The Wiley Blackwell Handbook of the Psychology of the Internet at Work
Wiley Blackwell Handbooks in Organizational Psychology

Series Editor: Jonathan Passmore

The aim of the Wiley Blackwell Handbooks in Organizational Psychology is to create a set of uniquely in-depth reviews of contemporary research, theory and practice across critical sub-domains of organizational psychology. Series titles will individually deliver the state-of-the-art in their discipline by putting the most important contemporary work at the fingertips of academics, researchers, students and practitioners. Over time, the series will grow into a complete reference for those seeking to develop a comprehensive understanding of the field.

Published

The Wiley-Blackwell Handbook of the Psychology of Coaching and Mentoring
Edited by Jonathan Passmore, David B. Peterson and Teresa Freire

The Wiley-Blackwell Handbook of the Psychology of Leadership, Change and Organizational Development
Edited by H. Skipton Leonard, Rachel Lewis, Arthur M. Freedman and Jonathan Passmore

The Wiley Blackwell Handbook of Psychology of Training, Personal Development and E-Learning
Edited by Kurt Kraiger, Jonathan Passmore, Nuno Rebelo dos Santos and Sigmar Malvezzi

The Wiley-Blackwell Handbook of the Psychology of Occupational Safety and Workplace Health
Edited by Sharon Clarke, Tahira M. Probst, Frank W. Guldenmund and Jonathan Passmore
The Wiley Blackwell Handbook of the Psychology of the Internet at Work

Edited by Guido Hertel, Dianna L. Stone, Richard D. Johnson, and Jonathan Passmore

WILEY Blackwell
Contents

About the Editors vii
About the Contributors ix
Foreword xv

1 The Psychology of the Internet @ Work
   Guido Hertel, Dianna L. Stone, Richard D. Johnson,
   and Jonathan Passmore 1

Part I Individual Perspectives 19

2 Digitized Communication at Work
   Nicole C. Krämer and Stephan Winter 21

3 Ergonomics of Information Technologies at Work
   Benjamin V. Hanrahan and John M. Carroll 39

4 Competencies for Web-Based Work and Virtual Collaboration
   Stefan Krumm and Julian Schulze 61

5 User Experience, Gamification, and Performance
   Meinald T. Thielisch and Jörg Niesenhaus 79

6 Trust in Virtual Online Environments
   Sirkka L. Jarvenpaa, Celeste Cantu, and Shi Ying Lim 103

7 Workplace Cyberdeviance
   Steven D. Charlier, Gary W. Giumetti, Cody J. Reeves,
   and Lindsey M. Greco 131

8 Blended Working
   Nico W. Van Yperen and Burkhard Wörtler 157

9 Flexwork, Work–Family Boundaries, and Information
   and Communication Technologies
   Ronald E. Rice 175

10 Mobile Computing and Hand-Held Devices at Work
    Humayun Zafar 195
Contents

Part II Organizational Perspectives 211

11 E-Recruiting: Using Technology to Attract Job Applicants 213
*Derek S. Chapman and Anna F. Gödöllei*

12 Social Networking Sites, Search Engines, and the Employment Process 231
*Kimberly M. Lukaszewski and Andrew F. Johnson*

13 The Evolution of E-Selection 257
*David N. Dickter, Victor Jockin, and Tanya Delany*

14 E-Leadership 285
*Surinder Kahai, Bruce J. Avolio, and John J. Sosik*

15 Virtual Teams 315
*M. Travis Maynard, Lucy L. Gilson, Nicole C. Jones Young, and Matti Vartiainen*

16 Online Employee Surveys and Online Feedback 347
*Bernad Batinic and Carrie Kovacs*

17 E-Learning 369
*Richard D. Johnson and Kenneth G. Brown*

Part III Societal and Cross-Sectorial Perspectives 401

18 Robots in the Digitalized Workplace 403
*Jochen J. Steil and Günter W. Maier*

19 Social Issues Associated with the Internet at Work 423
*Dianna L. Stone, Dianna Krueger, and Stephen Takach*

20 Employee Age Differences in Using Internet-Based Tools at Work 449
*Gabriela Burlacu, Donald M. Truxillo, and Talya N. Bauer*

21 The Future of Work 481
*Stela Lupushor and Alex Fradera*

Index 509
About the Editors

Guido Hertel  Guido is a Professor of Organizational and Business Psychology at the University of Münster, Germany. His research addresses emerging trends and challenges in work organizations, such as electronic human resource management, demographic changes, and synergy effects in cooperation and negotiations. He has published more than 100 chapters and journal papers, for instance, in the Journal of Applied Psychology, Journal of Organizational Behavior, Journal of Management, Journal of Occupational and Organizational Psychology, Journal of Personality and Social Psychology, Psychological Bulletin, and Research Policy. Guido is Associate Editor of Group & Organization Management, and member of the editorial boards of Organizational Psychology Review, Small Group Research, and the International Journal of Internet Science. He is also member of the founding editorial board of Work, Aging, & Retirement, and has served as guest editor of special issues for various journals such as the European Journal of Work and Organizational Psychology and the Journal of Managerial Psychology. In 2013, Guido was host and program committee chair of the sixteenth Congress of the European Association of Work and Organizational Psychology (EAWOP), and he received the Innovation Award of the German Association of Psychologists, Section Work, Organization and Business Psychology in 2015. In addition to his academic activities, Guido works as speaker, trainer, and consultant for work and business organizations.

Dianna L. Stone, PhD  Dianna received her PhD from Purdue University, and is currently a Visiting Research Professor at the University at Albany and an Affiliate Professor at Virginia Tech. Her research focuses on a variety of issues including diversity in organizations, cross-cultural issues, electronic human resource management (eHRM), e-recruiting, e-selection, and privacy. Results of her research have been published in the Journal of Applied Psychology, Personnel Psychology, the Academy of Management Review, Human Resource Management Review, Organizational Behavior and Human Decision Processes, and the Journal of Management. She is an Associate Editor of Human Resource Management Review, and has served as guest editor for several special issues of the journal. She is also the Editor of Research in Human Resource Management, and was the Editor for the Journal of Managerial Psychology from 2007 to 2014. In 2012 she was awarded the Sage Scholarly Achievement Award for Research on Gender and Diversity, and received the
Janet Chusmir Sage Service Award in 2013 from the same division. She also received the Lead Editor Award from Emerald Publishing in 2014 and was honored with the Trailblazer Award from the PhD Project for her research on diversity and work with minority doctoral students. Dianna is a Fellow of the Society for Industrial and Organizational Psychology, the American Psychological Association, and the Association for Psychological Science.

Richard D. Johnson, PhD Richard received his PhD from the University of Maryland, USA, and is an Associate Professor of Management, Department Chair, and Director of the Human Resource Information Systems (HRIS) program at the University at Albany, State University of New York. He has published more than 50 journal articles and book chapters on topics such as human resource technology, the psychological impacts of computing, training and e-learning, and issues surrounding the digital divide. His research has been published in outlets such as *Information Systems Research*, *Journal of the Association for Information Systems*, *Human Resource Management Review*, and the *International Journal of Human Computer Studies*. Richard is a Past Chair of Association for Information Systems Special Interest Group on Human–Computer Interaction (AIS SIGHCI) and is a Senior Editor at *Data Base* and an Associate Editor at *AIS Transactions on Human–Computer Interaction*. He is also an editor of the book, *Human Resource Information Systems: Basics, Applications and Future Directions*.

Jonathan Passmore, D.Occ.Psych Jonathan is a Professor of Psychology at the University of Evora, Portugal, and Director for the Centre of Coaching & Behavioural Change, Henley Business School, UK. Prior to this, he has worked for PriceWaterhouseCoopers, IBM and OPM. He is a chartered psychologist, holds five degrees and has an international reputation for his work in coaching and leadership. He has published over 20 books on the themes of leadership, personal development and change, including editing the *Association for Coaching* series of coaching titles. He speaks widely at conferences across the world from the United States to Europe and Asia and has published more than 100 journal papers and book chapters. He was awarded the Association for Coaching Global Coaching Award for his contribution to practice and research in 2010, the British Psychology Society Research Award for his research into safety coaching in 2012, and the Association of Business Psychologist Chairman’s Award for Excellence in 2015. He sits on the editorial board of several journals including *Coaching: An International Journal* and the *International Coaching Psychology Review*. 
About the Contributors

Bruce J. Avolio, PhD Bruce is the Mark Pigott Chair in Business Strategic Leadership at Michael G. Foster School of Business, University of Washington, USA. Bruce has published 11 books and more than 150 articles. His latest book, *The First Principle of Organizational Transformation*, covers organizations that have undergone successful and sustainable transformation.

Bernad Batinic Bernad is Head of Department of Work, Organizational and Media Psychology at the Johannes Kepler University, Austria. He was a founding member of the German Society for Online Research and involved in the development of several large online panels. His current research focuses on job characteristics and wellbeing, as well as the use and impact of media and new technologies.

Talya N. Bauer, PhD Talya is a Cameron Professor of Management in the Business School at Portland State University, USA. Her well-published research focuses on recruitment, applicant reactions to selection, onboarding, and leadership. In addition, she has co-authored three textbooks and co-edited the *Oxford Handbook of Leader-Member Exchange*.

Kenneth G. Brown, PhD Ken is an Associate Dean and Ralph L. Sheets Professor of Management and Organizations at the Tippie College of Business, University of Iowa, USA. He has a PhD in Psychology, and has served as a Fulbright Scholar at Seoul National University, South Korea. His research interests include workplace learning and development, and science-practice connections in human resource management.

Gabriela Burlacu, PhD Gabriela is a researcher at SAP SuccessFactors, where she focuses on identifying, understanding, and communicating ways companies can effectively support their human resource management (HRM) processes using Cloud-based solutions. She brings a primarily academic background to this role, having done extensive research on workforce age differences and HRM.
Celeste Cantu  Celeste is a doctoral student in Industrial Engineering at the Tecnológico de Monterrey, Mexico. She has a degree in Electronical Engineering from Tecnológico de Monterrey and a master’s in Media Management from KTH Royal Institute of Technology, Sweden. She is experienced in implementing radiofrequency identification (RFID), tele-health, and physical security systems. She also has an interest in trust issues and adoption of emerging technologies.

John M. Carroll  John is a Distinguished Professor of Information Sciences and Technology at Pennsylvania State University, USA. Trained as an experimental psychologist, his research is in internet tools for collaborative learning and problem-solving, and sustaining community. John has published 24 books and 600 papers, and received 10 fellowship/lifetime awards and an honorary doctorate in engineering.

Derek S. Chapman, PhD  Derek is an Associate Professor of Industrial and Organizational Psychology at the University of Calgary, Canada. His research interests include recruiting, person–organization fit, personnel selection, and technology use in human resources.

Steven D. Charlier, PhD  Steven is an Associate Professor in the Department of Management at Georgia Southern University, USA. He received his PhD in Management and Organizations from the University of Iowa. His research focuses on the impact of technology on various aspects of the modern work environment, including leadership, teams, training, and job attitudes.

Tanya Delany, PhD  Tanya leads selection and onboarding for IBM, as well as talent acquisition metrics and analytics. She received her doctorate in Industrial Organizational Psychology. Tanya has 15 years’ experience in organizational development and change management, surveys, job analysis, competency modeling, test development, training system design, and program evaluation.

David N. Dickter, PhD  David is a Director of Interprofessional Education Research and Strategic Assessment at Western University of Health Sciences, USA. He earned his PhD in Industrial Organizational Psychology from Ohio State University. David has spent more than 20 years developing and validating psychometric assessments in internal and external consulting roles.

Alex Fradera, PhD  Alex is a science writer for the British Psychological Society (BPS) Research Digest (http://digest.bps.org.uk), a consultant in workplace psychology since 2007, and the head of research for wiserbydesign.com, an organization dedicated to making sense of the world. He holds a doctorate in cognitive psychology from University College London.

Lucy L. Gilson, PhD  Lucy is a Professor and Head of the Management Department at the University of Connecticut, USA. Her research focuses on individual and team creativity, why managers should want employees to be creative, team effectiveness, and virtual teams. Lucy has been published in the Academy on Management Journal, Journal of Applied Psychology, Journal of Management, Leadership Quarterly, and Group & Organization Management.

Gary W. Giumetti, PhD  Gary is an Associate Professor in the Department of Psychology at Quinnipiac University, USA, where he teaches courses in and directs the concentration in Industrial Organizational Psychology. He received his PhD in Industrial Organizational
About the Contributors

Psychology from Clemson University. Gary’s research focuses on organizational justice and occupational stress and health.

Anna F. Gödöllei Anna is a master’s student in Industrial Organizational Psychology at the University of Calgary, Canada. Her interests include the validity and fairness of selection assessments and applicant reactions to assessment methods. Specifically, she studies gamification and how game-based assessments may be used in the recruitment and selection of employees.

Lindsey M. Greco, PhD Lindsey is an Assistant Professor in the Department of Management at Oklahoma State University, USA. She received her PhD in Management and Organizations from the University of Iowa. Her research interests center around individual differences in counterproductive work behavior, social identity at work, and research methods.

Benjamin V. Hanrahan, PhD Benjamin is a Research Associate at the Information Sciences and Technology department at Pennsylvania State University, USA. Previously, he worked as a research scientist in the Work Practice Technology group at Xerox Research Centre Europe. He received his PhD in Computer Science from Virginia Polytechnic State University.

Sirkka L. Jarvenpaa Sirkka is the Bayless/Rauscher Pierce Reñnes Chair in Business Administration and Professor of Information Systems at the University of Texas at Austin, USA, where she serves as the Director of the Center for Business, Technology and Law and the Director of the Information Management program in the Department of Information, Risk and Operations Management.

Victor Jockin, PhD Victor earned his PhD in Psychology from the University of Minnesota, USA. As Senior Manager of Assessment Solutions at PSI Services, Victor has developed a broad range of pre-employment assessment products. He was also instrumental in the development of PSI’s online testing platform and much of its proprietary scoring code.

Andrew F. Johnson, PhD Andrew is an Assistant Professor of Management at Texas A&M University-Corpus Christi, USA. He earned his PhD in Business Administration from the University of Texas at San Antonio. In addition to work in social networking and online learning, he studies corporate political activity.

Nicole C. Jones Young, PhD Nicole is an Assistant Professor of Management at the Franklin & Marshall College, USA. She earned her PhD in Organizational Behavior from the University of Connecticut. Her current research focuses on marginalized populations and social class as related to the selection process and organizational inclusion.

Surinder Kahai, PhD Surinder is an Associate Professor at Binghamton University, USA. Surinder’s research attempts to understand how information and communication technologies mediate leadership, collaborative work, and learning. He has employed his research, which has been published in prestigious journals and presented at selective conferences, to coach many business leaders.

Carrie Kovacs, PhD Carrie is a Research Assistant at the Department of Work, Organizational and Media Psychology, Johannes Kepler University, Austria. Her current
research extends her longstanding interest in research methods to the work context, with a focus on job satisfaction, worker wellbeing, and the use of wearable technologies in organizational research.

**Nicole C. Krämer, PhD** Nicole is a Professor for Social Psychology: Media and Communication at the University of Duisburg-Essen, Germany. Her research addresses human–computer interaction as well as computer-mediated communication, with a particular focus on social psychological processes and social effects.

**Dianna Krueger, PhD** Dianna received her PhD from the University of Texas at San Antonio, and is an Assistant Professor of Management at Tarleton State University, USA. Her research focuses on weight-based bias, diversity, and Hispanic work issues. She has published the results of her research in the *Journal of Managerial Psychology* and the *Business Journal of Hispanic Research*.

**Stefan Krumm** Stefan is the Head of Department of Psychological Assessment, Differential and Personality Psychology at the Freie Universität Berlin, Germany. Among other research interests, his current focus is on knowledge, skills, and abilities as predictors of success in digital collaboration and virtual teamwork.

**Shi Ying Lim** Shi Ying is a PhD candidate in Information Systems at the University of Texas at Austin, USA. Her research interests include health information technology design, digital innovation, information systems strategy, and entrepreneurship.

**Kimberly M. Lukaszewski, PhD** Kimberly is an Associate Professor of Management at Wright State University, USA. She holds an MBA in Human Resources Information Systems (HRIS), and a PhD in Organizational Studies from the University at Albany, State University of New York. Her research focuses on HR technology, e-recruitment, and social media.

**Stela Lupushor** Stela is the founder of Reframe.Work Inc. and a thought leader on the future of work and workforce analytics topics. She is consulting Fortune 100 companies on how to future-proof their business by reframing their workforce, workplace, and work strategies and practices. She holds a diploma in Mathematics and Computer Science, has a patent pending for a social sentiment analysis tool, and is a sought-after speaker on the topics of future of work and workforce analytics.

**Günter W. Maier** Günter is a Professor for Work and Organizational Psychology at Bielefeld University, Germany. He focuses on questions in the field of personnel selection, personality at work, leadership, organizational justice, innovation and creativity, personal work goals, and digitalized work. He has published more than 70 articles and chapters.

**M. Travis Maynard, PhD** Travis is an Associate Professor in the Department of Management at Colorado State University, USA. He received his PhD from the University of Connecticut and has conducted extensive research in the area of organizational team effectiveness. Specifically, his research interests include the role that team context has on team interactions and outcomes.
Jörg Niesenhaus, PhD  Jörg is a Branch Manager at Centigrade, where he supports clients in creating software products of high usability, visual attractiveness, and technical elegance. He uses playful design elements to enhance user satisfaction and motivation. He holds a PhD in Computer Science and has worked in the games and gamification industry since 1997.

Cody J. Reeves, PhD  Cody is an Assistant Professor in the Department of Organizational Leadership and Strategy at the Marriott School of Management, Brigham Young University, USA. He received his PhD in Management and Organizations from the University of Iowa. Cody’s research investigates entry into teams and organizations and the forces that influence the entry process.

Ronald E. Rice, PhD  Ronald is the Arthur N. Rupe Chair in Social Effects of Mass Communication at University of California, Santa Barbara, USA. He has published 13 books and more than 125 articles and 70 chapters on public communication campaigns, computer-mediated communication, organizational communication, information science, and social networks.

Julian Schulze  Julian is a Research Assistant and PhD candidate at the Department of Psychological Assessment, Differential and Personality Psychology at Freie Universität Berlin, Germany. His research interests include competencies for virtual teamwork and communication skills in face-to-face and computer-mediated interactions.

John J. Sosik, PhD  John is a Professor of Management and Organization and Professor-in-Charge of the Master of Leadership Development program at the Great Valley School of Graduate Professional Studies, Pennsylvania State University, USA. His current research interests include character and leadership development, multi-level leadership, and e-leadership.

Jochen J. Steil  Jochen is a Professor for Robotics and Process Control at Technische Universität Braunschweig, Germany. He focuses on robot learning, human–robot interaction, programming by demonstration, and applications in production and control systems. Jochen Steil has published more than 150 papers in cognitive robotics, neural networks, and learning systems.

Stephen Takach, PhD  Stephen earned his PhD in Business Administration from the University of Texas at San Antonio, and is a Lecturer at the University of New Mexico-Valencia, USA. His research focuses on a variety of issues including justification of organizational performance, cognitive biases in strategic decision making, culturally bound firm specific advantage creation and dissemination, and social issues in work organizations.

Meinald T. Thielsch, PhD  Meinald is an Akademischer Rat (Assistant Professor) at the Department of Psychology, University of Münster, Germany. He earned his PhD and habilitation in Psychology. His main work and research interests are human–computer interaction, user experience, applied research, and science–practice transfer.
Donald M. Truxillo, PhD Donald is a Professor of Psychology at Portland State University, USA, where he has done extensive research examining issues associated with older workers, including job design, age stereotypes, and work ability. He has published more than 70 peer-reviewed journal articles and book chapters, and serves on numerous journal editorial boards.

Nico W. Van Yperen, PhD Nico is a Professor of Organizational Psychology at the University of Groningen, the Netherlands. His research interests include achievement motivation, competence, blended working, and talent development.

Matti Vartiainen, PhD Matti is a Professor of Work and Organizational Psychology at the Department of Industrial Engineering and Management, Aalto University, Finland. With his research teams, he is studying organizational innovations, new ways of working such as digital, mobile, and multi-locational work and distributed teams and organizations, reward systems, knowledge and competence building, and e-learning systems.

Stephan Winter, PhD Stephan is an Assistant Professor of Persuasive Communication at the University of Amsterdam, The Netherlands. His research interests include selective exposure and opinion formation in online contexts, science and crisis communication, as well as self-presentation and self-disclosure in social media.

Burkhard Wörtler Burkhard is a PhD student at the Department of Organizational Psychology, University of Groningen, The Netherlands. His research interests include psychological needs in the workplace, blended working, and leadership in organizations.

Humayun Zafar Humayun is an Associate Professor of Information Security and Assurance in the Department of Information Systems at Kennesaw State University, USA. He is also a Research Fellow at the Distance Learning Center. He received his doctorate from the University of Texas in San Antonio.
The digital revolution, sparked by the development of the Internet, affects all of us 24/7/365. Given that two key objectives of industrial organizational psychology are to improve productivity as well as the quality of work–life for men and women, this edited volume on the psychology of the internet at work is especially timely. To understand the wide-ranging implications of the digital revolution in the context of work requires multi-level perspectives, and this book delivers. Indeed, the chapters are organized around three levels of analysis. At the micro level, primary concern is with the experience and behavior of the individual worker. This section of the book examines the effects of internet-based technologies on classical industrial organizational topics such as work motivation, performance, the analysis of work to identify required competencies, and workplace health and wellbeing.

The second section of the book focuses on the effects of Internet-based technologies at the meso level – work organizations. Here the focus is on topics such as recruiting, that is, finding talent, selecting it, developing it, leading it, and promoting effective teamwork, whether co-located or virtual. The critical issues of trust and distrust in e-commerce and in virtual teamwork are addressed explicitly (see Chapter 6), as are multilevel perspectives on trust that include other persons, as well as teams, organizations, brands, and even the Internet itself.

The final section of the book considers macro-level phenomena – societies as a whole. To their credit, the editors and chapter authors explicitly recognize that the effects of internet-based technologies have both positive and negative implications. On the one hand, these technologies have spawned many new business ideas to generate wealth, to grow the economy, and to improve the quality of life (e.g., Amazon, Google, Facebook, eBay, and millions of “apps”). On the other hand, the Internet has eroded personal privacy, it has enabled scammers, hackers, and thieves, and technologies such as machine learning and robots have led to the displacement and unemployment of many workers. Challenges wrought by the Internet at the micro, meso, and macro levels will engage industrial organizational scientist-practitioners for years to come. Whether you are just
beginning your career or are well established in it, you will find a fascinating array of intriguing ideas in every chapter of this volume. I invite you to explore each one in detail.

Wayne F. Cascio  
Robert H. Reynolds Chair in Global Leadership  
University of Colorado, Denver, USA
1

The Psychology of the Internet @ Work

Guido Hertel, Dianna L. Stone, Richard D. Johnson, and Jonathan Passmore

Introduction

The Internet has radically changed the way we work, and the way work is organized. Similar to other core technologies in the past, such as steam engines, electricity, or computer technologies, the Internet influences not only singular work activities or discrete branches, but affects nearly all aspects of work in a striking speed of time. For industrial and organizational psychologists, it is therefore essential to understand the implications of the Internet at work from different levels of analysis. At the micro level, Internet-based technologies have significant implications not only for the experience and behavior of the individual worker, for her or his work motivation, trust experience, and individual performance, but also for health and wellbeing and for required competencies at work. At the meso level, the Internet offers new strategies for work organizations, for recruiting and selection of employees, for leadership and teamwork, and for training and development. At the macro level, Internet-based work has implications for societies as a whole, creating new opportunities for economically underdeveloped regions and for the integration of disadvantaged workers, but also for new conflicts and legal problems in increasingly global workplaces. This edited handbook covers these three perspectives in an integrative way, providing state-of-the-art reviews of existing research, guidance for future work, and suggestions for practitioners.

In this first chapter, we start with a brief history of the Internet at work to understand the specific characteristics of Internet-based technologies that underlie different qualitative shifts in working conditions. In doing so, we identify five core characteristics of Internet-based work that might clarify and structure the still divergent usage of concepts in this emerging field. Moreover, such a task-oriented approach might help to analyze more precisely the various implications of Internet-based technologies for work-related experiences and behaviors as the main focus of work and organizational psychologists. We provide
initial suggestions and examples for this idea, and illustrate general opportunities and risks of the core characteristics at the three main levels introduced above, that is, the individual worker, work organizations, and societies. After these more general observations, we provide a preview of the other chapters in this handbook. In addition to newest findings from scientific research in the different fields, the book provides best practices for the usage and optimization of these rapidly evolving technologies for different sectors and industries.

**A Brief History of the Internet at Work**

The high prevalence of Internet-based technologies at work is reflected in a multitude of labels, such as “online” (e.g., online assessment), “web” (e.g., web-based working), “virtual” (e.g., virtual teams), “e-” (e.g., e-leadership), “cyber” (e.g., cyber loafing), “tele-” (e.g., telework), or “digital” (e.g., digital divide). Originating in different research traditions and disciplines, these different labels might be confusing when considering what the core attributes of Internet-based work might be. For instance, Internet-based work implies more than just electronically mediated information, and can also be relevant when people collaborate at short distances in the same building.

The Internet is a global communication system that connects private, public, academic, business, and government networks using a broad and constantly developing array of electronic, wireless, and optical technologies (Internet, n.d., retrieved November 15, 2016, from https://www.britannica.com/technology/Internet; see also Internet, n.d., retrieved November 15, 2016 from https://en.wikipedia.org/wiki/Internet). Thus, in addition to electronic computer technologies, global accessibility and interactivity are core characteristics of the Internet. Moreover, the Internet functions without a central governing body, with different autonomous networks being voluntarily interconnected.

The Internet emerged from early computer networks developed in the 1960s, such as the Advanced Research Projects Agency Network (ARPANET; e.g., Leiner et al., 1997). These communication networks were expanded to the 1980s in order to provide efficient communication for science and military needs. For instance, based on the ARPANET, the first email was sent 1971, and the File Transfer Protocol (FTP) specification was defined in 1973. However, the birth of the Internet as we know it today can be dated in 1990 when the ARPANET was opened for commercial usage. This was followed quickly by the first web page in 1991, and the first live stream (of a lab coffee pot) in 1993 (Trojan Room coffee pot, n.d., retrieved November 15, 2016, from https://en.wikipedia.org/wiki/Trojan_Room_coffee_pot). In addition, early forms of crowdsourcing started at that time, such as the Linux operating system software development project, one of the most successful Open Source software development projects. Open Source projects such as Linux, which had no strong financial incentives or organizational structures, demonstrated the potential of collaborative work via the Internet (e.g., Hertel, Niedner, & Herrmann, 2003; Saxena, Deodhar, & Ruohonen, 2017).

In 1995, the Internet was globally commercialized, and Internet-based (e-commerce) enterprises such as eBay and Amazon were founded. In the remaining years of the twentieth century, there was tremendous excitement about Internet-related businesses, with pundits predicting that brick and mortar stores would be replaced by click-and-order markets. This development led to an exploding stock market, and ultimately to the so-called “dotcom crisis” in 2000, when the hype surrounding Internet businesses finally burst, with many early e-commerce innovators becoming bankrupt. Following this hype-and-bust cycle, Internet-based e-commerce stabilized and set the stage for further, more solid developments (e.g., Fenn & Raskino, 2008). In addition, new developments in
multimedia and collaboration tools emerged in the mid-2000s that allowed for individuals to not only consume content but to also interactively and collaboratively create new content (“Web 2.0”). Wikipedia and other knowledge communities expanded on the idea of crowdwork, from rather specialized communities such as software developers in Open Source software projects, to the whole population (e.g., Schroer & Hertel, 2009). Moreover, social media tools such as Facebook, Twitter, YouTube, LinkedIn, Viadeo, and Skype supported both organizational and non-organizational communities to develop around common interests. The introduction of Internet-connected mobile “smart” phones (e.g., the first Apple iPhone in 2007) was a major step towards permanent accessibility at work, allowing users to not only make phone calls but to also access emails, webpages, and Internet-based data files. Somewhat ironically, the first email-free workday was also introduced in 2007 in some companies as a result of workers’ reactions towards the high number of emails to be attended every day.

Only a few years later, the idea of Internet-based collaboration was picked up by commercial or semi-commercial initiatives in so-called “sharing” communities, providing new services for transportation (Uber), housing (Airbnb), or labor leasing (Amazon Mechanical Turk). Notably, workers and service providers in these communities often lack conventional labor rights protection and insurances, raising various legal and ethical questions with these new conceptualizations of work.

More recently, the increasing use of sensor technologies has enabled again a new level of interactivity of the Internet, including direct connections between artifacts and machines (“Internet-of-Things”), which has further increased the speed of work and commerce. Although automatic driving, smart clothes, and smart offices provide many facilitations at work, these innovations can also cause risks and strain, and have been accused of destroying workplaces in various industries. For instance, use of the global positioning system (GPS) in monitoring in transportation businesses, while facilitating logistics and security issues, also puts pressure and strain on drivers, and automatic driving might even replace human drivers. Moreover, artificial intelligence might substitute important leadership tasks such as decision making in complex scenarios (Parry, Cohen, & Bhattacharya, 2016). Thus, Internet-based innovations at work come both with opportunities and challenges for the individual worker, for work organizations, and for societies (Cascio & Montealegre, 2016; Stone & Dulebohn, 2016).

We do not know exactly what will come next. One of the exciting aspects of doing research in this field is the innovative potential of the Internet for work and work organization over the coming decades. New technologies, tools, and business ideas are continually invented, some being picked up immediately, some only after a delay of months or even years, and some perhaps never. However, in order to understand the implications of the Internet at work, it might be useful to abstract from discrete tools and phenomena, and reconsider basic characteristics of the Internet from a task-oriented perspective.

Core Characteristics of Internet-Based Work

Internet-based work has been associated with many different attributes, for instance with high team diversity (e.g., Hoch & Kozlowski, 2014) or more autonomy at work (e.g., Gajendran & Harrison, 2007). However, some of these attributes are less central to or not unique for Internet-based work in general. Based on the definition of the Internet as a global system of interconnected computer systems, we consider the following characteristics of Internet-based work as most central and distinct from traditional work forms: accessibility, interactivity, reprocessability, automatization, and boundary crossing.
Accessibility of information. Connecting billions of autonomous computers throughout the world (with numbers still growing), the Internet provides easy and often un-delayed access to myriads of data both within organizational networks and beyond. In addition to increasing speed and amount of information available for work processes and decisions, high accessibility of information also supports the mobility of work because information (and people as information carriers) is neither restricted to certain locations nor to certain hours or days. Working “anywhere and anytime” has been made possible by this high level of information accessibility. However, this development has also increased the expectation that workers are accessible regardless of time or location. In fact, ubiquity has emerged as a major stressor at work, blurring traditional forms of separation between occupational and private life (e.g., Derks, Bakker, Peters, & van Wingerden, 2016). Moreover, high information accessibility comes with many ethical and legal issues about data ownership and data privacy, for instance, when organizations recruit and select new employees.

Interactivity of communication. A second major characteristic of interconnected computer systems is the opportunity to directly interact with other users regardless of where they are. Individuals can not only passively retrieve information or contact other persons, but can also send or post information and reply to others, enabling multidirectional exchange and collaboration. This high degree of potential interactivity is the backbone of many collaborative processes at work today. Users of Internet-based technologies can share and exchange information with other workers (e.g., in virtual teams) or with organization representatives (e.g., during recruitment processes) regardless whether or not the others are currently co-present. Whereas interactivity was mainly text-based and asynchronous in the early years of the Internet, the rapid development of technologies now includes synchronous audio and visual communication (e.g., web conferencing), and even digital exchange of physical products (e.g., three-dimensional [3D] printing).

Reprocessability of information. The mediated nature of working via Internet enables automatic storage of many working steps. As a consequence, related information can be retrieved and reprocessed on demand. Such documentation and reprocessability of work (Dennis, Fuller, & Valacich, 2008) has many advantages, such as reducing the risk of misunderstandings in complex (e.g., international) collaborations, or reducing the need for trust in virtual teams (e.g., Breuer, Hüffmeier, & Hertel, 2016). However, the fact that automatic storage and reprocessability makes “forgetting” considerably more difficult can also cause problems, such as information overload, stigmatization of individuals due to past behavior or rumors about past behavior (“cyber-mobbing”), and data protection issues. In light of the constantly increasing data volumes accessible for individuals and organizations, developing intelligent algorithms for handling “big data” (e.g., George, Haas, & Pentland, 2014; George, Osinga, Lavie, & Scott, 2016) and for “intentional forgetting” (e.g., Niederee, Kanhabua, Gallo & Logie, 2015) are important challenges for future knowledge management at work.

Automatization. A fourth core characteristic of interconnected computer systems is the potential to automatize processes in these networks, for instance, by using computer routines to send information at certain pre-programmed times, to scan (billions of) websites for information, or to monitor and control workers or machines from a distance (GPS monitoring). Automatization has the potential to disburden the individual at work in many respects, freeing resources for other tasks. Moreover, automatization in computer networks highly increases the opportunities for information seeking and control.
However, Internet-based automatization can also create undesired costs (e.g., unsolicited and undesired “spam” emails). Although automatization is also used in other work forms, its potential is greatly increased in interconnected computer networks.

**Boundary crossing.** High boundary-crossing capabilities are suggested as a fifth core characteristic of the Internet at work. In interconnected computer systems, information and products are communicated in a standardized “language” that not only connects different work processes at different geographic or organizational locations (e.g., cross-company collaboration in automotive industries) but can also integrate non-work domains (e.g., usage of social media networks at work; e.g., van Iddekinge, Lanivich, Roth, & Junco, 2016). Moreover, individuals not only collaborate remotely with others but also with machines (“manufacturing 2.0,” “industry 4.0”), and machines can directly communicate with other machines (“Internet-of-Things”). The more pervasive computer technology becomes in our (work) lives, the higher the potential interconnections of these computers will grow. This boundary-crossing potential can dissolve work structures such as hierarchies or demarcations of knowledge exchange within organizations. Moreover, required competencies for knowledge management, communication, and leadership are changing due to the boundary-crossing capabilities of the Internet.

These five core characteristics might help to structure research on psychological implications of the Internet at work, enabling more specific and perhaps precise predictions based on psychological theories. We illustrate this idea in the next section with initial examples.

**Psychological Implications of the Internet at Work**

When reviewing the existing literature on psychological implications of the Internet at work, we found that studies often focused on quite different aspects and outcomes, making comparisons of research results and literature summaries difficult. For instance, some research on Internet-based “virtual” teams has focused on the (lack of) synchronicity or interactivity of collaboration, while other studies have focused on difficulties in accessing and reprocessing data, and yet others on cultural diversity (see, for instance Gilson, Maynard, Jones Young, Vartiainen, & Hakonen, 2015, for a review). The suggested core characteristics of Internet-based work might help to structure existing and future research, and to connect technological phenomena with psychological theories. In addition, considering core characteristics of Internet-based work might provide helpful guidance for empirical research, for instance, suggesting appropriate baselines when examining specific effects of Internet-based work.

One of the basic questions in this respect is, which processes and requirements truly change when using the Internet at work, and which processes and requirements remain the same as in traditional work settings. For instance, at the person level, psychological theories related to high information accessibility include dual process models of information processing (e.g., Chaiken, Liberman, & Eagly, 1989; Petty & Cacioppo, 1986), predicting more systematic information processing of individual workers when more information is accessible. At the same time, theories from cognitive psychology also cover consequences of information overload on workers’ decision accuracy and strain experience (e.g., Speier, Valacich, & Vessey, 1999). At the organizational level, effects of information availability on individual decision processes are complemented by theories
on organizational knowledge management, including the motivation and coordination of knowledge generation, memory, and dissemination as well as decision-making routines. Theoretical approaches relevant for these themes include networking and knowledge transfer theories (e.g., Foss, Husted, & Michailova, 2010) as well as conceptualizations of potential information overload at the organizational level (e.g., Niederee et al., 2015).

Finally, at the societal level, high information accessibility due to Internet-based technologies increases opportunities to create new workplaces even in areas with low infrastructure and for workers with reduced mobility. Moreover, high information accessibility about work organizations affect how these organizations are perceived by job applicants or customers, which is described, for example, in theories of trust in organizations (e.g., Fulmer & Gelfand, 2012), employer branding (e.g., Rupp, Ganapathi, Aguilera, & Williams, 2006; Walker, Feild, Giles, Bernerth, & Short, 2011), or customer expectations (e.g., Barley, 2015).

Psychological theories relevant for increased interactivity due to Internet-based work include communication and feedback theories at the level of individual workers (e.g., Kluger & DeNisi, 1996), and theories on motivation for Enterprise Social Networks (e.g., Chin, Evans, & Choo, 2015; Leftheriotis & Giannakos, 2014) as well as social impact and minority influences (e.g., Latané & L’Herrou, 1996) at the level of organizations and societies. In addition, much of the field of electronic human resources depends on the ability of technology to expand communication and interaction opportunities among customers, employers, employees, retirees, and prospective employees (Johnson, Lukaszewski, & Stone, 2016). Reprocessability effects due to Internet-based work can be addressed, for instance, based on communication theories (e.g., Dennis et al., 2008), models of trust (e.g., Mayer, Davis, & Schoorman, 1995) and fairness perceptions (e.g., Colquitt & Zipay, 2015), as well as theories on error management (e.g., Frese & Keith, 2015).

Psychological effects of Internet-based automatization are explained, for instance, by theories on workers’ need for control (e.g., Karasek & Theorell, 1990), highlighting potential resource saving but also aversive and even threatening effects of Internet-based surveillance and monitoring. In addition, the change to automated human resource (HR) systems may evoke psychological reactance among applicants and employees, affecting individuals’ job acceptance rates or attraction to organizations. Internet-based recruiting has the potential to invade personal privacy, and may have an adverse impact on protected group members. As a result, psychological models of reactance (Brehm, 1966), person-organization fit (Chatman, 1989), privacy (Stone & Stone, 1990), and self-efficacy (Bandura, 1986) are relevant to explain the extent to which individuals accept these new systems and feel comfortable to use them. Together with research from sociology, human computer interaction, and information systems, these psychological theories are relevant for how individuals might respond to the replacement of human workers by Internet-based technologies (Hess, Fuller, & Campbell, 2009; Johnson, et al., 2006).

Finally, boundary-spanning aspects of Internet-based work are related to psychological theories on work-life balance and organizational segmentation norms (e.g., Derks et al., 2016) as well as basic approaches of job design (e.g., Hackman & Oldham, 1980) and job crafting (e.g., Wrzesniewski & Dutton, 2001). Based on these psychological theories, potential benefits and risks of Internet-based work can be derived more precisely. Initial examples are listed in Table 1.1 and Table 1.2.
Table 1.1  Potential benefits of Internet-based work.

<table>
<thead>
<tr>
<th>Level of analysis</th>
<th>Individual worker</th>
<th>Work organization</th>
<th>Society</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core characteristics</td>
<td>Accessibility</td>
<td>Breadth of available information</td>
<td>Processing speed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Decision quality</td>
<td>Decision quality</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flexible work times</td>
<td>Global presence and activities</td>
</tr>
<tr>
<td></td>
<td>Interactivity</td>
<td>Feelings of agency and voice</td>
<td>Decisions speed and quality</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Frequent exchange with colleagues</td>
<td>Speed of product development</td>
</tr>
<tr>
<td></td>
<td>Reprocessability</td>
<td>Perceived transparency and fairness</td>
<td>Reduced risks of process errors</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reduced risks of misunderstanding</td>
<td>Increased knowledge sharing</td>
</tr>
<tr>
<td></td>
<td>Automatization</td>
<td>Work safety</td>
<td>Cost reduction</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Strain relief</td>
<td>Breadth of information available</td>
</tr>
<tr>
<td></td>
<td>Boundary crossing</td>
<td>Job crafting</td>
<td>Breadth of available information</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Work–life balance</td>
<td>Cross-company collaboration</td>
</tr>
</tbody>
</table>
Table 1.2  Potential risks of Internet-based work.

<table>
<thead>
<tr>
<th>Core characteristics</th>
<th>Individual worker</th>
<th>Work organization</th>
<th>Society</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessibility</td>
<td>Information overload, Ubiquitous working</td>
<td>Data security</td>
<td>Privacy issues</td>
</tr>
<tr>
<td>Interactivity</td>
<td>Challenges to work-life balance, Escalating aggression (&quot;flaming&quot;)</td>
<td>Cyber-loafing</td>
<td>Post-truth thinking and conspiracy beliefs</td>
</tr>
<tr>
<td>Reprocessability</td>
<td>Suitability, Stigmatization</td>
<td>Challenge to rebuild negative reputation</td>
<td>Ability to interfere with political processes</td>
</tr>
<tr>
<td>Automatization</td>
<td>Monotony, Lack of control</td>
<td>Layoffs and reduction in job opportunities</td>
<td>Loss of workplaces</td>
</tr>
<tr>
<td>Boundary crossing</td>
<td>Blurred boundaries between work and non-work</td>
<td>Cyber-loafing</td>
<td>Legal issues</td>
</tr>
</tbody>
</table>
A Research Agenda for the Psychology of the Internet at Work

Research on the psychological implications of Internet-based technologies at work is still in its infancy. In addition to different foci and conceptualizations of Internet-based implications, published studies span multiple journals, books, conference proceedings, and research communities (see also Cascio & Montealegre, 2016). Often, valuable research is done by academics outside of work and organizational psychology, such as by computer or communication scientists. At the same time, theoretical work on the psychological implications of Internet-based work is still underdeveloped. Consequently, it is difficult to maintain a decent overview about research findings in specific fields of interest, for example, e-leadership, and it is even more difficult to integrate findings from different fields into a more complete picture of the Internet at work. For instance, research on ergonomics, cyber-loafing, Internet-based trust, and virtual teamwork is all relevant when developing models of e-leadership. Recognizing the implications of Internet-based work at different levels and for different processes is important in order to truly understand its psychological effects on experience and behavior at work.

This edited title is the first international handbook that integrates the various sources and fields of evidence-based psychological research on the Internet at work in one volume. As such, the handbook provides useful information for researchers and practitioners alike. The handbook is structured in three parts, reflecting the micro, meso, and macro perspectives referred to in the introduction to this chapter. Although the different chapters are sorted into these three parts according to their predominant perspective, most chapters are not restricted to only one perspective but cover various levels of analysis. Together, the chapters combine what are currently the most important findings, conceptual frameworks, and practices related to the psychology of the Internet at work.

Part I: Micro-level implications

The first part of the handbook addresses implications of Internet-based work at the level of the individual person (micro perspective). The aim of this part is to present theoretical concepts and empirical literature on individual reactions to Internet-based work, including both positive and negative consequences. In addition to individuals' motivation and performance, this part covers implications of Internet-based work for health and wellbeing as well as deriving implications for individual competencies.

The first two chapters of this part set the stage by presenting more general frameworks in this field. In Chapter 2, Nicole C. Krämer and Stephan Winter provide a comprehensive overview of theoretical frameworks on communication with digital technologies from a social science perspective. Given that Internet-based work usually includes some kind of mediated communication, the described constructs and mechanisms are at the heart of many of the following chapters, for instance, when considering required competencies or leadership strategies. Moreover, the chapter also includes excellent examples of psychological theories relevant for core characteristics of Internet-based work. The authors review both classic theories of computer-mediated communication, for instance, of the selection of specific communication tools, as well as more recent developments, such as communication in enterprise social media networks. In doing so, the chapter provides both illustrative description of existing concepts as well as promising new directions for future work.

Complementing the social science perspective of Chapter 2, Chapter 3 introduces a more technical perspective and presents the general principles of the ergonomics of
The Psychology of the Internet @ Work

human–computer interaction. Summarizing the wealth of findings in this very active and creative community could easily fill a full volume instead of only a single chapter. Therefore, Benjamin V. Hanrahan and John M. Carroll focus on more general processes of ergonomic analyses of requirements and implications of Internet-based technologies at work. Rather than reviewing micro issues in ergonomics (e.g., usability, human–machine interface), this chapter takes a macro approach in viewing how Internet-based technologies are embedded within broader work practices, how they impact how work is conducted, how power is structured in organizations, and how relationships are maintained. Moreover, the authors provide instructional case examples at different levels, including motivational implications of ergonomics in web-based customer service centers, online social networks in organizations, and Internet-based crowdworking. Thus, well in line with the general approach of this handbook, the authors demonstrate that in addition to individual-level effects, principles of human–computer interaction are also relevant for the meso and macro levels of Internet-based work.

Following and building on the introduction of basic concepts, Chapter 4 derives specific affordances for individuals during Internet-based work. Stefan Krumm and Julian Schulze review new research on competencies for Internet-based work, finding only low convergence among existing studies to date, despite many individual competencies having been proposed in the literature. Moreover, existing taxonomies provide few explicit links to specific challenges of Internet-based work, illustrating the already mentioned lack of theoretical connections between core characteristics of Internet-based technologies and existing psychological theories. In addition to a closer analysis of discrete task specifics, the authors argue for more rigorous empirical tests of whether assumed competencies are truly unique for Internet-based work. In their chapter, the authors provide initial examples of this quest. Moreover, the authors inspect existing theories on digital communication and virtual collaboration in order to derive potentially overlooked competencies. Together, this chapter sets the stage for more fine-grained theories of work competencies that integrate different aspects of task, organizational context, and mediating technology.

Switching from competencies to individual experience, in Chapter 5 Meinald T. Thielsch and Jörg Niesenhaus review the emerging literature on the impact of user experience in Internet-based work and its effects on motivation, learning, and performance. In doing so, the authors particularly address gamification as an increasingly popular aspect of the user experience. Building on general concepts of human–computer interaction, the authors summarize empirically established design principles and provide informative research examples. Moreover, they also discuss best practices for practical applications, and provide instructive cases for motivating design. In general, the individual experience of Internet-based technologies has been shown to considerably affect motivation and performance at work. At the same time, more integrative theories are needed that particularly consider mediating psychological mechanisms in this respect, such as attention, cognition, or emotion.

Chapter 6 also addresses motivational processes, focusing on trust and distrust as a consequence of Internet-based work. Indeed, difficulties to build and maintain trust are among the most prominent topics in the existing literature on Internet-based collaboration, and can be related to different core characteristics such as accessibility or reprocessability of information. Sirkka L. Jarvenpaa, Celeste Cantu, and Shi Ying Lim start with a comprehensive review of different conceptualizations of trust in the literature, before applying different trust models to the contexts of electronic commerce and virtual teamwork. Interestingly, trust in Internet-based context not only refers to other persons but also to larger entities such as teams, organizations, or brands. Moreover, trust
can refer to specific technologies and even to the Internet per se. Thus, even though psychologists usually consider trust as a state experienced by individuals, multilevel modelling of its determinants is required. Finally, the authors address important findings on the development, maintenance, and repair of trust in Internet-based contexts, considering current technologies and potential future developments.

Further exploring motivational implications of Internet-based work, Chapter 7 addresses potential counterproductive behavior summarized under the term of “cyber-deviance.” In their review, Steven D. Charlier, Gary W. Giumetti, Cody J. Reeves, and Lindsey Greco structure the existing research on cyber-deviance into behaviors that are intrapersonally focused (e.g., visiting Internet-based entertainment or shopping sites during work hours), interpersonally focused (e.g., using digital resources to harass others), and organizationally focused (e.g., posting defamatory comments about a company in publicly available Internet sites). The authors summarize both antecedents and consequences of cyber-deviant behaviors as well as potential countermeasures. Interestingly, not all cyber-deviant behaviors are intentional, some might be rather based on carelessness and inattention, and some deviant behaviors can even have positive consequences in the long term.

The following two chapters address consequences of Internet-based work for health and wellbeing, implications that are particularly related to high accessibility and boundary-crossing aspects of the technologies. Research on this topic has strongly grown in the past years as a consequence of increased complaints of strain due to ubiquity expectations at work. Although this certainly is a concern for organizations as a whole, the psychological processes of strain reactions and wellbeing are located at the level of individual persons. In Chapter 8, Nico W. Van Yperen and Burkhard Wörtler present the research on “blended working,” a relatively new concept describing the opportunities for more flexibility at work due to Internet-based technologies. When discussing both potential benefits and risks of blended working, the authors stress that these consequences are not automatically given but depend on specific moderating factors, such as workers’ personality, type of task, and organizational policies.

In Chapter 9, Ronald E. Rice focuses on the implications of Internet-based flexible work on work–life balance and related outcomes. This chapter provides an excellent example of the need to integrate findings from disparate research streams into a cohesive framework. The author draws on research from communications, health, information systems, management, and psychology as he reviews and integrates the work on communication technologies, flexwork, and work–life balance. Specifically, he develops a theoretically driven model to shape research on flexwork and work–life balance to inform those researching in this area.

Today, a large portion of Internet traffic is driven by mobile devices, increasing accessibility as core characteristic of Internet-based work even further. This can have profound implications for how work is conducted and how employees connect and interact with each other and with organizational resources. Despite the centrality of mobile computing to work practices, only limited research has begun to investigate its employee and organizational implications. In Chapter 10, Humayun Zafar first discusses the evolution of the use of mobile computing in organizations. He then reviews the research on both the positive and negative implications of mobile computing in organizations, and provides guidance for future researchers. Finally, he discusses how mobile computing and the “Internet-of-Things” will potentially transform the workplace of the future. Similar to other topics in this handbook, research on mobile computing is in an early stage and there are opportunities for scholars from various domains to use their theories to contribute to this phenomenon.
Part II: Meso-level implications

Part II addresses implications of the Internet at work at the organizational level, covering typical topics of “electronic human resource management” (e.g., Stone, Deadrick, Lukaszewski, & Johnson, 2015). The different chapters review the current literature on how organizations (can) use the Internet for the management of their employees, including recruiting and assessment, leadership, teamwork, and personnel development.

In Chapter 11, Derek S. Chapman and Anna F. Gödöllei focus on Internet-based recruiting, and describe how technology has dramatically altered the recruitment process in the past decades, modifying employer practices and applicant expectations. With respect to the introduced core characteristics of Internet-based technologies, e-recruiting particularly benefits from high accessibility of information and interactivity of communication technologies. Moreover, automatization of data collection and analyses increasingly plays a role. Discussing different strategies of e-recruiting, the authors not only consider finding and attracting job applicants but also how to keep them interested during the selection process. In addition to reflecting both potential benefits and risks of using e-recruiting in organizations, the authors review the existing theories and empirical research on the topic and introduce a new model of e-recruiting with interesting new directions for future research.

In Chapter 12, Kimberly M. Lukaszewski and Andrew F. Johnson consider the advantages and disadvantages of using information from social network sites and search engines in the employment decision-making process (e.g., selection, termination). They argue that organizations are using these sites to determine whether individuals have the knowledge, skills, and abilities to perform the job, and ensure that they are trustworthy and conscientious. In spite of the increased use of social network sites and search engines, the authors maintain that many individuals believe that the use of these sites in the employment process is unfair. One reason for this is that social network sites were designed for communication with friends and family, and were not meant to be viewed by employers. The authors begin their chapter with a review of literature on individuals’ reactions to using social network sites and search engines. Next, they apply a model of organizational justice and Leventhal’s fairness principles to understand the factors affecting individuals’ perceptions of unfairness. Finally, the authors offer interesting directions for future research on these issues.

David N. Dickter, Victor Jockin, and Tanya Delany present a review of the literature on e-selection in Chapter 13, describing the current state of research and its applicability to organizations. Similar to e-recruiting, main core aspects of Internet technologies relevant for e-selection are the high accessibility of information, the opportunity of interactive communication despite geographic distance, as well as automatization in data acquisition and analyses. The chapter begins by highlighting the problems and solutions associated with e-selection including deployment, data security, test equivalence, and the use of unproctored (unsupervised) tests. Next the authors discuss the landscape of e-selection tests and assessments and offer some considerations involved in their development and use. They describe issues associated with the implementation and emphasize that multiple stakeholders are involved in the e-selection process (e.g., applicants, employees, managerial decision makers). They also consider contextual factors affecting the e-selection process including international laws, policies and data-privacy standards that apply to all candidates as well as protected groups, delivering tests under unproctored conditions, and communicating and training. Finally, the authors offer suggestions for areas for future research in this rapidly-evolving field.

Switching from recruitment and selection to the management of workers, Surinder Kahai, Bruce J. Avolio, and John J. Sosik argue in Chapter 14 that the spread of