
The Fourth Industrial Revolution

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ARELLANO DARRYL

Profit and Prejudice Routledge

World-renowned economist Klaus Schwab, Founder and Executive Chairman of the World Economic Forum, explains that we have an opportunity to shape the fourth industrial revolution, which will fundamentally alter how we live and work. Schwab argues that this revolution is different in scale, scope and complexity from any that have come before. Characterized by a range of new technologies that are fusing the physical, digital and biological worlds, the developments are affecting all disciplines, economies, industries and governments, and even challenging ideas about what it means to be human. Artificial intelligence is already all around us, from supercomputers, drones and virtual assistants to 3D printing, DNA sequencing, smart thermostats, wearable sensors and microchips smaller than a grain of sand. But this is just the beginning: nanomaterials 200 times stronger than steel and a million times thinner than a strand of hair and the first transplant of a 3D printed liver are already in development. Imagine “smart factories” in which global systems of manufacturing are coordinated virtually, or implantable mobile phones made of biosynthetic materials. The fourth industrial revolution, says Schwab, is more significant, and its ramifications more profound, than in any prior period of human history. He outlines the key technologies driving this revolution and discusses the major impacts expected on government, business, civil society and individuals. Schwab also offers bold ideas on how to harness these changes and shape a better future—one in which technology empowers people rather than replaces them; progress serves society rather than disrupts it; and in which innovators respect moral and ethical boundaries rather than cross them. We all have the opportunity to contribute to developing new frameworks that advance progress.

Work in the Digital Age Kogan Page Publishers

This book helps decision makers grasp the importance, and applicability to business, of the new technologies and extended connectivity of systems that underlie what is becoming known as the Fourth Industrial Revolution: technologies and systems such as artificial intelligence, machine learning, 3D printing, the internet of things, virtual and augmented reality, big data and mobile networks. The WEF, OECD and UN all agree that humanity is on the cusp of the Fourth Industrial Revolution. As intelligent systems become integrated into every aspect of our lives this revolution will induce cultural and societal change of a magnitude hitherto unforeseen. These technologies challenge the values, customer experience and business propositions that have been the mainstay of almost every business and organization in existence. By redefining and encapsulating new value structures with emerging intelligent technologies, new innovative models are being created, and brought to market. Understanding the potential and impact of these changes will be a fundamental leadership requirement over the coming years. Skilton and Hovsepian provide decision makers with practical, independent and authoritative guidance to help them prepare for the changes we are all

likely to witness due to the rapid convergence of technological advances. In short, bite-sized, nuggets, with frameworks supported by a deep set of practical and up-to-the-minute case studies, they shine light on the new business models and enterprise architectures emerging as businesses seek to build strategies to thrive within this brave new world.

Defence Innovation and the 4th Industrial Revolution Crown Currency

An up-to-date guide for using massive amounts of data and novel technologies to design, build, and maintain better systems engineering Systems Engineering in the Fourth Industrial Revolution: Big Data, Novel Technologies, and Modern Systems Engineering offers a guide to the recent changes in systems engineering prompted by the current challenging and innovative industrial environment called the Fourth Industrial Revolution—INDUSTRY 4.0. This book contains advanced models, innovative practices, and state-of-the-art research findings on systems engineering. The contributors, an international panel of experts on the topic, explore the key elements in systems engineering that have shifted towards data collection and analytics, available and used in the design and development of systems and also in the later life-cycle stages of use and retirement. The contributors address the issues in a system in which the system involves data in its operation, contrasting with earlier approaches in which data, models, and algorithms were less involved in the function of the system. The book covers a wide range of topics including five systems engineering domains: systems engineering and systems thinking; systems software and process engineering; the digital factory; reliability and maintainability modeling and analytics; and organizational aspects of systems engineering. This important resource: Presents new and advanced approaches, methodologies, and tools for designing, testing, deploying, and maintaining advanced complex systems Explores effective evidence-based risk management practices Describes an integrated approach to safety, reliability, and cyber security based on system theory Discusses entrepreneurship as a multidisciplinary system Emphasizes technical merits of systems engineering concepts by providing technical models Written for systems engineers, Systems Engineering in the Fourth Industrial Revolution offers an up-to-date resource that contains the best practices and most recent research on the topic of systems engineering.

The Fourth Industrial Revolution: Implementation of Artificial Intelligence for Growing Business Success World Scientific

The term “4th Industrial Revolution” has become commonplace, popping up in various media, but the public's understanding of the underlying technologies is often lagging the fast-pace of its related technological developments. This book is designed to bridge the gap which exists between the 4th industry-related technology boom and the general public's perception of it. The book introduces the content and applications of the related major technologies, such as the Internet of Things, blockchain, artificial intelligence, cloud computing, and big data – all considered essential for the development and operation of contemporary business models. It is written to minimize technical / engineering content in order to enhance the reader's ability to understand these topics. FEATURES: Introduces the content and applications of the related major technologies, such as the Internet of

Things, blockchain, artificial intelligence, robotics, machine learning, cloud computing, big data, virtual reality, and more Provides interesting descriptions and applications of technical topics to enhance understanding Covers topics and trends that must be considered in modern business models

The Fourth Industrial Revolution and Its Impact on Ethics Kluwer Law International B.V.

Technological developments in electronic finance have changed the nature and delivery of financial services in recent years, especially through the use of online banking, online trading and brokerage services. This report reviews the developments in e-finance and analyses the implications for consumers, financial service providers and governments. Issues discussed include: the impact on competition within the financial services industry; how financial sector policies in emerging markets are affected; public policy and regulatory requirements.

Promoting Inclusive Growth in the Fourth Industrial Revolution Springer Nature

Provides executive leadership teams with information, tools, and advice they need to lead their organizations into the "future of work," characterized by transformative, smart, and connected technologies already under way, including artificial intelligence, the Internet of things, and automation. The technological and economic forces of the fourth industrial revolution (4IR) are shifting organizations in radical new directions. Automation is taking place not only in factories but in retail environments, and it is not just powerful or precise: it is intelligent, and it learns. Leaders must learn to rely on new sources of data, analytics, and intelligence in their efforts to anticipate emerging trends, forecast unforeseen consequences, make sense of systems and complexity, communicate constantly, build strong networks based on trust, and ultimately, win a following. Future-Ready Leadership is an invaluable resource for leaders and leadership educators seeking to transform 4IR trends into a source of collaborative (as opposed to competitive) advantage. A blueprint for reshaping the future of work, the book meets readers' "awareness need" by exploring cutting-edge research on technology's impact on the workplace. Each chapter uses data to set up a specific future of work leadership challenge, offering readers practical solutions and advice, actionable recommendations, and tools for reflection and action that can be put into practice right away.

The Disruptive Fourth Industrial Revolution Springer Nature

This book argues that the fourth industrial revolution, the process of accelerated automation of traditional manufacturing and industrial practices via digital technology, will serve to further marginalise Africa within the international community. In this book, the author argues that the looting of Africa that started with human capital and then natural resources, now continues unabated via data and digital resources looting. Developing on the notion of "Coloniality of Data", the fourth industrial revolution is postulated as the final phase which will conclude Africa's peregrination towards recolonisation. Global cartels, networks of coloniality, and tech multinational corporations have turned big data into capital, which is largely unregulated or poorly regulated in Africa as the continent lacks the strong institutions necessary to regulate the mining of data. Written from a decolonial perspective, this book employs three analytical pillars of coloniality of power, knowledge and being. Highlighting the crippling continuation of asymmetrical global power relations, this book will be an important read for researchers of African studies, politics and international

political economy. The Open Access version of this book, available at <http://www.taylorfrancis.com/books/e/9781003157731>, has been made available under a Creative Commons Attribution-Non Commercial-No Derivatives 4.0 license

The Fourth Industrial Revolution Springer

UPDATED EDITION 'A holistic take on AI from an African perspective, Closing the Gap joins the dots on deploying AI efficiently into everyday business and life.' – RENUKA METHIL, editor of Forbes Africa 'This book simplifies complex concepts through relatable stories and awakens fellow Africans to the opportunities ushered in by the 4IR. Closing the Gap must occupy our waking times.' – MTETO NYATI, chief executive of Altron Closing the Gap is an accessible overview of the fourth industrial revolution (4IR) and the impact it is set to have on various sectors in South Africa and Africa. It explores the previous industrial revolutions that have led up to this point and outlines what South Africa's position has been through each one. With a focus on artificial intelligence as a core concept in understanding the 4IR, this book uses familiar concepts to explain artificial intelligence, how it works and how it can be used in banking, mining, medicine and many other fields. Written from an African perspective, Closing the Gap addresses the challenges and fears around the 4IR by pointing to the opportunities presented by new technologies and outlining some of the challenges and successes to date.

Intellectual Property Law and the Fourth Industrial Revolution Routledge

World Economic Forum Founder and Executive Chairman Klaus Schwab offers a practical companion and field guide to his previous book, *The Fourth Industrial Revolution*. Today, technology is changing everything--how we relate to one another, the way we work, how our economies and governments function, and even what it means to be human. One need not look hard to see how the incredible advances in artificial intelligence, cryptocurrencies, biotechnologies, and the internet of things are transforming society in unprecedented ways. But the Fourth Industrial Revolution is just beginning, says Schwab. And at a time of such tremendous uncertainty and such rapid change, he argues it's our actions as individuals and leaders that will determine the trajectory our future will take. We all have a responsibility - as citizens, businesses, and institutions - to work with the current of progress, not against it, to build a future that is ethical, inclusive, sustainable and prosperous. Drawing on contributions from 200 top experts in fields ranging from machine learning to geoen지니어ing to nanotechnology, to data ethics, Schwab equips readers with the practical tools to leverage the technologies of the future to leave the world better, safer, and more resilient than we found it.

Imagination, Creativity, and Responsible Management in the Fourth Industrial Revolution

John Wiley & Sons

This book explores the core themes of the Fourth Industrial Revolution (4IR) highlighting the digital transformation that has been occurring in society and business. Representing an interface between technologies in the physical, digital and biological disciplines the book explores emerging technologies such as artificial intelligence, robotics, the Internet of Things, autonomous vehicles, 3-D printing, nanotechnology, biotechnology, materials science, energy storage, and quantum computing. The findings of collaborative research studies on the potential impact of the 4IR on the labour markets, occupations, future workforce competencies and skills associated with eight industry sectors in Australia are reported. The sectors are: agriculture and mining; manufacturing

and logistics; health, medical and nursing; education; retail; financial services; government services and tourism.

Management and Leadership in the 4th Industrial Revolution Routledge

Reimagining our global economy so it becomes more sustainable and prosperous for all Our global economic system is broken. But we can replace the current picture of global upheaval, unsustainability, and uncertainty with one of an economy that works for all people, and the planet. First, we must eliminate rising income inequality within societies where productivity and wage growth has slowed. Second, we must reduce the dampening effect of monopoly market power wielded by large corporations on innovation and productivity gains. And finally, the short-sighted exploitation of natural resources that is corroding the environment and affecting the lives of many for the worse must end. The debate over the causes of the broken economy—laissez-faire government, poorly managed globalization, the rise of technology in favor of the few, or yet another reason—is wide open. Stakeholder Capitalism: A Global Economy that Works for Progress, People and Planet argues convincingly that if we don't start with recognizing the true shape of our problems, our current system will continue to fail us. To help us see our challenges more clearly, Schwab—the Founder and Executive Chairman of the World Economic Forum—looks for the real causes of our system's shortcomings, and for solutions in best practices from around the world in places as diverse as China, Denmark, Ethiopia, Germany, Indonesia, New Zealand, and Singapore. And in doing so, Schwab finds emerging examples of new ways of doing things that provide grounds for hope, including: Individual agency: how countries and policies can make a difference against large external forces A clearly defined social contract: agreement on shared values and goals allows government, business, and individuals to produce the most optimal outcomes Planning for future generations: short-sighted presentism harms our shared future, and that of those yet to be born Better measures of economic success: move beyond a myopic focus on GDP to more complete, human-scaled measures of societal flourishing By accurately describing our real situation, Stakeholder Capitalism is able to pinpoint achievable ways to deal with our problems. Chapter by chapter, Professor Schwab shows us that there are ways for everyone at all levels of society to reshape the broken pieces of the global economy and—country by country, company by company, and citizen by citizen—glue them back together in a way that benefits us all.

Data Science and Digital Transformation in the Fourth Industrial Revolution World Bank Publications

The Fourth Industrial Revolution signals a sea change in the way we lead our organisations. Moving away from relational leadership and horizontal, organisationally-led development, it is imperative that business leaders are able to adapt to more networked organisations and shift away from dated assumptions of positional power. Constructing Leadership 4.0 breaks new ground by explaining the urgent challenges facing managers and business leaders. It will teach you how to: Approach leadership development as a system rather than a programme Develop an organisational ecosystem to support leadership 4.0 Build collaborative networks Cultivate a responsive mindset through sensemaking Use non-classroom based learning methodologies for educating leaders Rooted in leadership development methodology and underpinned by cutting-edge research, this book calls for businesses to cultivate responsive leaders through a theory of connectivism and swarm intelligence

that reflects the coming cybernetic revolution.

Shaping the Future of the Fourth Industrial Revolution Palgrave Macmillan

As we move through the Fourth Industrial Revolution, people are becoming more concerned about the potential benefits and risks of digital technology and its impact. People are worried about the extent, the implementation, and the effect digital transformation will have on their privacy, jobs, and welfare. Business managers will be expected to navigate organizations and employees through this unknown territory of digital transformation and disruption. Imagination, Creativity, and Responsible Management in the Fourth Industrial Revolution is an essential reference source that uses a multidisciplinary approach to examine the concepts of imagination and creativity, as well as responsible management practices, and their application to the development and use of innovative technologies. This book intends to help readers understand the importance of continuously developing their cognitive skills and to remain responsible and accountable in the new digital era—the Fourth Industrial Revolution. Featuring research on topics that include modes of interaction in the digitalized era, cognitive skills needed and creative tools to shape the future of work, and knowledge sharing, this book is ideally designed for managers, leaders, decision makers, directors, executives, engineers, entrepreneurs, IT specialists, academics, researchers, students, consultants, and industry professionals.

Artificial Intelligence and the Fourth Industrial Revolution Springer Nature

This open access collection examines how higher education responds to the demands of the automation economy and the fourth industrial revolution. Considering significant trends in how people are learning, coupled with the ways in which different higher education institutions and education stakeholders are implementing adaptations, it looks at new programs and technological advances that are changing how and why we teach and learn. The book addresses trends in liberal arts integration of STEM innovations, the changing role of libraries in the digital age, global trends in youth mobility, and the development of lifelong learning programs. This is coupled with case study assessments of the various ways China, Singapore, South Africa and Costa Rica are preparing their populations for significant shifts in labour market demands – shifts that are already underway. Offering examples of new frameworks in which collaboration between government, industry, and higher education institutions can prevent lagging behind in this fast changing environment, this book is a key read for anyone wanting to understand how the world should respond to the radical technological shifts underway on the frontline of higher education.

The Construction Industry in the Fourth Industrial Revolution IGI Global

This book examines the epistemological, political, and socio-economic consequences of the Fourth Industrial Revolution (4IR) for Africa. Presenting various case studies on epistemic freedom, theology, race and robotics, tertiary education, political and economic transformation, human capital, and governance, it debates whether the 4IR will be part of the solution to the African problem, namely that of coloniality in its various forms. Solving the African problem using the 4IR requires ethical, just and epistemologically independent leadership. However, the lack of ICT infrastructure militates against Africa's endeavours to make the 4IR a problem-solving moment. To its credit, Africa possesses some of the major capital needed (human, mineral, and social), and it constitutes a huge market comprising a young population eager to participate in the 4IR as problem-

solvers and not as a problem to be solved—as equal citizens and not as the marginalized other.

The 4th Industrial Revolution Currency

This book examines the implications of disruptive technologies of the Fourth Industrial Revolution (4IR) on military innovation and the use of force. It provides an in-depth understanding of how both large and small militaries are seeking to leverage 4IR emerging technologies and the effects such technologies may have on future conflicts. The 4th Industrial Revolution (4IR), the confluence of disruptive changes brought by emerging technologies such as artificial intelligence, robotics, nanotechnologies, and autonomous systems, has a profound impact on the direction and character of military innovation and use of force. The core themes in this edited volume reflect on the position of emerging technologies in the context of previous Revolutions in Military Affairs; compare how large resource-rich states (US, China, Russia) and small resource-limited states (Israel, Sweden, Norway) are adopting and integrating novel technologies and explore the difference between various innovation and adaptation models. The book also examines the operational implications of emerging technologies in potential flashpoints such as the South China Sea and the Baltic Sea. Written by a group of international scholars, this book uncovers the varying 4IR defence innovation trajectories, enablers, and constraints in pursuing military-technological advantages that will shape the character of future conflicts. The chapters in this book were originally published as a special issue of the *Journal of Strategic Studies*.

Climate Change, The Fourth Industrial Revolution and Public Pedagogies Springer

Why and how will the fourth industrial revolution impact great power politics? Here, Glenn Diesen utilizes a neoclassical approach to great power politics to assess how far the development of AI, national and localized technological ecosystems and cyber-warfare will affect great power politics in the next century. The reliance of modern economies on technological advances, Diesen argues, also compels states to intervene radically in economics and the lives of citizens, as automation radically alters the economies of tomorrow. A groundbreaking attempt to contextualize the fourth industrial revolution, and analyse its effects on politics and international relations.

The Fourth Industrial Revolution Springer Nature

This book presents the overall technology spectrum in artificial intelligence (AI) and the Fourth Industrial Revolution, which is set to revolutionize the world. It discusses their various aspects and related case studies from industry, academics, administration, law, finance, and accounting as well as educational technology. The contributors, who are experts in their respective fields and from industry and academia, focus on a gesture-recognition prototype for specially abled people; jurisprudential approach to AI and legal reasoning; automated chatbot for autism spectrum disorder using AI assistance; Big Data analytics and Internet of Things (IoT); role of AI in advancement of drug discovery; development, opportunities, and challenges of the Fourth Industrial Revolution; legal,

ethical, and policy implications of AI; Internet of Health Things for smart healthcare and digital wellbeing; machine learning and computer vision; computer vision-based system for automation and industrial applications; AI-IoT in home-based healthcare; and AI in super-precision human brain and spine surgery. Buttressed with comprehensive theoretical, methodological, well-established, and validated empirical examples, the book covers the interests of a broad audience from basic science to engineering and technology experts and learners. It will be greatly helpful for CEOs, entrepreneurs, academic leaders, researchers, and students of engineering, biomedicine, and master's programs in science as well as the vast workforce and students with technical or non-technical backgrounds. It also serves common public interest by presenting new methods to improve the quality of life in general, with a better integration into society.

Electronic Finance IGI Global

This edited book presents scientific results of the International Semi-Virtual Workshop on Data Science and Digital Transformation in the Fourth Industrial Revolution (DSDT 2020) which was held on October 15, 2020, at Soongsil University, Seoul, Korea. The aim of this workshop was to bring together researchers and scientists, businessmen and entrepreneurs, teachers, engineers, computer users, and students to discuss the numerous fields of computer science and to share their experiences and exchange new ideas and information in a meaningful way. Research results about all aspects (theory, applications and tools) of computer and information science, and to discuss the practical challenges encountered along the way and the solutions adopted to solve them. The workshop organizers selected the best papers from those papers accepted for presentation at the workshop. The papers were chosen based on review scores submitted by members of the program committee and underwent further rigorous rounds of review. From this second round of review, 17 of the conference's most promising papers are then published in this Springer (SCI) book and not the conference proceedings. We impatiently await the important contributions that we know these authors will bring to the field of computer and information science.

Great Power Politics in the Fourth Industrial Revolution Springer Nature

This book focuses on the implementation of AI for growing business, and the book includes research articles and expository papers on the applications of AI on decision-making, health care, smart universities, public sector and digital government, FinTech, and RegTech. Artificial Intelligence (AI) is a vital and a fundamental driver for the Fourth Industrial Revolution (FIR). Its influence is observed at homes, in the businesses and in the public spaces. The embodied best of AI reflects robots which drive our cars, stock our warehouses, monitor our behaviors and warn us of our health, and care for our young children. Some researchers also discussed the role of AI in the current COVID-19 pandemic, whether in the health sector, education, and others. On all of these, the researchers discussed the impact of AI on decision-making in those vital sectors of the economy.

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