

**MANAGING TECHNOLOGY AND
MIDDLE- AND LOW-SKILLED
EMPLOYEES**

THE CHANGING CONTEXT OF MANAGING PEOPLE

Edited by Professor Emma Parry, Cranfield School of Management, Swindon, UK

The past two decades have represented a time of unprecedented social, technological, and economic change that has required a transformation in human resource management (HRM). Shifts in demographics, continued increases of women in the workforce, and greater mobility across national borders have led to higher diversity in the workplace. Advances in technology, including social media, have enabled new ways of doing business through faster communications and vast amounts of data made available to all. Mobile technology with its ubiquitous connectivity has led to renewed concerns over work–life balance and extreme jobs. These and many other changes have seen evolving attitudes toward work and careers, leading to different expectations of the workplace and mean that existing ways of managing people may no longer be effective. This series examines in depth the changing context to identify its impact on the HRM and the workforce.

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MANAGING TECHNOLOGY AND MIDDLE- AND LOW-SKILLED EMPLOYEES

Advances for Economic
Regeneration

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INVESTOR IN PEOPLE

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Series Editor Foreword

Over the past 15 years we have seen a significant amount of discussion about the impact of technological advancement on organizations, managers, and employees. Both academics and practitioners alike have made predictions about the impact of technology on work, the workplace, and the workforce and have provided recommendations for a variety of stakeholders in relation to how they might benefit from technological advancement. This discussion has progressed from that around automation of manual tasks to digital transformation, social media, and more recently around artificial intelligence and machine learning. A growing thread within this discussion has focused upon the potential impact of these technologies on employees. Indeed, commentators have suggested both positive impacts in relation to flexibility, job creation, and opportunities for new skills development and negative effects such as issues relating to work–life balance, skills obsolescence, and job losses. There is little agreement on the likely outcomes of accelerating technological advancement; so this debate is likely to continue for some time.

Against this backdrop, there is also a concern from some practitioners and policy makers of increasing inequality and unfairness in relation to low- and middle-skilled workers. At worse, advances in artificial intelligence and robotics might worsen these issues as they have the potential to result in the automation of many of the tasks that these workers carry out. Despite these concerns, there is a lack of discussion in the academic literature about the impact that emerging technologies might have on low- and middle-skilled workers. This book addresses this gap, so I was very happy to include it within my book series *The Changing Context of Managing People*. I have included several texts already in this series that discuss technological advancement and their impact on work and on people management. However, this is the first that addresses the significant need for attention on the potential effect of emerging technologies on middle- and low-paid workers. I therefore feel that this makes a valuable addition to the series and hope that you will enjoy reading it.

Emma Parry
Series Editor
Changing Context of Managing People

Preface

This book describes the rapidly changing use of technology to manage people, middle-skill, and low-skill employees. Virtual teams and AI systems provide unique opportunities to better engage middle-skill and low-skill-level employees. These employees are being required to enhance their technology skills at a pace that requires extensive investment of financial and technological resources. Understanding how to manage the demands of technology as it relates to the interaction of people and technology in the workplace will assist HRM in recruitment efforts and HRD in development and retention efforts.

The purpose of this work is to add to the knowledge base of human resource professionals as they grapple with the changing workplace through the rapidly changing introduction of new technologies. The pace of technological advancement is constant. Thus, HR professionals and researchers are constantly trying to understand how these changes affect employees that they are being asked to recruit, hire, develop, and advance within the workplace. The competition between people and technology with the introduction of artificial intelligence has created apprehension and anxiety among some employees and the general public as they try to understand whether or not employees will be replaced by technology. Self-driving cars and transport trucks, Amazon Go grocery stores, and other previously unimaginable changes are taking place. This book will examine some of those changes and look for research and practical implications of how people and technology can exist, harmoniously, within the workplace.

This book also provides an analysis of virtual teams, middle-skill, low-skill-level, and disadvantaged employee management that is not yet mainstream. Hopefully, this book will help to offset some concerns as the anxiety level of middle-skill and low-skill-level employees is usually highest when new technology is introduced in the workplace. Virtual teams are also continuously evolving as they have to adjust to new technologies and new employees participating in teamwork. Remote access to technology is expanding with the Cloud, Box, Google Doc, and other technologies that employees must continuously learn. Having HR professionals who understand these changes and needs will only increase an organization's competitiveness as they seek to engage and maintain technologically skilled employees.

This book is appropriate for Business, Human Resource Development, Human Resource Management, Information System, and Workforce Development professionals and scholars. Chapter 1, "Introduction," provides an introduction of rapidly changing technologies into the workplace that has made it more important for organization leaders to understand how to manage technology, middle-skill, and low-skill employees in the workplace. The knowledge of employees within these levels in the workplace is the least known. There are varying levels of influence in workplaces, and the dynamic between people and

technology has implications for human resource professionals throughout the world as they grapple with change from technological advancement and human improvement.

Chapter 2, “Middle-skill-level Employees and Technological Environments,” describes how a majority of human resource executives report that their inability to attract and retain middle-skills talent frequently affects their firm’s performance. Middle-skills jobs, those that require more than a high school diploma, less than a four-year college degree, and pay above the national living wage, account for nearly half of labor demanded in the United States. As technology transforms the workplace, digital skills are becoming increasingly important and in higher demand. In today’s dynamic workforce, managers are facing managing and developing interdisciplinary and multilevel teams while combating a technical skills divide (lack of qualified workers), making it difficult to recruit and retain a high technology, middle-skill-level workforce. This chapter focuses on addressing unique challenges relevant to recruitment, upskilling, and management best practices as they relate to integration of technology and middle-skill-level workers in a highly successful workplace.

Chapter 3, “Virtual Teams and Technological Environments,” identifies the challenges faced by virtual teams and offers solutions to meet those challenges. Basic underlying concepts behind virtual teams are provided along with the most popular forms of virtual teams. Organizational, crowdsourcing, and peer production/online communities are the most common forms of virtual teams. Understanding these basic concepts will help HRD and HRM professionals to develop virtual teams that are suitable for middle- and low-skilled workers. The chapter also presents the various types of communication technologies used in virtual [teams] along with the pros and cons associated with each type.

Chapter 4, “A Hiring Paradigm Shift through the Use of Technology in the Workplace,” addresses the graying of the workplace which is forcing a paradigm shift in workplace hiring policies. The baby boomers’ generation, with their large number in population and years of work experience, plays a large role in shaping the American workplace. As this large group of workers is aging, managers are faced with the need for greater understanding of not only how to accept but also how to reskill and integrate emerging workplace technologies into this older and experienced workforce. Additionally, HR researchers have suggested that organizations undergo a cultural shift in order to develop ways to compete globally using technology. Understanding the benefits of creating people advantage within organizations is described within this chapter.

Chapter 5, “Artificial Intelligence, Employee Engagement, Fairness and Job Outcomes,” defines AI as the ability of a computer system to sense, reason, and respond to the environment. Computer systems with advanced AI can engage in sensing, reasoning, and responding in the most complex and dynamic environments. AI systems are being adapted rapidly by organizations to help manage their workforce. The reason for the popularity of AI is twofold. One, organizations now have access to huge amounts of data (i.e., big data) about their business operations which can be leveraged to make more efficient and effective management decisions. Two, advances in AI now afford organizations the

ability to capture and process this data in real time. Organizations can now incorporate the latest information into their decision making even in the most complex and dynamic competitive markets. Despite this, management through AI also presents new challenges to employees who are now both directed and held accountable by AI.

Chapter 6, “Designing and Managing Technology Innovation Training and Development for Middle-skill, Low-skill, and Disadvantaged Workers,” explores many factors that may influence training and development of middle-skill, low-skill, and disadvantaged workers. Within the United States and worldwide there are many middle-skilled, low-skilled, and disadvantaged workers whom training and development professionals must consider as organizations seek to expand their workforce and increase productivity using technology. Temporary agencies employ many middle-skilled, low-skilled, and disadvantaged workers; however, there is very little information regarding how effective these agencies are in developing these workers beyond the skill level with which they enter the agency.

Chapter 7, “Managing People and Technology in the Workplace,” explores how people and technology are managed in the workplace. It examines how data and data analytics in AI, human resource information system (HRIS), learning content management systems, learning management systems, and talent management software have become major components of human resource and workforce development. Middle-skill, low-skill, and disadvantaged employees are being asked to use their knowledge, skills, and abilities (KSAs) to evaluate and understand technology systems, technology resources, and equipment in the workplace. HRD and HRM professionals must understand the competencies (Ulrich, Brockbank, Yeung, & Lake, 1995) and resources needed to achieve harmony and balance between people and technology use in the workplace.

Chapter 8, “Emerging Technologies and Trends,” describes some of the many implications for middle-skill and low-skill workers as emerging technologies and trends continue to evolve related to using technology in the workplace. Managers and HRD professionals are tasked with ensuring that employees can meet organizational goals and objectives that are in accord with the emerging needs of a contemporary workforce. As the twenty-first century continues to evolve, managers and HRD professionals must remain current in strategies and practices that are effective in managing people. This chapter provides insight and suggestions to researchers on the current trends in the field that could benefit from further research.

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