

Transformation for Sustainable Business and Management Practices

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Transformation for Sustainable Business and Management Practices: Exploring the Spectrum of Industry 5.0

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Introduction

With changing times, the world is witnessing digital transformation in every industrial sector. The common man, businesses, and management are preparing themselves to enter the digitally enabled industry. This book aims to identify how digital transformation will introduce advanced technology to accelerate economic growth. The book is centered on empirical research, conceptual papers, and case studies of various industries in a global context that highlights the impact of digital transformations across the spectrum of business and industry. Industry 4.0 brought together robots, interconnected devices, and a fast network of data. The journey from Industry 4.0 to Industry 5.0 started when the companies began to allow customers to customize what they want. The Fifth Industrial Revolution will focus on co-operation between man and machine, as human intelligence works in harmony with cognitive computing. 5G is a new global wireless standard after 2G, 3G, and 4G networks. 5G enables a new kind of network that is designed to connect virtually everyone and everything including machines, objects, and devices.

With the digital transformation and planned introduction of 5G technology in the global business network, it becomes significant to understand the transformation from Industry 4.0 to Industry 5.0 for creating sustainable business and management practices. With the penetration of artificial intelligence, virtual reality, blockchain technology, Internet of Things (IoT), and collaborative robot, it is vital to understand how people and organizations are adopting the transformative changes in their practices. The group of connected advanced technologies provides the foundation for increased digitization in business and management in world economies. Industry 4.0 emerged with the arrival of automation technologies, IoT, and the smart factory. Industry 5.0 takes the next step, which involves leveraging the collaboration between increasingly powerful and accurate machinery and the unique creative potential of the human being. Unlike the concept of Industry 4.0, Industry 5.0 is not restricted to only manufacturing sectors, but it aims to solve many businesses, social, and environmental problems with the help of physical and virtual spaces. It is necessary to understand how this change is going to take place in various sectors of the economies. The book will serve as a guide to the researchers and various industry sectors like manufacturing, services, and management. Readers may discover a reliable and accessible one-stop resource of information. The book aims to provide an understanding of the foundations of various changes which are predicted to happen. We plan to start the journey for readers to understand how the transformation happened and how

it has evolved with time. The editors set the platform for the authors to make a valuable contribution in this emerging field in form of substantial and robust chapters. The idea behind this book is to simplify the journey of aspiring readers, students, and researchers to understand the technology and innovations. The book will provide a comprehensive understanding of managerial applications in business and management during the transformational phase of 5G.

Industry 5.0 is the re-humanization of the race toward automation. It's the recognition of robotic, automated, digital advances, and the emergence of insight, innovation, and creativity that comes from the human being. This book aims to help researchers and practitioners who are working in the business and management domains. It will serve as a useful guide for industry and academia. It is also aimed to serve the knowledge need of beginners as well the advanced users to understand concepts of digital transformation in the business world.

Acknowledgment

First and foremost, we would like to thank our Almighty God. In the process of putting this book together, we realized how true this gift of writing is. You gave us the power to believe in our passion and pursue our dreams. We could never have done this without faith in you. Our sincere and heartfelt thanks to our family members who were there supporting us throughout the arduous process of completing this book and has been a big pillar throughout.

The editors would like to acknowledge the help of all the people involved in this project and, more specifically, the authors and reviewers who took part in the review process. Without their support, this book would not have become a reality. First, the editors would like to thank each one of the authors for their contributions. Our sincere gratitude goes to the chapter's authors who contributed their time and expertise to this book. Second, the editors wish to acknowledge the valuable contributions of the reviewers regarding the improvement of quality, coherence, and content presentation of chapters. Most of the authors also served as referees; we highly appreciate their double task. We owe an enormous debt of gratitude to those who gave us detailed and constructive comments on few chapters and pushed us to clarify concepts, explore particular facets of insight work, and explain the rationales for specific recommendations.

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Editors

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ABOUT THE BOOK

This handbook is a comprehensive assimilation of contemporary development in the current scenario. It includes the following chapters:

Chapter 1 titled “Industry 5.0 – The Co-creator in Marketing” discusses about how organizations undergo the transformation due to this industry revolution and the intervention of this Revolution 5.0 which will level up the existing customer experience.

Chapter 2 titled “Industry 5.0 and Digital Innovations: Antecedents to Sustainable Business Model” discusses about how digital transformation can give influence in existing business models and what is the impact of digital transformation on existing business practices. It also discusses about industry coping up with transient dimensions – in terms of product, process, and service delivery. The chapter is not restricted to the manufacturing sector but addresses larger social challenges based on the integration of physical and virtual spaces.

Chapter 3 titled “Open Strategy and Competitive Advantage in the Age of Digital Transformation” discusses about how adoption of open strategy in the age of digital transformation will help business to attain competitive advantage. They concluded that there is positive effect of learning on innovation and competitive advantage, and between innovation and competitive advantages.

Chapter 4 titled “The Era of the Transition – From Traditional to Digital Banking” discusses about the rapid growth and development of digitalization which can be seen and utilized for the betterment of the banking and financial services sector. The chapters specifically discussed about the status of the digital banking diffusion in Sri Lanka under two main areas: digital banking ecosystem and digital banking customer adoption. Their findings suggest that consumer digital banking adaption is still in its infancy compared to the development of the country’s digital banking ecosystem.

Chapter 5 titled “Epidemic Diseases and Smart Transformation” evaluates about the epidemic diseases and their impact on the future of cities, and examines the causes of these problems for cities. It also discusses the steps taken in the field of smart transformation and smart cities and the necessary for cities to move toward smart transformation.

Chapter 6 titled “The Impact of Blockchain and IoT, Technologies on Food Security” discussed about the availability of resources in different areas that causes different ways of production and nurturing innovative technologies to maintain food security. The chapter also revealed about the most important trends of technology absorption in the food industry.

Chapter 7 titled “Integration and Expansion of ICT-based Initiatives in Indian Higher Education System” discusses that education reform agendas benefit from the use of ICT in most developing nations. The chapter also addressed how ICT may promote and revolutionize higher education in India through new government initiatives. The chapter also addressed the issues and challenges associated with the use of ICT for educational purposes.

Chapter 8 titled “A Study of Conscious Consumerism of Sustainable Products Among the University Students” is the study to measure and analyze the responses of young generations to conscious consumption of sustainable products in Pune City. The study reveals that conscious consumption enhances the environmental, social, and economic quality of life among young generations. It reflects conscious sense among youth as well as their perception and behavior on caring about themselves, the environment, and conserving for future generations.

Chapter 9 titled “Mooc’s Impact on Higher Education” has the objective to examine the essential aspects of developing the teaching and learning mechanisms used in Gwalior and the nearest region by employing open-source courses (MOOCs) in university education. The results of the analysis reveal that MOOCs have a significant direct impact on higher education as it improves education outcomes.

Chapter 10 titled “Adoption of 5.0 Online and Collaborative Education Among the Youth of Indonesia” has the objective to investigate the characteristics of learning in the era of Industry 4.0 and Society 5.0, specifically in the master’s program of advertising and public relation of a private university in Indonesia. The results indicate that learning characteristics in the era of Industry 4.0 and Society 5.0 are swiftly transforming and there is a vital need of accommodation and acceptance by learner and instructor during dissemination of knowledge. Overloading of technology has become a blockage too during the facilitation of an educational activity in lack of appropriate awareness and training.

Chapter 11 titled “Unleashing Business Model Innovation in the Era of Digital Disruption: A Multiple Case Study Analysis” is grounded in two overarching theoretical frameworks, namely the theory of disruptive innovation and the resources–processes–values framework. The chapter is based on multiple case study analyses of 10 low-tech firms in diverse industries in Sri Lanka, the findings indicate that successful disruptive business model innovation in low-tech firms in Sri Lanka is predicated on an effective technology management strategy, suitable organizational structures, compatible organizational culture, and devoted corporate governance.

Chapter 12 titled “Digital Financial Transformation and Legal Environment for Sustainable Tourism Development in East Africa,” seeks to examine the effects

of digital financial transformation and legal environment for sustainable tourism development in East Africa. The finding revealed that in East Africa, the digital infrastructure for the Industry 5.0 is relatively underdeveloped hindering faster growth of digital financial economies and sustainable tourism. There are many gray areas in law regarding the use of artificial intelligence, cybercrime, intellectual property, and data privacy within Kenya, Uganda, Burundi, Rwanda, and Tanzania.

Chapter 13 titled “The Changing Role of Marketing: Industry 5.0 The Game Changer” aims to introduce the concept of Industry 5.0, where robots and machines are interweaved with the human intellect and labor as teammate instead of opponent. The objective of the chapter is to examine and explore the different facets of marketing in the face of Industry 5.0. The chapter adds value to, how marketers are gearing up for Industry 5.0 and making use of the new technology to their marketing objectives and strategies.

Chapter 14 titled “Digital Transformation for Business: Enablers, Framework and Challenges” focuses on digital transformation which is a critical direction in which organizations will have to move toward to in order to succeed in this competitive world. They revealed that to make a smooth transition, firms must understand the basic building blocks of the digital transformation process and the key areas it touches upon namely customer experience, operational process, and dynamic business models. A clear understanding of these challenges will help the firms to overcome or mitigate these challenges and be successful in their digital transformation process.

Chapter 15 titled “Are Fintech Firms Ready for Industry 5.0? The Influence of Cybercrime on the Dynamics of Volatility and Herding Behavior Among Investors” seeks to identify whether we are ready to implement Industry 5.0 across domains and enterprises while there are still obstacles to overcome, such as cybercrime impacting fintech organizations. The results suggested that during times of crisis, investors should be more careful in their approach to investment diversification, and any Industry 5.0 implementations should be done with the constraints in mind.

Chapter 16 titled “Financial Services Employee Engagement and Attitude Toward Artificial Intelligence: Evidence from Sri Lanka” focused on the impact of financial services and employees’ engagement on the attitude toward artificial intelligence in Sri Lanka. The model developed in this study comprises three constructs to demonstrate employee engagement, namely, psychological state engagement, trait engagement, and cognitive engagement. The result revealed that artificial intelligence is the most significant importance in promoting a high level of engagement.

Chapter 17 titled “Linking Entrepreneurial Orientation Dimensions to Entrepreneurial Intention: Role of Openness to Experience as a Mediating Variable” states that entrepreneurial orientation and intentions both are prominent factors in the entrepreneurship domain to predict entrepreneurial behavior. The study

aims to examine the association between sub-dimensions of entrepreneurial orientation; proactiveness, risk-taking, and innovativeness, and entrepreneurial intention incorporating personality trait-openness to experience as mediating variable. Findings reveals that all the sub-aspects of entrepreneurial orientation are significantly correlated with entrepreneurial intentions and personality trait-openness to experience acted as a mediating construct in link amidst entrepreneurial orientation and entrepreneurial intention.

Chapter 18 titled “Consumer Micro-moments: The Four Game Changing Moments and Consumer Online Buying Behavior” aims to solve the problem of inability of marketers to understand the consumer mindset. This study is potential to prove of high affectivity to the firms and marketers due to the inclusion of new perspectives to solve the problem of channelizing advertising efforts efficiently. The objective of the study is to connect consumer behavior and micro-moments for the benefit of marketers. The study concluded to prove the relation between measuring these moments of consumers being profitable to determine the purchaser mindset to make real conversions.

Chapter 19 titled “The Effects of Fintech on the Banking Sector: Evidence from China and Vietnam” examines the effects of financial technology news on banks’ return, efficiency, and profitability in China and Vietnam from 2011 to 2019. The study finds that financial technology is welcomed by Vietnamese banks and also there is a lower efficiency level in early adopters of financial technology and reduced profitability in the first year when they started applying financial technology.

Chapter 20 titled “Fusion of Artificial Intelligence and Blockchain in the Banking Industry: Current Application, Adoption, and Future Challenges” has the main objectives to determine the current application of AI and blockchain in the banking industry, to identify the challenges faced by banks in adapting AI and blockchain technology, and to provide new insights on future banking in the Industry 5.0 digital era. This chapter discusses the application of two robotic platforms widely used in banking, chatbots, and Robo-advisors. The chapter provides insights on banking at Industry 5.0. In the future, banking customers can experience completely virtual and customer-oriented banking services. In this regard, the fusion of all technologies and collaborative human effort is essential.

Chapter 21 titled “Artificial Intelligence and Collaborative Robots in Healthcare: The Perspective of Healthcare Professionals” focused on the adoption of CoBots and AI-enabled devices in the healthcare sector by examining Turkish medical doctors’ general attitudes toward adopting them in their daily operations. The study sheds light on the real-life practice, and proposes future directions regarding Industry 5.0 in the healthcare sector.

Chapter 1

Industry 5.0 – The Co-creator in Marketing

A. Mansurali, V. Harish and Swamynathan Ramakrishnan

Abstract

The unavoidable connection between automation and digitalization is already in the business horizon in the name of Industry 5.0. Industry 4.0, the robotic and technological revolution were largely hit among the manufacturing industries, but Industry 5.0 is meant for all sectors across ranges from manufacturing to services. Evolution from the days of mechanization (Industry 1.0) to smart factory (Industry 4.0) witnessed the improvisation of metrics related to efficiency and optimization. And now its turn for the balance between optimization and efficiency with the support from robots in assisting the smarter generation's technologies and machineries and tools through Industry 5.0 in the domain of marketing too where the change is constant and dynamic would be more accommodative to opportunities and challenges through the next wave of 5.0. The disruption by Industry 5.0 will change existing nature of marketing in terms of customer experience, supply chain, procurement, product development, retail operations, etc. The market which predominantly flourishes with the help of customers in co-creation is going to have robot as bystander with the intervention of this Revolution 5.0 which will level up the existing customer experience. Marketing by its nature demands the cooperation at multiple levels and is becoming easier prey for the Industry 5.0 revolution as it's expected to create the cooperation between the humans and machines. Product development, customer engagement and customer experience will undergo the transformation due to this industry revolution and also there are other areas in the marketing domain to go through the impact are addressed in this chapter.

Keywords: Industry 5.0; co-creation; customer experience; robots; digitalization; technology; marketing

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Introduction

Industry 4.0 is playing a significant role in industrial and our day to day life. Smart phones, Tablet PC's and virtual classrooms are all instances of how we use technology in our daily lives. However, in the not-too-distant future, all aspects not only information and virtual life, but also we will see machines that behave like humans and will occupy a significant amount of time. Since then, people have begun to collaborate with robots. In other words, Industry 5.0 is coming. Industry 5.0 as a term has been envisioned differently by many. Human-machine collaboration is one emerging theme. This aspect has seen exponential growth in robotics and intelligent systems research in recent years. Through the next wave of 5.0, marketing would be more accommodating to possibilities and difficulties because change is ongoing and dynamic. Marketing, by its very nature, necessitates collaboration at various levels, making the Industry 5.0 transformation an easier target, as it is supposed to foster collaboration between humans and machines. Due to simulations, automating and digitalization issues in picking the attributes effectively, product creation, the largest slice of time and money spent in marketing will shift.

Industrial revolutions mainly focused on dividing the work of man with that of machines. They are called by different names, either a “machine” or a “robot.” They undertake jobs that are complicated, tough or dangerous to be performed by people. There were three industrial revolutions and we are currently experiencing the fourth. And now it's time for Industry 5.0. Two visions were proposed for Industry 5.0. First being “human-machine co-existence.” It refers to performing work together by robots and humans wherever possible. Second vision being “bio economy.” This refers to using of biological resources smartly to maintain an equilibrium among the industry, ecology and economy. The European Commission explains bio economy as “producing of biological resources that are renewable and converting these resources into products of great value such as, food, bioenergy, bio-based products, etc.” Digitalization initiates a new genre in industrial arena and removes monotonous jobs. Apart from that, it identifies the process of more value addition through Industry 5.0 in the society as a whole (Javaid & Haleem, 2020). Generally, in the field of marketing, end consumers are now putting a premium on adapting products to meet their specific needs, thanks to the development of Industry 5.0. In this stage of development, the marketing strategy and marketing interpretations are completely new (Aslam, Aimin, Li, & Rehman, 2020). It focuses on big data, which is expected to be the call of the new marketing genre. From customer acceptance, adaptation to customer satisfaction, the flow of big data has been extremely beneficial, and it helps Industry 5.0 to serve customers well (Mekkunnel, 2019). Business houses all over the world are going to strive to integrate artificial intelligence (AI), the Internet, digital electronics and other advanced technologies into their working setup and even the product delivery took a new shape in pandemic days. Industry 5.0 is now putting new lights on the present day sales and delivery system (Paschek, Mocan, & Draghici, 2019). The conception of smart cities gives rise to the sustainable lifestyle with a greener and more secured urban environment which also will be more

eased by Industry 5.0 in future. This chapter explains how Industry 5.0 impacted new facets of marketing in a multi-dimensional way as indicated in Fig. 1.

Research Methodology

The research design of this chapter is descriptive in nature as the researcher tried to explain the existing and futuristic application possible by Industry 5.0 with respect to the domain of marketing. For the purpose of data collection, secondary research methodology had been employed for the collection of information and data related to Industry 5.0 and its applications. Various secondary resources such as journals, articles, books and blogs had been referred and the chapter presented the Industry 5.0 co-creation role in the marketing in the areas such as customer needs, communication, product development, digital marketing, customer experience and behavioral change.

Industry 5.0

Industry 5.0 and its role on disrupting business lacks proof today but there is no doubt that it will overcome the existing challenges between the real and



Fig. 1. Industry 5.0 Effects on Marketing.

virtual world (Scanlon, 2018). Industrial revolution will be required as customers' strong need for individualization is growing in the items they would buy (Ostergraad, 2018). Likewise, a Germany vehicle manufactures makes use of people more in the manufacturing facilities than the machines understanding the reason that the customer values customization more (Atwell, 2017). As a result, increasing interface between people and digital technologies such as gadgets and robots will be seen in Industry 5.0, particularly in the manufacturing sector. At this level, machines will have the skillset to automate all dull, monotonous and risky tasks, while people will manage more responsibility and management of systems in order to improve overall production quality. However, as revealed by Accenture's global study of 512 manufacturing leaders, this concept is not new. Because by 2020, 85 percent of respondents wanted their offices and factories to have an integrated production and assembly line involving people and machinery (Atwell, 2017).

The previously mentioned efficient human-technology synergy will have an impact on the economic, ecological and social realms as well (Shelzer, 2017). These elements are also complemented by a waste avoidance technique utilized in industrial upcycling (Rada, 2018), which includes physical trash, urban garbage, process waste and social waste. Because production managers are concerned with lowering raw inventory costs and remain sustainable in the industrial operations, the four categories of waste prevention measures have important economic and environmental implications in terms of reduced lost materials and resources (Shelzer, 2017). It has been proved that the industry 5.0 looks only about the end user. So a company has to adopt new concepts of customer acceptance in implementing marketing strategies along with new technologies (Saptaningtyas & Rahayu, 2020).

Core Values

The fundamental principles human centricity, sustainability and resilience are three interconnected basic ideals at the heart of Industry 5.0 (see Fig. 2). The human-centric technique replaces technology-driven progress with a truly human touch with society development being at the center, putting basic human needs and interests at the center of the manufacturing process. As a result of the swing



Fig. 2. Industry 5.0 – Core Values.