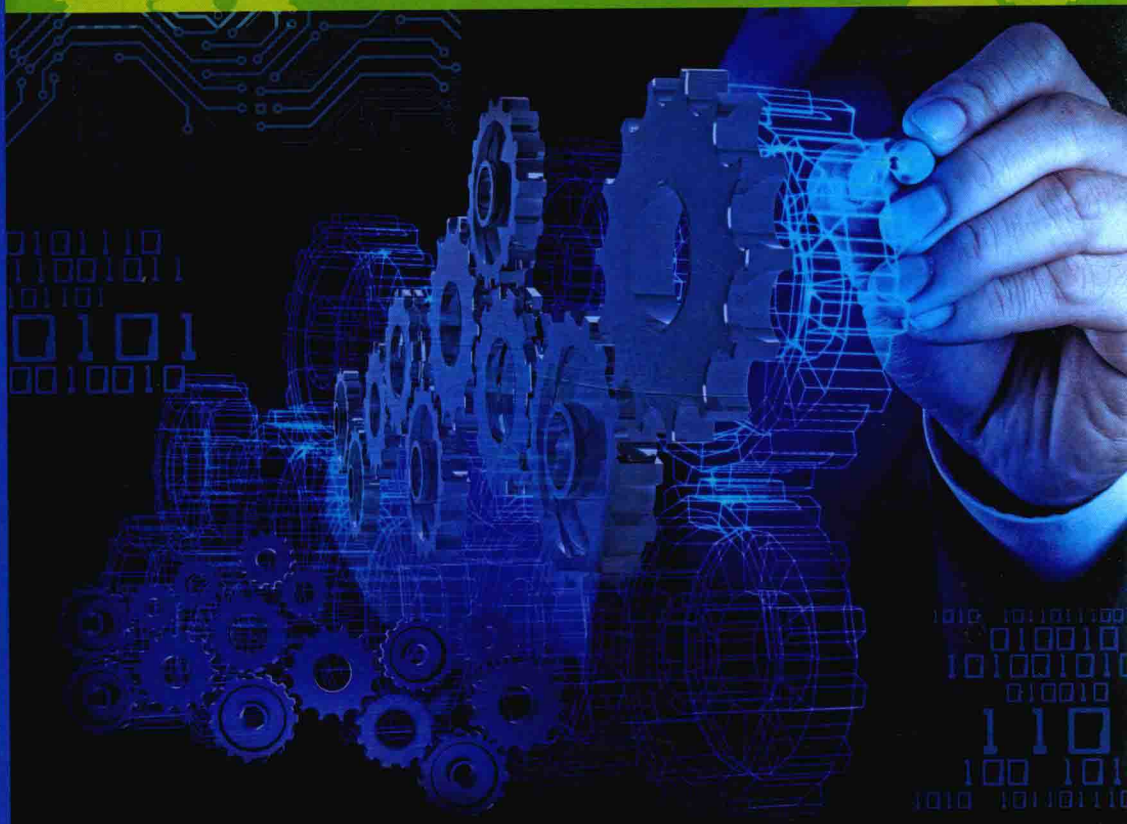
Manufacturing Design and Technology



Technological Challenges and Management

MATCHING HUMAN AND BUSINESS NEEDS

EDITED BY
CAROLINA MACHADO • J. PAULO DAVIM

CRC Press
Taylor & Francis Group

Technological Challenges and Management

MATCHING HUMAN AND BUSINESS NEEDS

EDITED BY
CAROLINA MACHADO • J. PAULO DAVIM

CRC Press
Taylor & Francis Group
Boca Raton London New York

CRC Press is an imprint of the
Taylor & Francis Group, an **informa** business

CRC Press
Taylor & Francis Group
6000 Broken Sound Parkway NW, Suite 300
Boca Raton, FL 33487-2742

Printed on acid-free paper
Version Date: 20151216

International Standard Book Number-13: 978-1-4822-6101-1 (Hardback)

Technological Challenges and Management

MATCHING HUMAN AND BUSINESS NEEDS

Manufacturing Design and Technology Series

Series Editor
J. Paulo Davim

PUBLISHED

Drills: Science and Technology of Advanced Operations
Viktor P. Astakhov

FORTHCOMING

Technological Challenges and Management: Matching Human and Business Needs
Feliciana Machado and Paulo Davim

Preface

Technological Challenges and Management: Matching Human and Business Needs is dedicated to technological challenges and management with special emphasis on the new advances and challenges that today's organizations face in the areas of human resources and business, resulting from continuous and highly complex changes in technological resources.

Nowadays, organizations face many challenges, namely, in the technological field, which causes many changes related to organizational structure and strategy. As a result, organizations need to implement a more proactive and flexible management, matching their human and business needs. Due to this reality, it is important to study and understand varied contributions made by researchers, academics, and practitioners in this field of study worldwide.

With the focus on this reality, this book aims to exchange experiences and perspectives about the state of technological challenges, management research, and future directions for this field of study, taking into account the deep implications that these challenges have in the organization of human resources. It aims to support academics and researchers and those operating in the management field in dealing with different challenges that organizations face today, with special emphasis on the relationship between technological changes, human resources management, and business.

For the purpose of sharing knowledge, through debate and information exchange, about technological challenges and management, and matching two critical items like human and business needs, this book is divided into seven chapters: Chapter 1 covers "Fashion or Adoption? Harmonization of New Technologies with Strategy, Structure, and Culture." Chapter 2 discusses "Technological and Organizational Changes: Challenges for HRM." Chapter 3 contains information on "The Concept of E-HRM, Its Evolution and Effects on Organizational Outcomes." Chapter 4 describes "Organizational Change Success as a Communicational Agency Effect: Structuration, Textualizing, and Networking." Subsequently,

Chapter 5 covers "E-HRM in SME: An Exploratory Study in a Portuguese Municipality." Chapter 6 describes "Collaboration in Processes Supported by Web 2.0: The Emergency of Interactivity." Finally, in Chapter 7 "Enhancing Online Fashion Retail: The Quest for the Perfect Fit" is presented.

We consider this as an excellent opportunity to participate in an exchange of information, ideas, and opinions about technological challenges and management and can say that this book is designed to increase the knowledge and understanding of all those involved in this field, in all kinds of organizations and activity sectors, such as human resource managers, managers in other areas, engineers, entrepreneurs, strategists, practitioners, academics, and researchers.

We are grateful to CRC Press/Taylor & Francis Group for this opportunity and for their professional support. Finally, we thank all chapter contributors for their interest and time allotted to work on this project.

Carolina Machado
Braga, Portugal

J. Paulo Davim
Aveiro, Portugal

Editors

Carolina Machado received her PhD in management sciences (organizational and politics management/human resources management) from the University of Minho, Braga, Portugal, in 1999, and a master's degree in management (strategic human resource management) from the Technical University of Lisbon, Lisbon, Portugal, in 1994. She has been teaching human resources management subjects since 1989 at the University of Minho and became an associate professor in 2004, with experience and research interest in the areas of human resource management, international human resource management, human resource management in small and medium-sized enterprises, training and development, and management change and knowledge management. Dr. Machado is the head of Human Resources Management Work Group at the University of Minho and the chief editor of the *International Journal of Applied Management Sciences and Engineering* (*IJAMSE*).

Institutional web page: http://www.eeg.uminho.pt; http://www.globalhrm.org.

J. Paulo Davim received his PhD in mechanical engineering from the University of Porto, Porto, Portugal, in 1997; the aggregate title from the University of Coimbra, Coimbra, Portugal, in 2005; and a DSc from London Metropolitan University, London, United Kingdom, in 2013. He is professor in the Department of Mechanical Engineering at the University of Aveiro, Aveiro, Portugal. He has more than 29 years of teaching and research experience in manufacturing and materials and mechanical engineering with special emphasis on machining and tribology. Recently, he became interested in management/industrial engineering and higher education for sustainability. Dr. Davim is the editor-in-chief of eight international journals, a guest editor of journals, a book editor, a book series editor, and a scientific advisory for many international journals and conferences. Presently, he is an editorial board member of 25 international journals and acts as a reviewer for more than 80 prestigious

ISI's Web of Science journals. In addition, he has also authored or coauthored more than 6 books, 50 book chapters, and 350 articles in journals and conferences (with more than 200 journal articles indexed in Web of Science: h-index 33+).

Personal web page: http://machining.web.ua.pt/pers-davim.htm.

Contributors

Catarina Rosa e Silva de Albuquerque
Faculty Damas
Recife, Brazil

Mouhannad Al-Sayegh
London College of Fashion
University of the Arts London
London, United Kingdom

Sara Carvalho
Department of Management
School of Economics and Management
University of Minho
Braga, Portugal

Jorge da Silva Correia-Neto
Department of Education
University Federal Rural of Pernambuco
Recife, Brazil

Ivo Manuel Pontes Domingues
Social Sciences Institute
University of Minho
Braga, Portugal

Jairo Simião Dornelas
Economic School
University Federal Rural of Pernambuco
Recife, Brazil

Mine Afacan Findikli
Faculty of Economic and administrative Sciences
Istanbul Gelisim University
Istanbul, Turkey

Susan Hamilton
London College of Fashion
University of the Arts London
London, United Kingdom

Carolina Machado
Department of Management
School of Economics and Management
University of Minho
Braga, Portugal

Maria Amélia Marques
Superior School of Business Sciences
Polytechnic Institute of Setúbal
Setúbal, Portugal

Fanke Peng
Media Arts and Digital Design
University of Canberra
Canberra, Australian Capital Territory, Australia

Yasin Rofcanin
Warwick Business School
University of Warwick
Coventry, United Kingdom
and
Faculty of Economic and Administrative Sciences
Istanbul Gelisim University
Istanbul, Turkey

José Manuel Gameiro Rebelo dos Santos
Superior School of Business Sciences
Polytechnic Institute of Setúbal
Setúbal, Portugal

Yasemin Sen
School of Business
Istanbul University
Istanbul, Turkey

Alessandra Vecchi
London College of Fashion
University of the Arts London
London, United Kingdom

Contents

chapter one

Fashion or adoption? Harmonization of new technologies with strategy, structure, and culture

Yasemin Sen

Contents

Abstract

Advancements in the technological environment of businesses have forced organizations to keep up with rapid changes in order to not fall behind competitors. For this reason, organizations are in a race for the adoption of new technologies. But the following question remains: Are these organizations really ready for this technological advancement or is this new technology appropriate for these organizations? Therefore, this chapter aims to address the technology adoption issue and presents an insight into the alignment of new technology with the strategy, structure, and culture of an organization.

Keywords: Technology adoption, technology integration, culture, strategy, structure

1.1 Introduction

Organizations are not performing in a vacuum. They are surrounded by several environments and faced with different actors internally and externally. These actors can be customers, competitors, regulatory agencies, and suppliers, as well as employees or management. The main objective of any business is supporting its bottom line and maintaining its life in the long run. In order to achieve these aims, organizations need to satisfy customer needs and compete with other organizations by managing their operations. In business history, it is seen that competition has evolved in time. While initially the main concern of businesses was productivity, later on it became competition based on quality. However, today quality is also not sufficient to compete in the market. Providing better-quality products and services faster than other businesses and also considering sustainable development have become important issues for survival, including monitoring environmental changes very carefully and taking necessary actions.

Technological developments are also among the important changes that should be taken into consideration. As a result of the information age, the technological environment is one where rapid changes take place. Here, new solutions are continuously introduced, developed, and adopted by businesses. While some businesses implement new technologies as they are introduced, some adopt them from early adopter businesses (Butler & Sellbom, 2002:23). Many of these new technology adoptions do not bring expected results or end up with failures. The main reason behind these failures is the fact that new technologies are not standard prescriptions for all organizations. They should serve the purposes of organizations and should not be acquired just because they are popular. Each business has its own organizational context, namely, its own culture, structure, and strategy. When adopting a new technology, organizations should consider the issue of integration and make necessary adjustments. In the following sections, this issue will be discussed in detail.

1.2 "Technology" concept

More generally, the term "technology" means things that support organizational processes for maintaining business operations. This can be at the operational or knowledge level. Therefore, technology can be classified differently in this vein. *Operational technology* is defined as "equipping and sequencing of activities in the work flow which means producing and distributing output." But this work flow does not need to occur only in the factory. It can be a logistic activity for transferring a product to the marketplace and can be related with the manufacturing

process of a physical product in the factory. On the other hand, *knowledge technology* is defined as "characteristics of knowledge used in the workflow" (Hickson, Pugh, & Pheysey, 1969:380). It can be the way of working, as well as the mental methods or information of techniques used in the production process (Kocel, 2005:273). Besides this general classification, there are also different classifications of technology in the literature. One of these categorizations can be seen in the study of Woodward. Woodward has investigated technology based on the technical complexity of the manufacturing process and proposed three types of technologies, namely, unit or small-batch production technology, large-batch or mass production technology, and continuous flow or process production technology (Blau, Falbe, McKinley, & Tracy, 1976:280). *Unit or small-batch production technology* refers to manufacturing individual or small-batch products based on the customer specifications stated in the order. Souvenir products that are specially produced for a name can be an example of this technology. *Large-batch or mass production technology* refers to manufacturing in large amounts in response to the continuous consumer demands in the industry. Production of white goods or cars can be examples of this category. Moreover, *continuous flow or process production technology* refers to "manufacturing of products measured and sold by weight, capacity or volume." The production of petroleum, natural gas, or chemicals are examples of this category (Tompkins, 2005:254). As it can be seen from explanations, these technologies are manufacturing technologies. But technology is not only utilized by manufacturing businesses. There are service businesses as well. Therefore, another classification has been made based on the type of organization in that manner. Manufacturing organizations are related with the transformation of inputs into physical outputs, and the technology used in this process is called manufacturing technology. On the other hand, service organizations are the ones that provide nontangible facilities like transportation or consultancy (Madura, 2004:4). Therefore, the way of providing this service can also be regarded as technology. Some organizations are not pure service or manufacturing organizations. In that case, both technologies can be used together. Another classification of technology has been made by Thompson, and this time both manufacturing and service organizations were taken into consideration. This classification has been made based on the interdependence and coordination between units, and technology has been categorized under three types, namely, long-linked, mediating, and intensive technologies (Thompson, 1967:15–17). In *long-linked technology,* organization units are serially interdependent. There is a fixed sequence of steps in the production process. Therefore, the latter step can only be accomplished after the former step. A mass production line can be an example of this type (Aldrich & Herker, 1977:222). In *mediating technology,* different customer groups are linked with each

other. For example, commercial banks link depositors and borrowers to each other. Additionally, *intensive technology* is regarded as a custom technology where all units are in reciprocal interdependence with each other. Since the object (here the patient) and units (polyclinics, laboratory, surgery, etc.) are in relation with each other, hospitals can be an example of this type of technology (Thompson, 1967:17). Although there are such basic technology classifications, there are also different subconcepts of technology based on the functional areas of businesses. For example, a design technology (Ohnuma, Tsudaka, Kawahira, & Nozawa, 1998:6686), a production technology (Darr, Argote, & Epple, 1995:1750), or an HR technology (Thornton & Byham, 2013:3,4) can be regarded as functional technologies. Today, with the emergence of the information age, information technology has also taken an important role as supporting a great variety of business activities. Information technology involves information processing and handling support such as computer hardware, software, and communication and information system tools (Lin, Vassar, & Clark, 2011:25), and some organization-wide systems like ERP use information and communication technologies intensively.

Classified under whatever classification, technology is a stubborn part of any business process and is subject to continuous developments. In order to keep up with these developments, organizations try to get new technologies. But the implementation of new technologies may not always result in expected results. Therefore, adoption of technology needs careful decision making.

1.3 *Technology adoption process*

Technology adoption has been used with different meanings by different researchers in the literature. Some researchers regarded technology adoption as an "organization's receptivity to an innovation and change," while some researchers defined the term as "widespread acceptance, or diffusion, of the innovation throughout an organization or relevant social system" (Neeley, 2006:7). Although the term is mostly defined with the aforementioned explanations, adoption can not only be taken as an acquisition and diffusion of new technology. Since the main issue starts after bringing this new technology into a different organizational setting, it is more appropriate for the term "technology adoption" to be explained with the inclusion of implementation and integration as well.

Process studies that investigate the topic considered technology adoption as a type of decision and explained it with a sequential process. As the new technology adoption process can result in important organizational outcomes, it can be thought as a kind of strategic decision or at least it should be. In one of these process explanations, Mintzberg's decision-making process has been taken and the technology adoption