ADVANCES IN THE TECHNOLOGY OF MANAGING PEOPLE

THE CHANGING CONTEXT OF MANAGING PEOPLE

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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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ADVANCES IN THE TECHNOLOGY OF MANAGING PEOPLE: CONTEMPORARY ISSUES IN BUSINESS

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Emerald Publishing Limited
Howard House, Wagon Lane, Bingley BD16 1WA, UK

First edition 2019

British Library Cataloguing in Publication Data
A catalogue record for this book is available from the British Library

ISBN: 978-1-78973-074-6 (Print)
ISBN: 978-1-78973-073-9 (Online)
ISBN: 978-1-78973-075-3 (Epub)

ISOQAR certified Management System, awarded to Emerald for adherence to Environmental standard ISO 14001:2004.

Certificate Number 1985
ISO 14001

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Foreword

The world is changing is a phase that is overused and underappreciated. As an IT Sales Executive with over 25 years' experience, it gives me great honor to share my insights and enthusiasm for *Advances in the Technology of Managing People: Contemporary Issues in Business*. I have firsthand experience on how technology positively impacts an organization's ability to compete in an ever-changing digital world. Today's IT professional must be vigilant to current marketplace trends, embrace the virtual workplace while developing flexible, tactical, and strategic plans that address the organization's overall short- and long-term business goals. All of these protect secure company assets, intellectual property, personal data, customer and patient information that are stored virtually everywhere. Data are warehoused and traverse diverse types of storage and platforms, such as in public and private clouds, virtual servers, tablets, smartphones, and wearables.

In my experience in providing IT and IT Security solutions to thousands of clients, the role of IT has evolved to be a strategic component and critical success factor in business planning for today and for the future. Providing secure, emerging, and advanced solutions to the world's largest financial institutions, media companies, prominent educational institutions, global and national healthcare organizations, and manufacturing companies has provided keen insight to the challenges companies face in a global, digital world.

We live in a connected world where the lines between personal and business tools are blurred. Employees, students, patients, executives, clients, and vendor partners choose organizations based on a seamless user experience, maintaining and demonstrating a secure environment, while providing exemplary service. In the past, these roles and responsibilities would be siloed. In a fully connected and often virtual workplace, we must consider all aspects of the user/employee experience. The following chapters will address the many current, relevant topics that all organizations face today, while providing a path to the future. How we collaborate on a cross-functional level will determine our success in employee and client retention, position us for the future, and keep IT relevant to the business. Companies continue to struggle with attracting and maintaining talent while implementing online tools and education to preserve intellectual capital.

Whether you are responsible in full or in part in developing, maintaining, or executing a strategy for your organization, the content in this book will provide you with basic and advance guidance, thought-provoking strategies, practical applications and tools via case studies that are adaptable to any environment. Ensuring key stakeholders are educated and involved will assist in bridging the

gap between technical and non-technical decisions that will positively impact the success of an organization. Gaining knowledge of and understanding how to apply emerging technologies such as the Internet of Things, The Cloud, Machine Learning, and the Artificial Intelligence will help you create and maintain an agile workplace. Professionals with a current knowledge of emerging, accelerating, and disruptive technologies and how to apply them in a meaningful, common-sense approach are a valuable part in staying relevant. The following chapters will provide a keen insight into this modern-day challenge.

I sincerely hope that you enjoy the following pages and apply these tools and techniques to enhance your workplace, as I have.

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Chapter 1

Technology and Globalization: The Evolution of Human Interactions, Values, and Management Practices

Irina A. Weisblat

Introduction

Abundant are writings on globalization. Some claim that the world is flat (Friedman, 2007) – an exaggeration meant to amplify the impact of the new, equalizing, flattening forces that empower people around the world to "connect, compete, and collaborate" (p. x). Friedman (2007) presents a novel view on globalization that goes beyond the emergence of international institutions institutions, such as General Agreement on Tariffs and Trade (GATT), International Monetary Fund (IMF), World Trade Organization (WTO), private organizations, and regional agreements. Others define globalization simply as an economic phenomenon, a "trend away from distinct national economic units and toward one huge global market" (Hill & Hult, 2018, p. 6). They present globalization as a fascinating *belle époque* and a *renaissance* that began in the 1950s, after World War II, and climaxed with the economic convergence among nations by the start of a new millennium (Lindert &Williamson, 2003). Their view is only a minor detour from the World Bank's (2002) two-cycle approach to globalization that divides economic globalization into two periods – from the early nineteenth century to 1913 and from 1950 to the present. All these texts have two flaws in common – they are missing a historical perspective and the core reason that caused the radical change called globalization.

Firstly, the Western historians traditionally believe that the early stages of globalization "began only some five hundred years ago, in 1492" (Smil, 2010, p. 5), when the great European voyages were piloted and helped to secure long-lasting influx of capital from the newly discovered foreign lands. Further, Smil (2010) underscores arguments by Frank and Gills (1993), who showed that globalization was as old as the recorded history itself – at least, 5,000 years old. The archeological and historical evidence presented in Cunliffe's (2008) study of

Advances in the Technology of Managing People: Contemporary Issues in Business
The Changing Context of Managing People (CCMP), 1–12

doi:10.1108/978-1-78973-073-920191001

European pre-history supports these views. It would appear that globalization is as old as history itself and it is impossible to determine a date when it began.

Secondly, regardless of the various methods of periodization and "the measurement of flows of people, goods and money over time" (McKeown, 2007, p. 220), a fresh approach to understanding the phenomenon of globalization seems to be missing. The globalization process has been continually evolving from one transformative age to a new one. While outlining the specific periods may be of value, the real focus must be on technologies that made globalization possible.

Technology as a Main Driver of Globalization

What exactly prompted this global process of social and cultural conversions, economic exchanges, and interdependencies? Throughout the history, above all other motives and drivers of globalization, the impact of technology has been largely ignored. There were massive investments in technology made throughout history.

Technology played a significant role in the shift toward integrated and interdependent world economy. One such momentous impact on human progress was the sail. From Columbus's journey in 1492 that opened trade between the Old World and the New World until the early 1800s, "wind and sails continued to propel many merchant ships" (Smil, 2010, p. 12). They used the same basic principle as the ancient Egyptian, Greek, and Roman sailors did, with one significant innovation – a square-rigged ship that became the most effective on a long-distance journey. The square rig sails transformed the kinetic energy of wind into forward motion of a boat. As such, they went into history as the prime movers of globalization.

The next radical step in technology was the invention of a steam engine in the late 1700s. By the end of nineteenth century, the world had the steam engine that was 30 times more powerful than their early prototypes, which brought new, unprecedented opportunities to a commercial stage of globalization. Steamships connected the five continents with regularly scheduled traffic, including freight and passenger ships. This stage was revolutionary in the globalization process, because intercontinental migration and leisure travel started to develop on a relatively large scale. Transporting people had a superior impact than moving goods. Steamships carried 60 million of the first wave of immigrants to foreign lands, including North America, between 1815 and 1930 (Baines, 1991, as quoted in Smil, 2010).

In the period between the late 1890s and 1930s, internal-combustion engines and gas turbines became the technological forces behind the third wave of globalization. After 1945, separate national economies recovering after World War II started to gain strength and integrate into a global economy, as we know it today. Not only have developments in technology nudged human progress, but they also initiated the commercialization of these inventions. Further, advances in transportation technologies (containerization and utilization of commercial jet aircrafts and super freighters) as well as the invention of microprocessors, computers, and the Internet in the late twentieth century are perfect examples of the rapid commercialization of technology. In turn, this trend intensified the rise of

globalization, with all its benefits, costs, and other overheads, such as environmental consequences.

Still, all technological advances combined – sails, engines, smart machines, and the artificial intelligence (AI) – are hardly the primary causes of globalization. Instead, they are the tools people have created and used in their propensities for extra profits, higher standards of living, and economic power. Indeed, international trade agreements and efforts of national governments to lower trade barriers laid out theoretical foundations for the global economy. But ground-breaking changes in technology made globalization possible and turned it into a tangible reality that we live in today.

Technology as a Competitive Weapon

Innovation and technology are reshaping all industries and spheres of life. New technology is revolutionizing the way we live and work. These changes create benefits for both individuals and businesses. From car displays and robotic pets, as advertised on the streaming TV, to "smart" cities and driverless cars – these are just a few examples of how people take advantage of technological progress. Humans seem to have totally surrendered to high-tech dependence.

The innovators have been incorporating real-time data, the AI, robotics, and block-chain technology in their organizational routines and processes. Technology has been advancing so rapidly and affecting our lives so dramatically that the modern society seems to reject the past theories about competitive advantage. The classic economists explain the wealth of nations from the viewpoint that land, labor, and capital are the three factors of production that drive competition.

Later, the classic group of production factors absorbed new elements, which shattered the consensus of old theories. First, it was management, and then – entrepreneurship that referred to a distinctive talent of risk-takers to organize those resources of land, labor, and capital. Their goal was to pursue new opportunities, develop new ways of doing business, and produce new goods and services that other people will be willing to buy. The last, fourth added factor does not appear to be entirely true any longer. In the new millennium, technological know-how became a new factor of production because of its significant contributions to organizations. Technology is a primary factor, alongside the land, labor, capital, management, and energy that allow companies and national economies compete more effectively in the age of globalization.

The Nobel Prize-winning *New Trade* theory by Krugman (1980) and the Porter's (1998) *theory of national competitive advantage* significantly extend the teachings of Adam Smith and David Ricardo in that they reject the notion of competitiveness and prosperity as *a zero-sum game*. They stress the idea that a national competitive advantage stems from the superior performance of firms and workers in the countries where the environment is supportive of such productivity. According to Porter (1998), "In the modern global economy, prosperity is a nation's choice" (p. vii). He focuses his new theory of competitiveness on the causes of productivity with which companies compete. Technology has become a weapon of such strategic

importance that the United States supports it with grit and vigor – to ensure the nation's economic dominance in the post-World War II world. This support allowed America to become the preeminent world competitor in aerospace, telecommunications, personal computers, software, and other technologies.

Technology Commercialization

Using technology more effectively is an integral part of business strategies for many successful organizations. The most advanced companies show commitment to exploiting technology not only in business applications and future plans of their own, but also in their support and sponsorship of the most innovative and futuristic projects attempted by other entrepreneurs. For example, Cargolux, a leading European airline company that operates all-cargo flights in 50 countries and a global network of trucks, is profoundly invested in the Solar Arctic project and *the World Tour* project by providing transportation for it. For the company, support of this solar-powered transportation project is "an effort to explore new and innovative paths in the transportation industry" (Cargolux, 2018, para 3), as the head of corporate communications explains. This pioneering project is in line with the company's *lean and green* philosophy and its efforts to promote sustainable business. The goal of the Solar Arctic project is to bring awareness of environmental and climate issues. To publicize their efforts in the summer of 2018, Anne Quéméré embarked on a solo journey of 3,500 km in a boat propelled by the solar energy, across the mythical Northwest Passage that links the Atlantic to the Pacific.

The World Tour is another ambitious project in which Cargolux is participating. The *Across America* tour involved two missions in 2013 and 2015 from California to the East Coast of the United States. Next, Cargolux will transport the solar airplane intended to fly from Switzerland to Abu Dhabi. The solar aircraft and the solar-powered boat used for the Arctic Solar project were both conceived and designed by Swiss visionary Bertrand Picard.

More innovative projects – from reusable spaceships and 3D-printed rockets to asteroid mining, satellite internet transceivers, and spacecraft for cargo and humans – are examples of current attempts to commercialize space by companies such as Virgin Galactic, Blue Origin, Kymeta, Planetary Resources, and Sierra Nevada Corporation. The world's most prominent companies and wealthiest people are taking enormous risks investing in the ground-breaking projects of the future – just like they once did with their earlier ventures that have become the staples of today's ingenuity and innovation (Forbes, 2018). As technology is getting ahead of society, many companies are desperate to figure out how to remain relevant in this highly competitive world, in which the pressures of globalization push the limits of creativity beyond national borders.

Globalization and Collaborative Intelligence

As globalization absorbs isolated nations into one interdependent world economy, more organizations are becoming global. They offer more products and services

to meet the increasing demands of customers worldwide and, accordingly, require that their employees communicate and collaborate in more sophisticated ways, both with their internal colleagues and external customers. Technology transformed the workplace itself in such a way that the smart machines now have become the human workers' team members and collaborators.

Globalization does not just mean that we are competing with workers around the world. Modern technology inspires collaborative intelligence, in which humans and the AI are joining forces. If computers and the Internet at the end of the twentieth century radically changed the way people trade and communicate, the AI in the twenty-first century is transforming the business itself. The initial fears that the AI will replace the human workers are gradually dismissed with the realization that the AI actually "augments human workers instead of replacing them" (Wilson & Daugherty, 2018, p. 116). There is no need for workers to perform low-level, labor-intensive, and repetitive tasks. Instead, the AI can assist human workers and thus enhance their cognitive skills and creativity. For instance, at their plant in Stuttgart, Germany, Mercedes-Benz replaced some of the assembly robots with the AI-enabled *cobot* arms guided by human workers. Repeatedly picking up and placing heavy auto parts, this *cobot* acts as an extension of the worker's body. By introducing greater flexibility in their business processes, the German company was able to achieve the top level of customization of cars that customers expect. As a result, the Mercedes-Benz employees can now put their skills and core competencies into creating more innovation and producing more profits.

Since the American Industrial Revolution of the late eighteenth and into the early nineteenth century, the principal objective of technology utilization in manufacturing and various industries was to increase productivity and maximize business results. Today, companies reinvent the very nature of a business and redesign their organizational structures and decision-making processes, such as the AI and robotic automation change who does the work and how they do it. They redefine the concept of teamwork itself – the holy grail of a modern organization – to realize even better performance from a radically new type of collaboration, in which humans and smart machines work together (Wilson & Daugherty, 2018). Still, the AI is only as good as the engineers' programming. People will be always held accountable for the responsible use of smart machines, their training, and the expected outputs.

The notorious competition between a man and a smart machine is now turning into *collaborative intelligence*, which allows human workers and the AI complement each other's strengths. After all, what comes naturally to people (e.g., making a joke) can be incomprehensible for robots, and what we expect of machines (e.g., analyzing gigabytes of data) remains virtually impossible for humans (Wilson & Daugherty, 2018). To achieve a proper alliance with the AI – beyond the misguided idea of replacing a working man with a smart machine – companies must reengineer their business processes to embrace the human-machine interface and collaborative intelligence that will transform their workforce and the bottom line.

Technology, Management Practices, and Business Models

After the Industrial Revolution, the business world did not change much for about a century. Then, the first computers in the 1940s have spurred the information revolution. Still, the Internet and advances in communication technologies did not radically change management functions or business processes that companies practiced for decades. It was the software revolution that entirely transformed businesses, increased productivity, and maximized profits.

In fact, on the brink of the twenty-first century, technology has been developing at such an exponential rate that most companies lag behind in implementing it. The software-enabled technology and mobile solutions have fundamentally changed business. Some of the most influential changes in business practices provide solutions that make mobile web browsing easier. Accordingly, mobile devices considerably increase opportunities to shop, find, and utilize local and distant businesses, and share their retail experiences – especially with the rise of Millennials, a significant influx to the traditional consumer base. Mobile solutions further advanced e-commerce and supporting functions that enable sales, marketing, and customer relations via digital devices. Mobile technology has blended seamlessly with communication software to allow virtually unlimited access to real-time information and more data (Modus, 2018).

Cloud computing further enhanced the Internet connectivity. Small businesses have particularly benefited from this newly found ability to move some of their operations to third-party servers. Owing to cloud computing, small businesses gained access to resources that otherwise would be cost-prohibitive. Access to this new technology allowed them to grow and compete even with the larger corporations.

In the new Millennium, software solutions for business have become affordable and user-friendly. Some technology commentators observe that these software advances increased the number of entrepreneurs who could easily exploit technology to grow their businesses. Also, sophisticated software solutions have enabled companies to reduce the cost of doing business, as the need to hire dedicated employees or commit to long-term service contracts decreased (Modus, 2018).

In the age of social media, businesses cannot afford to operate in a vacuum. Social networking puts an enormous pressure on companies to provide products and services of better quality. Unsatisfied customers do not tolerate an average product or mediocre service and make their views known instantaneously, to the entire world, by posting on Facebook, Amazon, and Yelp. Companies are increasingly concerned about their *digital footprint*. Because of the impact of social networking, businesses are becoming more proactive in protecting their social identity.

As Drucker (1999) observed nearly 20 years ago, no one could foresee the profound changes in the markets and industry structures, consumer values and behavior, and jobs and labor markets that were fundamentally altered by emerging technologies and globalization. The information revolution imposed radical changes on organizations and individuals. But it is not information *per se* that

fuels this change. It is not the AI that controls data processing and influences decision making, policy making, or strategy. It is the impact of technology on how we see the world and how we perceive ourselves in it.

What comes next after the explosion of big data and software revolution? Some predict that the processes will continually improve themselves without the need of human interactions in the near future (Modus, 2018). A combination of recent developments in the traditional computing, the AI, and automation technologies is disrupting the way we work in the twenty-first century.

Virtual Teams: Competitive Advantage in a Global Workplace

Whether the modern management strategies are catching up with the latest technologies and the new ways of doing business is still debatable. But the workplace itself continues to change, ever since the virtual workplace has emerged. Virtual workplace environment includes virtual teams and situations where employees are working without direct, face-to-face interaction, part of the time. A typical description of the virtual team is the "group of people who work independently with shared purpose across space, time, and organization boundaries, using technology to communicate and collaborate" (Mind Tools, 2018, para 6).

As organizations are moving into the Digital Age, they start recognizing that offices in "the cloud" must be operated and managed differently than those in the brick-and-mortar buildings. One critical distinction of virtual teams, compared to traditional employees, is the work that they do, not the place where they go to work (Bailey, 2016; Davis & Beach, 2018). If selected and managed appropriately, virtual teams can increase organizational effectiveness and efficiency. The management agenda in the twenty-first century does not rely entirely on control and productivity, but instead – focuses on adaptability and creativity that drive business success (Hamel, 2007).

The virtual office environment requires changing the old dogmas of supervision and control. As more actual work, collaboration, and innovation happens outside the traditional office, trust and self-managed teams become more important to organizations. Handy (2000) maintains that the three I's (information, ideas, and intelligence) of virtual teams have the potential to improve the quality of life. Everyone can potentially benefit from implementing the three I's – not only the organizations that employ virtual teams, but also the customers and partners with whom they do business, as well as society as a whole.

The evident characteristics of virtual teams are the distance and different work culture. To manage the work flow and the work load among dispersed employees and lead them effectively, managers must learn to deal with the "distance factor" and make it work both for the team members and for the organization. This transformation does not just happen by itself. Even though technology makes certain tasks easier, the nature of work today (more of "knowledge work" and less manufacturing) and the diversity of the workforce due to the globalization of talent make a significant shift in the function of management. Geographic distances, time zone differences, lack of face-to-face contact, cultural

and language barriers, various levels of proficiency with technology and dealing with ambiguity are all real issues facing managers operating in the cyberspace today (Bailey, 2016).

Some of the challenges of managing virtual teams may arise from the fact that people working in different time zones, often on a contractual basis, do not always share the organizational heritage and corporate culture. To foster the needed collaboration, create commitment, and build a sense of community in virtual teams, managers must establish trust and employee engagement. Unlike traditional organizations, getting virtual teams to buy in organizational mission and vision may be even more challenging. Achieving such a trust will require different ways to incentivize and reward employees who work in the cyberspace. It takes more effort, creativity, managerial skills, long-term planning, commitment, and new measures of success to build a virtual team that is empowered by trust, has its own identity, and clarity of purpose. But such an effort is the only way to improve the chances of success for a virtual team, maximize the return, grow its technological innovations, and ensure the competitive advantage of the company.

Management Innovation

The accelerated technology is a constant reminder that the future is already here, and demands to the workforce are growing at a rapid rate in the knowledge economy. The twenty-first century reinvented the very nature of what we think about work and business. Organizations have been evolving into the systems of continuous innovation that capitalize on the energy, creativity, and human potential of their employees. But above all, it is a process of radical management innovation that must fuel long-term business success, including new ways of mobilizing talent, allocating resources, and building strategies.

At the end of twentieth century, a number of the fast-growing companies were placing more emphasis on technology and using it as a competitive weapon in business. There were significantly more top managers with technical backgrounds, as opposed to the earlier preference for engineering and finance backgrounds. Also, companies who exploited technology well allocated more R&D funds to protect their leadership position in key technology areas. Most importantly, there was a growing connection between technology and business decision-making systems. Further, technology advances caused notable shifts in organizational structures. The ability to align their technological systems and organizational structures accounted for the company's success.

It is unlikely that the world will be free of executives and administrators in the near future. As Hamel (2007) predicted, "it would take more than advances in technology to transform the work of management" (p. 255). The rise of the creative class in this emerging age of information and knowledge creates "the ongoing tension between creativity and organization" (Hamel, 2007, p. 255). To some extent, this happens because management lags behind organizational innovation and technological innovation. Also, Hamel (2007) pointed to disconnect between the twenty-first century cutting-edge, business processes enabled by the Internet,