adapt to remain competitive, even though it was quite expensive. Although we have previously suggested that the changes since the early 1990s were evolutionary, in the past decade, we have entered another period of revolutionary change. No longer are companies purchasing a HRIS, customizing it to fit their needs, and installing it locally. Instead, today organizations are moving to cloud computing, where they "rent" space to maintain their data and rely on the vendors to manage and support the system. In addition, HR is taking advantage of systems outside of organizational control, such as Twitter, Facebook, Instagram, YouTube, and more to support employees throughout the employment life cycle. Finally, companies are embracing AI to support better decision making, to automate processes, and to improve

business operations. Thus, HR must develop policies to address this vastly different environment, in which jobs are rapidly changing and much of the data supporting "people" decisions are accessed remotely and often are stored on systems not under the direct control of the organization.

Along with these changes in technology, a revolution has come to the practice of human resources. By adopting software to support HR functioning, HR now has more information on employees and can use this understanding to better attract candidates, hire better employees, and more effectively manage them. In other words, these changes have meant that there have been significant advances in the use of people resources in managerial decisions. Thus, the role of HRM has evolved so that it is increasingly viewed as a strategic partner in the organization. In addition, the role of an HR professional is changing, and the most successful HR professionals will have both HR expertise and a knowledge of and appreciation for how a variety of technology tools can support "people practices" within HR and within the firm.

What do these changes mean for the new learner with a background in HRM or IT who is trying to understand the HRIS field? Although it may be tempting to think that the optimal approach is to train students on the latest HRIS software and the latest trends in HRIS, in reality, this would be like starting with Chapter 17 of this book and then proceeding backward through the book. Unfortunately, many people do, in fact, focus on learning the actual software tool itself (e.g., the HRIS) and the technological advances in HRIS without understanding the basics first. The approach we take in this book, and one we recommend, is to start with an understanding of the *evolutional* changes to technology and how these changes have transformed HR practices (e.g., how HRM moved from using paper records in file cabinets to the computerization of the HR function) and how this interplay between technology and human resources has changed and will continue to change the field of HRIS. Only after understanding these changes will the learner be able to effectively understand how advances in technology can help their organization manage their HR function more effectively.

NEW ASPECTS OF THE FIFTH EDITION

As we do in each edition of the text, we have made substantial revisions in response to feedback from adopters and by advances in the field of HRIS. Consistent with the previous version of the text, we have four main parts to the book:

- Human Resource Information Systems (HRIS)
- Managing HRIS Implementations
- Electronic Human Resource Management (eHRM)
- Advanced HRIS Applications and Future Trends

In our first section, we discuss the modern HRIS, strategic considerations in HRIS adoption and use, and the key IT architectures and people who interact with the HRIS. Chapter 1 continues to evolve as technology evolves, with the goal of more clearly describing how technology is transforming human resources. It further defines what an HRIS is, discusses how an HRIS contributes to HR functioning, and briefly touches the

advantages and risks of using HRIS. We have a new Chapter 12, "Strategic Considerations in HRIS," written by Huub Ruël and Tanya Bondarouk. Although understanding the process of developing and using an HRIS's important, any adoption decision must be undertaken in light of HR's strategy. In Chapter 12, the authors discuss the strategic considerations when adopting HRIS and how an HRIS can support HR and organizational strategy.

In our second section, Managing HRIS Implementations, we focus on the development and implementation of a HRIS in an organizational setting. Chapter 6 has been updated with current thinking on justifying HRIS investments, examining different justification strategies, and exemplar calculations that can demonstrate how benefits and costs of HRIS implementation can be estimated. These estimates are useful for guiding decisions about investment choices but also in identifying potential contingencies that may need to be managed during implementation to maximize returns.

Section 3 focuses on eHRM, or the management and delivery of HR functionality enabled by technology. In this section, each chapter focuses on a major functional area of human resources (e.g., recruitment, selection, training, etc.) and discusses how technology is changing its practice. In addition, these chapters bring in some of the latest research-based recommendations for using HR technology. In Chapter 7, we welcome aboard Christopher Hartwell, who adds his expertise to the discussion of HR administration.

The final section of our book focuses on advanced HRIS topics. The chapters in this section continue to evolve. Chapter 14 has been updated to bring out the use of big data, AI, and the importance of the decision-making processes to metrics. Andrew Johnson has joined Stephanie Black in a substantial rewrite of the chapter on the role of social media in HR (Chapter 16). This is an important and timely topic, as many organizations are embracing social media despite the potential risks involved. Finally, Chapter 17 has been updated with a discussion of the latest trends in HR and HRIS that will shape the future of the field, including blockchain and artificial intelligence.

As with the fourth edition, we include a number of "industry briefs" in which industry leaders briefly discuss the importance of the chapter's topic and how it plays out in their firm or industry. Continued positive feedback has contributed to our decision to retain our "HRIS in Action" feature. We did these things to improve the text as a learning and teaching tool—we wanted the text and each chapter within it to present a complete learning experience. Thus, we also continued the consistent structure across all chapters that was introduced in the previous edition. Chapters contain, in the following order: (1) an editors' note, (2) chapter objectives, (3) an industry brief (where included), (4) chapter content, (5) chapter summary, (6) a list of key terms, (7) chapter discussion questions, and (8) a case with student discussion questions. This internal *consistency* for each chapter was established by emphasizing the same chapter learning points for the chapter objectives, chapter summary, key terms, and chapter discussion questions. We felt that this within-chapter consistency would aid the learning process of the students and aid the faculty in identifying the important content of each chapter. Likewise, the websites and additional readings in the appendix have been expanded because of recent changes in the field. In determining to make these changes in the book, the coeditors worked to make this a textbook they would personally be comfortable using to teach their HRIS courses.

FIFTH EDITION SUMMARY

In summary, in this fifth edition, we have described the major advances in the field of HRIS and the relation of HRIS to managerial decision making while, at the same time, exploring the basic concepts of developing, implementing, and maintaining an HRIS. The book represents the intersection of the best thinking and concepts from the two fields of HRM and IT. It was the early intersection of these two fields that changed the role of HR in organizations from record keeper to strategic partner. After introducing the basic concepts of an HRIS combined with new approaches to the operation of HRM in the organization, we then proceed to the more advanced and evolutionary technical changes. The basic philosophy of this book is that the integration or harmonization of technology with people management in an HRIS will create a distinct competitive advantage for organizations. We hope that you, the reader, gain this understanding and that you enjoy this book.

TEACHING RESOURCES

This text includes an array of instructor teaching materials designed to save you time and to help you keep students engaged. To learn more, visit sagepub.com or contact your SAGE representative at sagepub.com/findmyrep.

ACKNOWLEDGMENTS

Undertaking a book like this cannot be done without the contribution of many individuals. Each of you have our thanks, for without you, this book would not be as successful as it has been. First to both the new and returning authors of the chapters . . . THANK YOU! For some of you, this is your Fifth time, and we greatly appreciate all the time and effort you have placed into your chapters each and every time. We know how difficult it is to write a chapter for an edited book, particularly when the editors have defined the philosophy and approach used.

As we regularly do, we again thank Dianna Stone of the University at Albany, SUNY, Virginia Tech, and the University of New Mexico, who has helped us identify potential authors, provided feedback on the book, and co-authored a chapter on privacy and security. Our thanks go to the professionals in the International Association for Human Resource Information Management (IHRIM) and the Society for Human Resource Management (SHRM) who patiently listened and responded to our ideas regarding this book. We would also like to thank Lauren Gobell and Maggie Stanley for their guidance and help in keeping us focused and on track, as well as for their suggestions for resolving technical issues we encountered in writing the book. Finally, we would like to thank copyeditor Kim Husband and Astha Jaiswal for correcting our grammar as needed, finding missing keywords, and finding those mistyped words and grammatical errors that were done by gremlins.

SAGE Publishing gratefully acknowledges the following reviewers for their kind assistance:

Syed Adeel Ahmed, *Xavier University of Louisiana*

Mesut Akdere, *University of Wisconsin-Milwaukee*

Yvonne Barry, *John Tyler Community College*

Kristen Irey Esquire PHR, *Peirce College*

Dan Farrell, *Western Michigan University*

Ray Gibney, *Penn State Harrisburg*

Jonathan Halbesleben, *University of Alabama*

Heidi Helgren, *Delta College*

Tarona Lee, *Baruch College*

Gery Markova, *Wichita State University*

Marc S. Miller, *New York University*

Frank J. Mueller, *Oakland City University*

Jan Mason Rauk, *University of Idaho*

Joel Rudin, *Rowan University*

Azlineer Sarip, *Universiti Teknologi Malaysia*

M. Shane Tomblin, *Marshall University*

Surette Wärnich, *University of South Africa*

Lee Whiteman, *La Roche College*

You will notice that we have made some changes to the editors of the textbook. First, Mickey Kavanagh has stepped back from his active involvement in the book and has headed into retirement. Although we don't know if we should be jealous or excited for him, we do know that we need to provide a heartfelt "thank you" to Mickey. This book reflects Mickey's vision and his deep and long connection to HRIS. Without his hard work and dedication to its success, we would not be here in the fifth edition. For this, Mickey, we say Thank You and best of luck in your new endeavors! Finally, we would like to thank our families, who provided the support we needed when frustration and writer's block crept in!

Richard D. Johnson, Kevin D. Carlson, and Michael J. Kavanagh

HUMAN RESOURCE INFORMATION SYSTEMS (HRIS)

PART I

1

THE EVOLUTION OF HRM AND HRIS

Richard D. Johnson and Kevin D. Carlson

The purpose of this chapter is to introduce the field of human resource information systems (HRIS), which lies at the intersection of human resource management (HRM) and information technology (IT). A central focus of this chapter is the use of data from the HRIS in support of managerial decision making. The chapter starts with a brief discussion of HRIS and electronic human resource management (eHRM). The history of the field of HRM and the impact of information technology on HRM is covered, as well as the advent of using a human resource information system and the subsequent effects on both HR and IT professionals. The chapter will also discuss the role of an HRIS within this broader organization environment, particularly its alignment with HR and organizational goals. This first chapter lays the groundwork for the remainder of this book, and, consequently, it is important to understand thoroughly the concepts and ideas presented. This chapter contains definitions for several terms in common use in the HRM, IT, and HRIS fields. (Note that a glossary defining these terms is also provided at the back of this book.) The central themes of this book in terms of the development, implementation, and use of an HRIS will also be discussed. A brief overview of the major sections of the book will be presented here as well, one discussing how each chapter is an integral part of the entire field of HRIS. Finally, you should note that the key terms used in this chapter are in bold and contained in a section after the chapter summary. The pattern of sections for this chapter will be consistent for all chapters of this book.

CHAPTER OBJECTIVES

After completing this chapter, you should be able to

- Describe three types of HR activities
- Explain the purpose and nature of an HRIS

- Describe the differences between eHRM and HRIS
- Explain the value and risks associated with the use of a HRIS
- Describe the historical evolution of HRM, including the changing role of the human resources (HR) professional
- Discuss the evolution of the technology of HRIS
- Discuss how the data from an HRIS can assist organizational decision making
- Understand how HRM and HRIS fit within a comprehensive model of organizational functioning in global business environments

HRIS IN ACTION

Situation Description

To illustrate the importance and use of HRIS in contemporary HR departments, this vignette examines the typical memoranda that may appear in the inbox of HR professionals and managers. Assume you are the HR director of a medium-sized organization that primarily maintains and uses manual HR records and systems. This morning, your inbox contains the following memos that *require immediate action.*

Memo 1: A note from the legal department indicates that some female staff members have filed an employment discrimination complaint with the local government agency responsible for the enforcement of equal opportunity employment. The female staff members allege that, for the past 10 years, they have been passed over for promotion because they are women. In order to respond to this allegation, the legal department requires historical data on the promotions of both males and females for the past 10 years for all jobs in the company broken down by department. It also needs the training records for all managers involved in personnel actions, such as promotions, to ascertain whether they have received training in equal employment provisions, especially in terms of unfair gender discrimination.

Memo 2: The second item is a complaint from employees working in a remote location of the company, about 150 miles away. The employees are complaining that their pay slips are not reaching them on time and that they are finding it difficult to get timely and accurate information on the most recent leave and benefits policies of the company.

Memo 3: A letter from the marketing manager states that he has not received any updated information on the status of his request, made three months ago, to recruit a new salesperson. The failure to recruit and hire a new salesperson has had a negative effect on the overall sales of the company's products over the past quarter.

(*Continued*)

(Continued)

Memo 4: A letter from the HR professional in charge of the southwest regional office says that she is swamped with HR administrative work, particularly personnel transactions on employees. As a result, she has not been able to meet employees in her region to describe and begin to implement the recent Employee Engagement Initiative as required by corporate headquarters.

Memo 5: A note from one of the production managers indicates that he has received a resignation letter from a highly regarded production engineer. She is resigning because she has not received the training on new technology that she was promised when hired. She notes that most of the other production engineers have attended this training program and have had very positive reactions to it.

Memo 6: A strongly worded note from the director of finance asks the HR department to justify the increasing costs associated with its operation. The note indicates that the HR director needs to develop a business plan for the overall operation of the HR department to include business plans for all the HR programs, such as recruiting and training. Further, the finance director indicates that unless the business cases can demonstrate a positive cost-benefit ratio, the budget for the HR department will be reduced, which will lead to reductions in the HR department professional staff.

As the HR director, your first thought may be to resign, since searching for the information required by these memos in the manual records on employees will require several days if not weeks to complete. However, you have just returned from a professional conference sponsored by the Society for Human Resources Management (SHRM) and remember how an HRIS may be what you need! As this chapter and the ones that follow will illustrate, an HRIS enables an HR department to streamline its activities and the demands placed on it by automating the HR data and processes necessary for the management of the human capital of the organization. This automation helps develop the capabilities to produce information and reports on the requests contained in the memos in the vignette, and these reports will facilitate efficient and effective managerial decision making. While an HRIS cannot make the judgment calls in terms of whom to recruit or promote, it can certainly facilitate better inputting, integration, and use of employee data, which will reduce the administrative burden of keeping detailed records and should aid and enhance decisions about strategic directions.

Need for an HRIS in Decision Situations

If you read the memos again, you will recognize that each one has a request for human resource management (HRM) information that will be used in a decision situation. The information requested in Memo 1 will help the legal department determine the company's potential liability in a workplace gender discrimination situation. This information may help to determine whether the company should decide to rectify the situation in terms of an informal settlement with the female staff members or to defend the company's promotion procedures as valid—in court if necessary. The information required in Memo 2 may help the HR department decide to change its payroll procedures as well as its distribution of benefits information to remote company locations. The information needed to respond to Memo 3 will impact decisions by the HR department to change recruitment and selection programs. The response to Memo 4 clearly suggests the need for the acquisition of an HRIS. The information

required to answer Memo 5 may help in decisions regarding the revision of recruiting and training procedures, especially for new engineers. The information that would be provided in response to Memo 6 will help decide the future of the HR department. As you go through this book, look at information on the capabilities of various human resource information systems, trying to find an HRIS that would allow you (as the HR director) to respond to each of the six memos in one day.

INTRODUCTION

It's kind of fun to do the impossible.

—Walt Disney

What do you think is keeping CEOs up at night? Although you might think that it may be issues such as increasing stock price and market share, navigating and surviving in a globally competitive environment, or government regulation, according to a recent *Harvard Business Review* article (Groysberg & Connolly, 2015), the most-often mentioned concerns are talent related. CEOs are worried about hiring the right individuals and how to properly develop, promote, and retain top talent.

To maintain a competitive advantage in the marketplace, firms need to balance their physical, organizational, and human resources to achieve, profit, and survive. Leading management thinkers (Porter, 1990; Drucker, Dyson, Handy, Saffo, & Senge, 1997) argue that **human resource management (HRM)** will be the most critical and most challenging area for organizations in the 21st century. The most effective and well-respected companies today have innovative and valuable people practices. These organizations know that human resources (HR) cannot afford to simply focus on completing day-to-day activities, but instead they should focus on outcomes and capabilities that align with the broader organizational goals (Ulrich, Younger, & Brockbank, 2008).

But to do this, they need timely and accurate information on current employees and potential employees. The ability of organizations to do this has been greatly enhanced through the use of human resource information systems (HRIS). A basic assumption behind this book is that the effective management of employee information for decision makers will be the critical process that helps a firm maximize the use of its human resources and maintain competitiveness in its market.

HR ACTIVITIES

The goals of human resources are to attract, motivate, develop, and retain employees. Typical HR responsibilities involve things such as record keeping, recruiting, selection, training, performance management, employee relations, and compensation. Within each

functional area, activities can be classified as transactional, traditional, or transformational (Wright, McMahan, Snell, & Gerhart, 1998). **Transactional activities** involve day-to-day transactions such as record keeping—for example, entering payroll information, tracking employee status changes, and the administration of employee benefits. These activities are the costliest and most time-consuming activities that HR undertakes. Despite the advances in technology, most HR departments still spend a majority of their time on them. **Traditional activities** involve HR programs such as planning, recruiting, selection, training, compensation, and performance management. HR departments spend about 15% to 30% of their time on these activities. Traditional activities can have strategic value for the organization if their results or outcomes are consistent with the strategic goals of the organization. **Transformational activities** are those activities that add value to the organization—for example, cultural or organizational change, structural realignment, strategic redirection, and increasing innovation. Because of the time and effort to complete transactional and traditional activities, HR departments typically spend only 5% to 15% of their time on transformational activities.

One of the major purposes of the design, development, and implementation of an HRIS is to reduce the amount of time HR employees must spend on transactional activities, allowing the staff to spend more time on traditional and transformational activities. This notion of using technology to improve transactional activities and accomplish them more efficiently is the central theme of this book and provides one of the primary justifications for a computer-based system. In later chapters that discuss various HR programs such as selection and training, we will see how a computer-based system can aid in both traditional and transformational activities to make them consistent with the strategic goals of the organization.

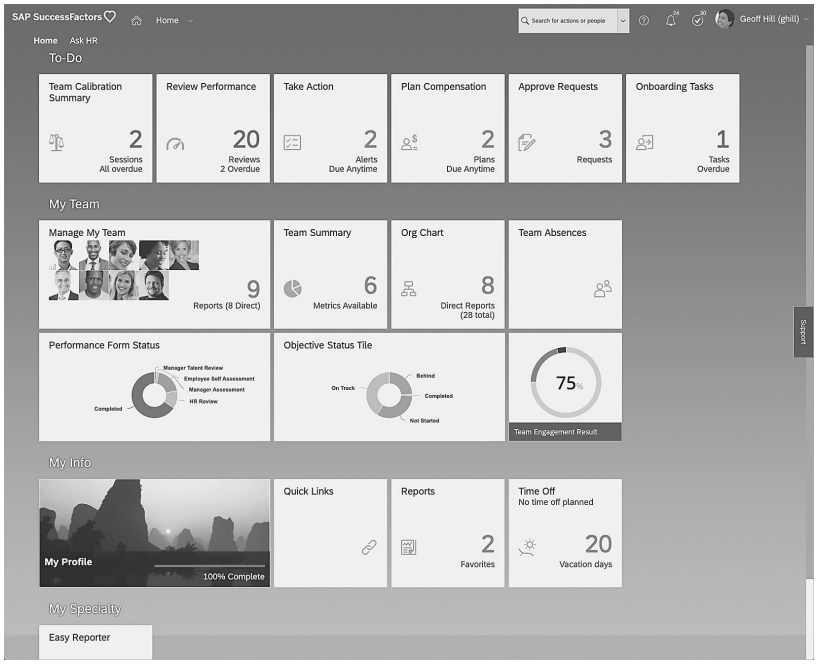
TECHNOLOGY AND HUMAN RESOURCES

What Is an HRIS?

Since the 1940s, technology has been used to support HR processing. In fact, the earliest organizational systems were built to support payroll processing due to increasing tax regulations. But, despite its early start, the complexity and data intensiveness of the HRM function has led to it being one of the last management functions to be automated (Bussler & Davis, 2001/2002). This fact does not mean that an HRIS is not important; it just indicates the difficulty of developing and implementing systems in HR compared with other business functions—for example, accounting and supply chain systems. Only recently has HR embraced the use of technology, with estimates suggesting that now nearly all large organizations have implemented systems to support HR processes and functions (CedarCrestone, 2014). These systems can support activities such as online applications, Internet-based selection testing, management of employee information, support of training, succession planning, and more. Together, these systems are broadly referred to as human resource information systems (HRIS). A sample employee home screen for an HRIS is shown in Figure 1.1

An HRIS is an information system that is focused on supporting HR functions and activities, as well as broader organizational "people" processes. A more formalized definition of a HRIS is a system used to acquire, store, manipulate, analyze, retrieve, and distribute information regarding an organization's human resources to support HRM

FIGURE 1.1 ■ SuccessFactors Employee Home Screen



Source: © SuccessFactors, Inc. All Rights Reserved

and managerial decisions. An HRIS is not simply computer hardware and associated HR-related software. In addition to hardware and software, it also includes people, forms, policies and procedures, and data. The major difference between a traditional information system and an HRIS is that the HRIS contains data about people in the organization and can become both the face of HR and the initial system with which new employees interact with the firm. This difference is particularly important, because an HRIS is often one of the first systems with which individuals will interact when considering working for a firm. It can also affect who will accept job offers and who is promoted, and can even affect who remains with an organization. Inaccurate data within an HRIS can stigmatize employees, and employee privacy concerns regarding how and where applicant and employee data are used can affect the organization's reputation.

It is important to note that an information system does not have to include computers. Many small businesses *still* utilize paper-based systems (e.g., stored in files or folders), because historically, the expense of implementing a HRIS was beyond their financial capabilities. Thus, if you work for a small organization, you may find that much of the information in HR is paper based. However, the expense and time associated with paper means that most organizations will invest in technology to support HR. As organizations choose to implement a HRIS, the paper-based systems become the basis upon which the new HRIS is evaluated. For the purpose of this book, however, we will use the term "HRIS" to refer to a computerized system designed to manage the company's HR.

There are three main ways that a HRIS can add value to HR and the organization. First, they automate HR processes to conduct transactional activities more efficiently. Second, by providing accurate and timely information to the HR personnel and managers, an HRIS can help them make better decisions. Finally, by providing new forms of information, HRIS can help HR more fully support the strategic mission of the firm. For example, HR can provide better information used to support planning for needed employees in a merger, to identify potential discrimination problems in hiring, or to evaluate the effectiveness of programs, policies, or practices (Dulebohn & Johnson, 2013).

eHRM and HRIS

The implementation of an HRIS provides HR with the opportunity to update and change their processes so that they are technology enabled. This technology-enabled collection of HR processes has been called **electronic human resource management (eHRM)** and reflects a new way of "doing" HR. eHRM uses **information technology (IT)**, particularly the Web, as the central component of delivering efficient and effective HR services. This can be best seen through the words of Gueutal and Stone (2005): "Things will look a bit different here. No longer will you deal with an HR professional. . . . The HR portal will take care of you" (p. xv). Essentially, technology becomes the nerve center for disseminating, connecting, and conducting human resources (Strohmeier, 2007). Organizations embracing an eHRM approach don't simply utilize technology in the support of human resources but instead see technology as enabling the HR function to be done differently by modifying "information flows, social interaction patterns, and communication processes" (Stone & Lukaszewski, 2009, p. 136). It has also been defined as the "implementation and delivery of HR functionality enabled by a HRIS that connects employees, applicants, managers, and the decisions they make" (Johnson, Lukaszewski, & Stone, 2016, p. 536).

Whereas eHRM is a way of conducting HR, the HRIS is the technology through which eHRM is enabled. An HRIS can include technologies such as databases, small functional systems focused on a single HR application (e.g., performance management), or a large-scale, integrated **enterprise resource planning (ERP)** system and Web-based applications. Today, an HRIS may even incorporate smartphones to allow employees to access data remotely and social networking tools to support employee social connections. Another way of looking at the differences between eHRM and HRIS is that eHRM tends to focus on how HR functionality is delivered, and an HRIS focuses on the systems and technology underlying the design and acquisition of systems supporting the move to eHRM.

The Value and Risks of HRIS

A HRIS can add value to HR in many ways. Advantages of using a HRIS include

- providing a comprehensive information picture as a single, integrated database; this enables organizations to provide structural connectivity across units and activities and to increase the speed of information transactions (Lengnick-Hall & Lengnick-Hall, 2006);
- increasing competitiveness by improving HR operations and management processes;
- improved timeliness and quality of decision making;

- streamlining and enhancing the efficiency and effectiveness of HR administrative functions;
- shifting the focus of HR from the processing of transactions to strategic HRM;
- improving employee satisfaction by delivering HR services more quickly and accurately.

In addition, the implementation of a HRIS can lead to dramatic cost and time savings, including:

- Reduction of salary planning cycle by over 50% (Gherson & Jackson, 2001);
- Reduction of 25% in HR staffing headcount when implementing self-service (Gueutal & Falbe, 2005);
- Reduction of 25% in recruiting cycle time (Cober, Brown, Blumenthal, Doverspike, & Levy, 2000);
- Reduction of recruitment costs by up to 95% (Cober et al., 2000);
- Training cost reductions of 40% to 60% with e-learning (Gill, 2000).

However, the technology alone will not improve HR outcomes. The ability of firms to harness the potential of HRIS depends on a variety of factors, such as

- the size of the organization, with large firms generally reaping greater benefits;
- the amount of top management support and commitment;
- the availability of resources (time, money, and personnel);
- the HR philosophy of the company as well as its vision, organizational culture, structure, and systems;
- managerial competence in cross-functional decision making, employee involvement, and coaching;
- the ability and motivation of employees in adopting change, such as increased automation across and between functions (Ngai & Wat, 2004).

The implementation of a HRIS does not come without risks though. As with any information system, there are potential dysfunctional impacts that may occur when a HRIS is implemented (Johnson & Stone, 2019). These include:

- management by computer and substitution of technology for human judgment—managers may begin to base performance evaluations exclusively on the data captured by the HRIS. Thus, soft-skill behaviors such as teamwork and customer service may not be fully considered.
- privacy concerns—employees and applicants may feel that their data are being accessed and used by those internal and external to the organization.

- system rigidity and lack of flexibility—standardization of HR processes can benefit the organization, but some systems may not allow for the inevitable exceptions that arise and as the HR legal environment changes.
- employee stress and resistance to the use of electronic performance monitoring.
- performance reduction in complex tasks when performance monitoring systems are used.

EVOLUTION OF HRM AND HRIS

To fully understand the current state of HR technology and its role in organizations, it is important to understand both the evolution of HR and the evolution of technologies supporting HR. The historical analysis that follows will demonstrate the growing importance of employees from being just one of the replaceable parts in organizations in the 20th-century industrial economy to being a key source of sustainable competitive advantage in the 21st-century knowledge economy. This means examining the evolution of HRM intertwined with developments in IT and describing how IT has played an increasing role in HRM. This historical analysis will show how the role of HRM in the firm has changed over time from primarily being concerned with routine transactional activities and the utilization of simple, inflexible systems to the support of more strategic activities through the use of flexible, mobile, and web-deployed systems. This evolution is illustrated in Figure 1.2

FIGURE 1.2 ■ Historical Evolution of HRM and HRIS

Early Systems Mid-20th Century	Emerging Systems 21st Century
HR Role	*HR Role*
Employee Advocate	Strategic Management Partner
Maintain Accurate Employee Records	Evidence-Based HR
Legal Compliance	HR Data Supports Strategic Decision Making
React to Organizational Change	External Focus: Serve "Customers"
Internal Focus: Serve Employees	Legal Compliance
System Characteristics	*System Characteristics*
Inflexible	Flexible
"Islands of Technology"	Mobile
Batch Processing	Web-Deployed
Focused on Employee Record Keeping	Integrated With Organizational System
	Real-Time Processing
	Focused on Information Sharing

and will become evident as we trace the historical evolution of HRM in terms of five broad phases of the historical development of industry in the United States. For more information on this historical development, we encourage readers to consult Johnson et al. (2016).

Pre–World War II

Prior to World War II, the personnel function (the precursor of human resources management) was primarily involved in clerical record keeping of employee information. During this period, the prevailing management philosophy was called **scientific management**. The central thrust of scientific management was to maximize employee productivity. It was thought that there was *one best way* to do any work, and this best way was determined through time-and-motion studies that investigated the most efficient use of human capabilities in the production process. Then the work could be divided into pieces, and the number of tasks to be completed by a worker during an average workday could be computed. These findings formed the basis of piece-rate pay systems, which were viewed as the most efficient way to motivate employees at that time.

At this point in history, there was limited government influence in employment relations; consequently, employment terms, practices, and conditions were left to the owners of the firm. As a result, abuses such as child labor and unsafe working conditions were common. Some employers set up labor welfare and administration departments to look after the interests of workers by maintaining records on health and safety as well as recording hours worked and payroll. Of course, at this time, paper records were kept, and we can still see paper-record HR systems in many smaller firms today.

Post–World War II (1945–1960)

The mobilization and utilization of labor during the war had a great impact on the development of the personnel function. Managers realized that employee productivity and motivation had a significant impact on the profitability of the firm. The human relations movement after the war emphasized that employees were motivated not just by money but also by social and psychological factors, such as receiving recognition for work accomplished or for the achievement of work goals.

Due to the need for the classification of large numbers of individuals in military service during the war, systematic efforts began to classify workers around occupational categories to improve recruitment and selection procedures. The central aspect of these classification systems was the **job description**, which listed the tasks, duties, and responsibilities of any individual who held the job in question. These job description classification systems could also be used to design appropriate compensation programs, evaluate individual employee performance, and provide a basis for termination.

Because of the abusive worker practices prior to the war, employees started forming trade unions, which played an important role in bargaining for better employment terms and conditions. Significant numbers of employment laws enacted in the United States allowed the establishment of labor unions and defined their scope in relationship with management. Thus, personnel departments had to assume considerably more record keeping and reporting to governmental agencies. Because of these trends, the personnel department had to establish specialist divisions, such as recruitment, labor relations, training and benefits, and government relations.

With its changing and expanding role, the typical personnel department started keeping increasing numbers and types of employee records, and computer technology began

to emerge as a possible way to store and retrieve employee information. In some cases, in the defense industry, **job analysis** and classification data were inputted into computers to better understand, plan, and use employee skills. For example, the U.S. Air Force conducted a thorough and systematic job analysis and classification through its Air Force Human Resources Laboratory (AFHRL), which resulted in a comprehensive occupational structure. The AFHRL collected data from thousands in jobs within the Air Force, and, using a computer software program called the Comprehensive Occupational Data Analysis Program (CODAP), it was able to establish more accurately a job description classification system for Air Force jobs.

During this time, large firms began investing in technology to keep track of payroll, but due to the complexity and expense of computers, only the largest organizations, such as GE, could afford to develop these systems in house. In addition, companies such as ADP were founded as payroll outsourcers and used mainframe computers to support payroll processing.

With increasing legislation on employment relations and employee unionization, industrial relations became one of the main foci of the personnel department. Union–management bargaining over employment contracts dominated the activity of the department, and these negotiations were not computer based. Record keeping was still done manually despite the growing use of computerized data processing in other departments, such as accounts and materials management. What resulted was an initial reluctance among personnel departments to acquire and use computer technology for their programs. This had a long-term effect in many firms when it came to adopting advancements in computer technology, even though the technology got cheaper and easier to use.

Social Issues Era (1963–1980)

This period witnessed an unprecedented increase in the amount of labor legislation in the United States, legislation that governed various parts of the employment relationship, such as the prohibition of discriminatory practices, the promotion of occupational health and safety, the provision of retirement benefits, and tax regulation. As a result, the personnel department was burdened with the additional responsibility of legislative compliance that required collection, analysis, and reporting of voluminous data to statutory authorities. For example, to demonstrate that there was no unfair discrimination in employment practices, a personnel department had to diligently collect, analyze, and store data pertaining to *all* employment functions, such as recruitment, training, compensation, and benefits. To avoid the threat of punitive damages for noncompliance, it had to ensure that the data were comprehensive, accurate, and up to date, which made it essential to automate the data collection, analysis, and report-generation process. As you go through the chapters of this book, these varying laws and government guidelines will be covered within the specific HR topics.

It was about this time that personnel departments were beginning to be called human resources departments and the field of human resource management was born. The increasing need to comply with numerous employee protection laws or suffer significant monetary penalties made senior managers aware of the importance of HRM. In other words, HRM practices were starting to affect the "bottom line" of the firms, so there was a significant growth of HR departments.

Additionally, computer technology had advanced to the point that it could deliver better productivity at lower costs, and organizations were using it more widely. The decreasing

costs of computer technology versus the increasing costs of employee compensation and benefits made the acquisition of an HRIS a necessary business decision. As a result, there was an increasing demand for HR to adopt computer technology to process employee information more effectively and efficiently. These technology developments and increased vendor activity led to the development of a comprehensive **management information system (MIS)** for HRM (e.g., an HRIS). In addition, early forms of integrated systems were being developed by SAP, the precursor to the modern ERP. But interestingly, HR was still slow in adopting computer technology. Thus, the major issue at this time in the historical development of HRIS was not the need for increased capabilities of technology but how to best implement it.

Cost-Effectiveness Era (1980 to the Early 1990s)

With increasing competition from emerging European and Asian economies, the U.S. and other multinational firms increased their focus on cost reduction through automation and other productivity improvement measures. In HR, administrative burdens intensified with the need to fulfill a growing number of legislative requirements, while the overall functional focus shifted from employee administration to employee development and involvement. To improve effectiveness and efficiency in service delivery through cost reduction and value-added services, the HR departments came under pressure to harness technology that was becoming cheaper and more powerful.

In addition, there was a growing realization within management that people costs were a very significant part of a company's budget. Some companies estimated that personnel costs were as much as 80% of their operating costs. As a result, there was a growing demand on the HRM function to cost justify their employee programs and services. In one of the first books to address this growing need to cost justify the HRM function, Cascio (1984) indicates that the language of business is dollars and cents, and HR managers need to realize this fact. But the challenge facing HR was that most leaders were not thinking like business managers (Fitz-enz, 1980).

Technology was becoming more cost effective, and an increasing number of organizations were increasingly able to afford using them. In addition, organizations began networking computers together, and the development of microcomputers (e.g., PCs) allowed organizations to leverage the power of both the mainframe and local computer to support HR operations. This allowed managers and employees to have HR information directly available on their workstations. This approach to computing was called client-server computing. Specifically, client-server computing supported the processing and use of both HR data on the mainframe computer as well as on the local personal computer of an employee. Organizations could now distribute employee information to multiple locations throughout the organization, providing more current information to managers in support of their personnel decisions. An early leader in this space was PeopleSoft, which developed one of the first and most popular HRISs during this time.

Although as noted earlier, the prevailing management thinking regarding the use of computers in HR was not that their use would result in a reduction in the number of employees needed in HR departments but that employee activities and time could be shifted from transactional record keeping to more transformational activities that would add value to the organization. This change in the function of HRM could then be clearly measured in terms of cost-benefit ratios to the bottom line of the company.

ERPs and Strategic HRM (1990 to 2010)

The economic landscape underwent radical changes throughout the 1990s with increasing globalization, technological breakthroughs (particularly Internet-enabled Web services), and hyper competition. **Business process reengineering** exercises became more common and frequent, resulting in several initiatives, such as the rightsizing of employee numbers, reducing the layers of management, reducing the bureaucracy of organizational structures, creating autonomous work teams, and outsourcing. Firms today realize that innovative and creative employees hold the key to organizational knowledge and provide a sustainable competitive advantage because, unlike other resources, intellectual capital is difficult for competitors to imitate.

Accordingly, the people management function became strategic and was geared to attract, retain, and engage talent. These developments led to the creation of the **HR balanced scorecard** (Becker, Huselid, & Ulrich, 2001; Huselid, Becker, & Beatty, 2005), as well as to added emphasis on the **return on investment (ROI)** of the HR function and its programs (Cascio, 2000; Fitz-enz, 2000, 2002). With the growing importance and recognition of people and people management in contemporary organizations, **strategic human resource management (strategic HRM)** became critically important in management thinking and practice. Human resources and the intellectual capital of employees were increasingly viewed as strategic assets and a competitive advantage in improving organizational performance (Becker & Huselid, 2006). Organizations became more aware that there was not one best way to strategically deploy HR resources. Thus, researchers increasingly emphasized the **"best-fit" approach to strategic HRM** as opposed to the **"best-practice" approach to strategic HRM**. They argued that it was "the fit between the HR architecture and the strategic capabilities and business processes that implement strategy that is the basis of HR's contribution to competitive advantage" (Becker & Huselid, 2006, p. 899).

A good example of the importance of HR and the information provided by an HRIS can be found in the **human resources planning (HRP)** function. HRP is primarily concerned with forecasting the need for additional employees in the future and the availability of those employees either inside or external to the company. Imagine, for example, that a company is considering a strategic decision to expand by establishing a production facility in a new location. Using the data from an HRIS, HRP can provide estimates of whether there are enough internal employees or individuals in the external labor market of the new location available with the necessary skills to staff the new facility.

Another critical characteristic of strategic HRM is the adoption and use of **HR metrics** (Cascio, 2000; Lawler & Mohrman, 2003). Most functional departments of an organization have utilized metrics for decades due to the nature of their business transactions. For example, the marketing department has set sales goals, and the effectiveness metric that is used is the percentage of sales relative to the goal. But for HR, the focus on the measurement of the cost effectiveness of programs is relatively recent. Despite the recent utilization of metrics, their use continues to grow and has deepened as organizations seek to compete globally.

During this time frame, the technology supporting HR also underwent a dramatic transformation. In the late 1990s, software vendors began developing (ERP) systems. Industry leaders in this area were PeopleSoft, SAP and Oracle. Other vendors focused on one-specific HR function (such as time and attendance, online recruiting, or payroll). This approach where the organization would purchase the best system for each functional area became known as best of breed. Some industry leaders who chose this approach were Kronos for time and attendance, ADP for payroll, and Taleo for online recruiting.

"The Cloud" and Mobile Technologies (2010—present)

Within the last few years, we have seen an additional shift in HR, and much of this has been technology and regulation dependent. In 2010, the **Patient Protection and Affordable Care Act** was passed, and with it, a host of new healthcare regulations were placed on organizations. In addition, several new data requirements were needed by organizations to ensure compliance with this act. Thus, the data needs for organizations continue to grow.

In addition, the technology supporting HR continues to evolve. Rather than the traditional ERP, organizations are increasingly moving to cloud-based HR systems that are accessible over mobile devices and leverage the capabilities of machine learning, social networking, and Web 2.0 tools. This creates new hurdles for HR professionals as they learn to navigate new technologies and the distribution of data across devices and architectures, some of which are internally controlled by HR and others outside of organizational control (e.g., Twitter, Facebook, Instagram, etc.).

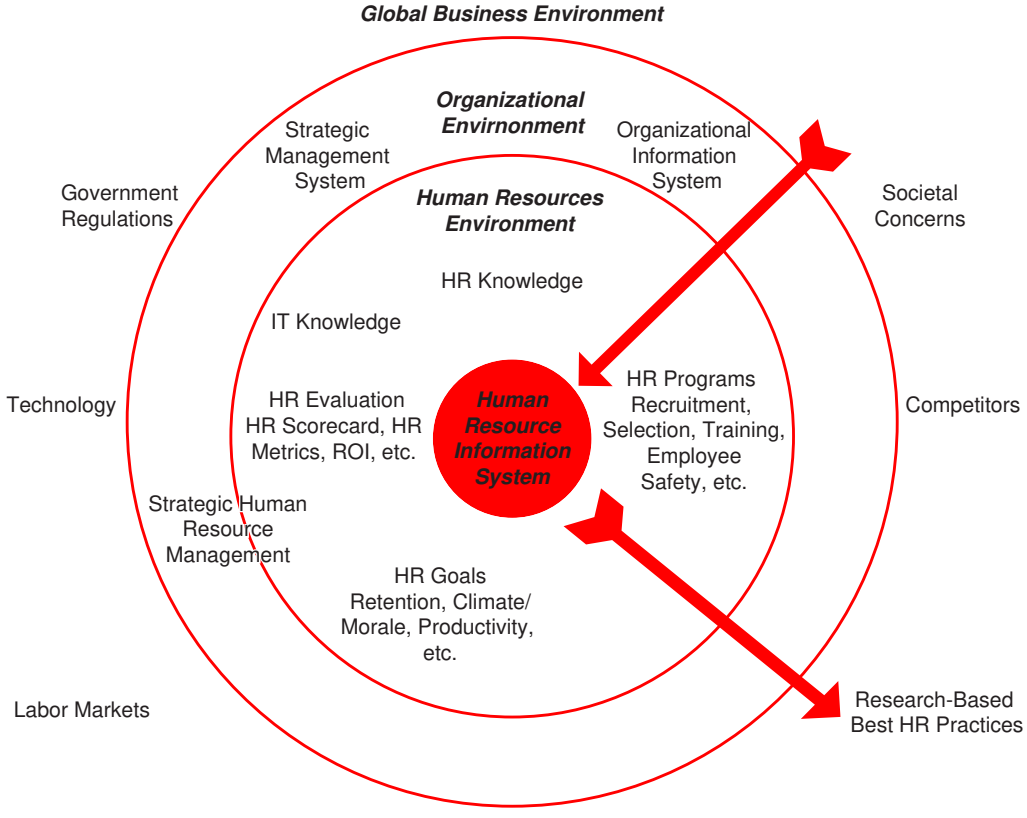
Ultimately, as we will see in the ensuing chapters, although technology is a key enabler of Strategic HRM, it is not simply the "best" technology and "best" strategy that leads to competitive advantage but rather the fit between the environmental realities, technology, and strategic practices that lead to competitive advantage.

HRIS WITHIN THE BROADER ORGANIZATION AND ENVIRONMENT

Beyond supporting and providing data for human resources, an effectively designed HRIS must also interface with individuals and systems within the broader organization and organizational environment. The data centrality of the HRIS is pictured in Figure 1.3. Several aspects of this model are critical. First, this model is a framework to use in reading, organizing, and understanding the information given in this book. At the core is the HRIS. The next layer focuses on the human resources environment and the major components of that environment (e.g., HR programs). Outside of this figure represents the organizational environment and its components. Outside the organizational environment is the global business environment, which directly influences the organizational environment and indirectly affects the HR environment. Each of these layers mutually influence each other and together can impact the development and implementation of the HRIS. For example, differing labor laws across countries mean that different HR policies may be implemented and may affect the type of data collected by the HRIS and reported to regulatory agencies in different companies. The figure also indicates the interrelatedness between the strategic management system; the strategic HRM system; and the performance, business, and HR goals that are generated during the strategic planning process.

Second, this is a systems model; that is, it is organic and can change over time, as the environment changes (e.g., the increasing focus on unfair discrimination in society and in the workforce will affect the HR environment and will, in turn, affect the organizational and global business environments). Third, the HRIS and the HR program evaluation results, in terms of HR metrics and benefit-cost results (value added and return on investment—ROI), are in continual interaction. This emphasis is consistent with current thinking in the HRM field (Cascio, 2000; Fitz-enz, 2000, 2002) and the creation of the HR workforce scorecard (Becker et al., 2001; Huselid et al., 2005). Finally, as will be

FIGURE 1.3 ■ Overview of an HRIS Embedded in Organizational and Global Business Environments



emphasized throughout this book, the *alignment* between the global business environment, the strategic management system, the strategic HR management system, the business goals, the HR goals, and the HR programs is critical to the organization's maintenance of its competitiveness in the market (Evans & Davis, 2005; Huselid, Jackson, & Schuler, 1997).

THEMES OF THE BOOK

The *overall theme* of this book is that the HR and IT operate jointly with HR processes and people to provide accurate and timely information in support of HR and operational and strategic managerial decision making. The book itself is broken into four major themes, each with a different focus

- Part I—System aspects of HRIS. In this section, you will learn about databases and the different technical and design considerations underlying HRIS.

- Part II—Implementation of the HRIS. In this section, you will learn about the systems development process, change management, assessing the feasibility of a HRIS, and how to implement one.
- Part III—eHRM. In this section, you will learn about how technology has transformed the administration of HR as well as how it has transformed the various functions of HR.
- Part IV—Advanced HRIS topics. In this section, you will learn about advanced topics such as including international considerations in HRIS, workforce analytics, privacy and security, and social media. It concludes with a look forward to the future of HRIS and the cutting-edge technologies that will influence it.

Summary

The primary purpose of this chapter was to introduce the field of human resource information systems (HRIS) to readers. The field of HRIS has evolved greatly from just automating simple HR transactions such as cutting a payroll check to one of assisting HR in becoming a strategic partner with the organization. The result of this is that HRISs have evolved from simple mainframe systems with limited capabilities to large-scale integrated, mobile systems that support social networking capabilities. In addition, the use of HRIS has allowed HR to rethink how HR functionality is deployed, leading to an eHRM approach. The distinction between HRIS and eHRM was explained to help the reader avoid confusing these terms when they appear in the remainder of the book. Additionally, the role of HRIS within the broader organization and environment and its mutually influencing role were discussed. Finally, the chapter briefly discussed four major themes covered within the book. This chapter therefore serves as an introduction to the field of HRIS and serves as a foundation for the sections and chapters that follow.

Key Terms

"best-fit" approach to strategic HRM 14
"best-practice" approach to strategic HRM 14
business process reengineering 14
electronic human resource management (eHRM) 8
enterprise resource planning (ERP) 8
HR balanced scorecard 14
HR metrics 14
human resource management (HRM) 5
human resources planning (HRP) 14
information technology (IT) 8
job analysis 12
job description 11
management information system (MIS) 13
Patient Protection and Affordable Care Act 15
return on investment (ROI) 14
scientific management 11
strategic human resource management (strategic HRM) 14
traditional HR activities 6
transactional HR activities 6
transformational HR activities 6

Discussion Questions

What are the factors that changed the primary role of HRM from a caretaker of records to a strategic partner?

Describe the historical evolution of HRM and HRIS in terms of the changing role of HRM and the influence of computer technology on HRM.

What is required for the effective management of human resources in a firm to gain a competitive advantage in the marketplace?

Describe the emergence of strategic HRM and the influence of computer technology.

What are some of the approaches used in HRM to facilitate the use of strategic HRM in a firm's business strategy?

How does technology help deliver transactional, traditional, and transformational HR activities more efficiently and effectively?

Justify the need for an HRIS.

Describe and differentiate the major types of information systems.

Case Study: Position Description and Specification for an HRIS Administrator

One way to assess the nature and importance of a specific function or position in an organization is to examine the job description and job specifications for this position, as they tell us what activities, duties, and tasks are involved in the job as well as what knowledge, skills, and abilities (KSA) are required to perform the job. The following is an actual advertisement for an HRIS administrator. A large corporation placed this ad in the "Job Central" section of the Internet site for the International Association for Human Resources Information Management[1] (http://www.ihrim.org).

Job Level: Senior (5+ Years), Full time
Reports to: Senior Director of Human Resources Operations

MOMIRI, LLC is an Alabama Native Owned Corporation, providing shared services to the MOMIRI family of companies and planning and incubating the next generation of companies serving federal and commercial customers. MOMIRI companies offer core expertise in telecommunications, information technology, product development, major program management, open-source software, construction management, facility operations, and operations support. MOMIRI companies realize that quality personnel are the key to our success. An excellent benefits package, professional working environment, and outstanding leaders are all keys to retaining top professionals.

The incumbent will serve as a key member of the HR Support Services department and provide professional human resources support in specific functions or disciplines to management and staff for the MOMIRI family of companies. This position is viewed as going to a midlevel professional who assists management and staff with HR programs

at the tactical level and performs all essential duties and responsibilities at the direction of the Manager of HR Operations.

Provides technical assistance to senior-level HR staff and management on several HR programs to include employee relations, compensation, EEO compliance, company policies and procedures, disability programs (STD, LTD, FMLA, ADA), federal and state employment laws, and personnel actions as needed.

Supports and maintains the Human Resources Information System (HRIS) in addition to other systems supported by the management of enterprise applications.

Serves as technical point of contact for assigned functional areas and assists subject matter experts with ensuring data integrity, testing of system changes, report writing, and analyzing data flows for process improvement opportunities.

Supports HRIS and other enterprise systems' upgrades, patches, testing, and other technical projects as assigned.

Recommends process/customer service improvements, innovative solutions, policy changes, and/or major variations from established policy.

Serves as key systems liaison with other departments and process stakeholders (e.g., Payroll).

Writes, maintains, and supports a variety of reports or queries utilizing appropriate reporting tools. Assists in development of standard reports for ongoing customer needs.

Maintains data integrity in ATS, HRIS, and other enterprise systems by running queries and analyzing and fully auditing data across all HR departments.

Conducts new hire in-processing to include systems training for new employees and entering new employee information in Costpoint.

Conducts termination out-processing to include entering employee separation information in Costpoint and reporting attrition data.

Develops user procedures, guidelines, and documentation for HR-related systems. Trains system users on new processes/functionality.

Provides HR tools and resources for management and staff to accomplish their goals and objectives.

Processes personnel actions (hires, terminations, pay and title changes, promotions, employment status, etc.) to include entering data into HRIS.

Assists with special HR-related projects and provides training to other staff members as required.

Performs other duties as assigned.

Experience working with a multiple-site workforce.

Working knowledge of federal and state employment laws and related acts.

Advanced- to expert-level computer skills.

Excellent verbal and written communication and presentation skills.

Great interpersonal skills.

Strong time-management and prioritization skills.

Bachelor's degree in HR and/or equivalent professional experience.

3–5 years of technical HRIS experience in professional HR environment.

Self-directed, highly responsive, and detail oriented.

Ability to maintain absolute confidentiality in all business matters.

Government contracting experience is a plus.

How does this position help the HR function become a strategic partner of the organization?

From the position description, identify the traditional, transactional, and transformational HR activities that this position is involved with.

Using the key responsibilities identified for this position, explain why and how the HRIS function plays a pivotal role in the organizational model as described in this chapter.

2

SYSTEMS CONSIDERATIONS IN THE DESIGN OF AN HRIS

Planning for Implementation

Michael D. Bedell and Michael L. Canniff

This chapter focuses on the HRIS as one large information system. It starts with a brief discussion of the various stakeholders who must be considered during the design and implementation of a new HRIS. Next, it turns to a discussion of the various hardware and software architectures that organizations may consider when implementing an HRIS. This discussion traces the history of HRIS from early mainframe systems to today's integrated, mobile, and cloud-based systems. An important consideration for all organizations is whether to select the best software package from different vendors for each functional area of HR (e.g., best of breed) or to select a system that integrates all the functions within one large software package. The chapter touches on how organizations would integrate these best-of-breed solutions so that they integrate as seamlessly as possible. This chapter focuses more on the key technology and processes underlying HRIS implementation.

CHAPTER OBJECTIVES

After completing this chapter, you should be able to

- Understand the different types of users or customers of the implemented HRIS and their different data needs
- Discuss the differences between the five general hardware architectures that are presented, from "dinosaur" to "cloud computing" to "bring your own device"

- Discuss, very generally, the main concepts of hardware and database security
- Discuss the "best of breed" approach to HRIS acquisition and the various options available for each functional area of HR
- Develop an understanding of the general steps and factors that affect system implementation
- Understand the pros and cons of implementing a changeover from one software system to another

Designing and implementing a Human Resource Information System is one of those initiatives that every organization encounters, yet most of the individuals within an organization usually have little or no experience in going through the process. This, combined with the continuous evolution of technology, puts organizations in the precarious spot of trying to figure out the best approach to successfully choosing and implementing a solution that provides the organization with all of the necessary value added benefits yet manages the risk of a potential failed implementation.

Organizations, whether they are commercial, education, or public sector, that have had the most success follow a design methodology that is centered on people, process, and technology. Those of us that have spent a great deal of our careers designing and implementing these systems have learned, sometimes through trial and error, that the planning and design of the system arguably play the most critical part in determining success. Common characteristics shared by organizations that have been and are most successful are as follows:

Commitment—A frequently used word that is only proven to be true by actions. Defining and understanding what the system needs to provide so that it can be an enabler for the organization and used as a competitive differentiator.

Proper Resource Allocation—Having your best and brightest be part of the design, participating throughout the lifecycle of an implementation. Insight is critical to avoid sloppy design, and it is worth the sacrifice to dedicate some of the most knowledgeable resources in the organization. The cost of not doing this will be paid later on due to rework and changes.

Understanding of Technology—Designing a system that will evolve along with technology, not one that will be restricted as technology changes. Too many organizations design systems that are somewhat outdated in a short period of time. This is primarily caused by the lack of understanding as to what the capabilities of the technology are and how they can help the system continue to be enhanced. I unfortunately have been part of many projects where once a system was "live" and operational, it almost immediately needed to be "upgraded" due to improper design up front.

Clear and Realistic Expectations—Once set, these expectations need to be constantly communicated to all stakeholders. This provides a common bond and keeps everyone focused on what needs to be accomplished.

Acceptance of Change—Through education and training, acceptance defeats resistance. Too many organizations choose the right technology yet fail to allocate the proper attention to change management.

Over 25 years of working and assisting with many diverse organizations as they design their HRIS, the most successful have truly understood and successfully managed these points. Through dedication and perseverance, these organizations have become leaders in their industries by using all of the benefits a properly designed HRIS can provide. As we continue into the digital age with access to more data faster than we could have ever imagined, it has never been more important for organizations to "get it right" when it comes to designing their HRIS.

HRIS IN ACTION

A billion-dollar retailer with more than 4,000 stores finds that it cannot move fast enough to beat out the competition. The organization's senior management arrives at the conclusion that it would be easier to achieve the strategic goals enumerated by the board of directors if the various organizational functions would share information. Shared information would enable them to develop and deploy new actions and tactics more quickly. The CEO and president have therefore ordered the major functions to update their information systems immediately so that data sharing is possible. The senior vice presidents (SVPs) of accounting and human resources immediately conclude that the only solution is to decide jointly on an **enterprise resource planning (ERP)** product. An ERP software application is a set of integrated database applications or modules that carry out the most common business functions, including human resources, general ledger, accounts payable, accounts receivable, order management, inventory control, and customer relationship management (see www.erpsupersite.com). To speed the installation along, the SVPs decide on a rapid-implementation methodology that a company down the street used. The goal is to have the new systems operational in nine months.

Shortly after this decision has been made, the SVP of HR calls you into his office and tells you that you will be management sponsor for this project. You have to decide on everything. You sit back in your nice office and think:

What's the problem with this scenario? It shouldn't be difficult to select a vendor and then borrow the methodology from down the street. It worked for them; it should work for us! We'll call a few vendors in the morning and find out about cost, time frame, and implementation methods. In the meantime, I should find out a little more about how to do this and who will be using the ERP. I remember from my information systems class in college that this is a reasonable first step when it comes to buying software.

What do you think your response would be to this inquiry? As you go through this chapter's material, keep this vignette in mind, and see if your answer changes.

INTRODUCTION

There are two ways of implementing a software design; one way is to make it so simple that there are obviously no deficiencies, and the other way is to make it so complicated that there are no obvious deficiencies. The first method is far more difficult.

—C.A.R. Hoare, James Martin

Professor of Computing, Wolfson College

Successful implementation is the central goal of every HRIS project, and it begins with a comprehensive design for the system. As the steps in the system development process are covered in this chapter, the foundation knowledge that is critical to the implementation process will be emphasized. Only by understanding the users/customers of the HRIS, the technical possibilities, the software solution parameters, and the systems implementation process can we increase the probability that the completed software installation will adequately meet the needs of the **human resource management (HRM)** function and the organization. The chapter will begin by identifying the potential users and the kind of information that the HRIS will be managing and storing to facilitate decision making. The chapter will next discuss the technical infrastructure, how the technical infrastructure has evolved, and the many choices that the organization must make. After the technology is discussed, the systems implementation process will be presented.

Those who have participated in a system implementation will tell you that success is the result of careful planning, a dedicated team, top-management support, and an awareness of potential pitfalls. These same people will also tell you that the implementation process provides a host of opportunities to reengineer and systematically improve HR processes to reflect best HRM practices. These opportunities should not be ignored, as they can benefit the organization as much as implementing the software will. Finally, the **implementation team** members will tell you that getting the system up and running was the most intense six months, year, or two years of their work life but that they learned a lot, and every moment of the experience was worth the time.

There are four things that should be remembered throughout the chapter:

1. It is important to keep in mind the customer of the data, the process, and the decisions that will be made.
2. Everything about HRM is a system of processes designed to support the achievement of strategic organizational goals. The HRIS, in turn, supports and helps manage these HR processes.
3. An HRIS implementation done poorly will result in an HRIS that fails to meet the needs of the HR function.
4. Successful implementation requires careful attention to every step in the system design process. However, done well, the implementation process is full of opportunities to improve the organization and processes. More consistent processes will contribute to enhanced organizational performance.

HRIS CUSTOMERS/USERS: DATA IMPORTANCE

Individuals who will be using the HRIS can be split into two general groups: employees and nonemployees. The employee category includes

- managers who rely on the HRIS and the data analyzed by the analyst or power user to make decisions;
- analysts or power users who use the HRIS to evaluate potential decision choices and opportunities;
- technical staff who are responsible for providing a system that is usable and up to date for each user or clerical employees who largely engage in data entry; and
- employees who use the HRIS on a self-service basis to obtain personal information, for example, to look up paycheck information, to make choices about benefits during open enrollment, or to see how much vacation time they have available.

The nonemployee group includes potential employees, suppliers, and partners. Potential employees are those who might log in via a Web portal to search for and apply for a position. Suppliers and partners are organizations that interface with the HR function for a variety of purposes, from recruiting to benefits administration and payroll.

Employees

Managers

The managers referred to within this section may have a variety of titles: manager, director, vice president, and even CEO. What they all have in common is that their primary HRIS need is to have real-time access to accurate data that facilitate decision making with regard to their people (Miller, 1998). The HRIS provides the manager with data for performance management, recruiting and retention, team management, project management, and employee development (Fein, 2001). The HRIS must also provide the information necessary to help the functional manager make decisions that will contribute to the achievement of the unit's strategic goals and objectives (Hendrickson, 2003). Easy access to accurate employee data enables the manager for each employee to view and engage in employee life cycle changes such as salary decisions, job requisitions, hiring, disciplinary action, promotions, and training program enrollment (Walker, 2001; Zampetti & Adamson, 2001).

Many HRIS products provide real-time reporting and screen-based historical information that can provide managers with information about their employees or their functional units. There are also several third-party software products available that provide managers with almost continuous data about the status of their unit and the organization—much as a dashboard on a car provides immediate information. The analysis of more complex situations is beyond the capabilities of many of these reporting and query tools. To facilitate decision making on complex issues, the manager, before making a decision, usually relies on the analyst or power user to complete some type of analysis.

Analysts (Power Users)

The **analysts or power users** are perhaps the most demanding users of the HRIS. The primary role of the analyst is to acquire as much relevant data as possible, examine it, and provide reasonable alternatives with appropriate supporting information to facilitate the decision process of the manager. The analyst is referred to as a power user because this person accesses more areas of the HRIS than almost any other user. Analysts must be proficient with reporting and query tools. Analysts must also understand the process used to collect the data, how new data are verified, and how the HRIS and the employee life cycle interact. They also need to understand the data definitions in terms of what data exist, the structure of the data, and what data fields are up to date and complete. Some HRISs also provide tools that the analyst can use to model scenarios or perform "what-if" analyses on questions of interest.

As an example, a recruiting analyst might be asked to provide a short list of potential internal candidates for a position that opened in the marketing function of a large retailer. The potential candidates' characteristics of interest are queried and may include (1) when they were last promoted, (2) whether they have engaged in continuous personal-skills development, (3) what their undergraduate degrees were, and (4) whether they have ever expressed any interest in marketing. The analyst would query appropriate tables and develop a list of internal candidates.

Another example might have the HR analyst completing an analysis of corporate headquarters turnover to determine if a particular function or salary issue is the cause of the problem. This information would be drawn from existing reports, ad hoc queries, and available salary information. Data could be compiled into categories by salary, function, gender, or organizational level and examined to determine if the cause of the turnover can be pinpointed and then countered.

Technicians (HRIS Experts)

Technicians (HRIS experts) straddle the boundary of two functions. Their role is to ensure that appropriate HR staff members have all the access, information, and tools necessary to do their jobs. HRIS experts do this by understanding what is needed from an HR-process standpoint and then translating that into technical language so the technical employees—programmers, database administrators, and application administrators—know exactly what to do. When the technical staff is planning to install the latest update and one of the results will be a change in functionality, the HRIS expert must take what the technical staff provides and translate that into language HR users understand so as to indicate how processes and activities might change. For example, if an HR professional required that a new report be generated every other Tuesday, the HRIS expert would learn what data the report requires—perhaps mock the report up with the user—and then explain to the technical people how to make sure that this report is automatically generated on the time schedule.

Clerical Employees

Much like power users, **clerical employees** also spend a significant portion of their day interacting with the HRIS. The difference is one of depth. The clerical employee must understand the process required to enter information into the HRIS and may also need to start the process or generate periodic reports. While clerical staff members in the HR employment department do not generally provide input about whether to hire an individual to a