

An Overview of The Fourth Industrial Revolution through the Business Lens

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Abstract

This article highlights the opportunities and consequences of the Fourth Industrial Revolution for business management daily. The primary objective of the research is to comprehend how the economy has evolved over the last two centuries and the implications for business and market competition. Contemporary events have contributed to the continued evolution of the opportunities and adaptability that the Industrial Revolution offered the business community. These two concepts have enabled a much more appropriate risk management approach. Many businesses have begun to utilize their resources in novel and innovative ways, allowing them to remain afloat even during the current global pandemic. The authors have found that with the help of the tools provided by the Fourth Industrial Revolution, businesses and business owners can better navigate these trying times and have been permitted to reinvent themselves easier. Thus, this article presents a theoretical framework for analyzing how the Industrial Revolutions have been perceived throughout history, emphasizing the most recent one. A formulation of the most pervasive features and the aspects associated with them would be derived as an outcome of the existing literature review, allowing space for further analysis in future studies in which one can elaborate on each aspect presented in this current paper. The findings indicate that the Fourth Industrial Revolution is a vast subject that can be approached in various ways. The business perspective allows the reader to dive into the current economic situation and helps provide a broad picture of all the sectors affected by this global crisis, be it political, geographical, or cultural. The results of the research can be used to gain a better understanding of the position where the business world finds itself, and the importance of adaptability and innovation in this scenario.

Keywords: Adaptability, Business Model, Competition, Fourth Industrial Revolution, Innovation.

JEL Classification: M1, M19.

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Introduction

Business, in general, and commerce, in particular, underpin every facet of economic, social, and human life. The framework provided by the business supports every activity. On the one hand, all activities are subsequently conducted from a business perspective; on the other hand, any economically motivated transaction must incorporate measures of social delivery and broader unity if it adds value and financial and economic returns in a certain way. The business operates to look after the interests of society as a whole and individuals who comprise that society. It generates the demands, needs, and wants that businesses and companies must meet. The resilience of community is contingent on the volume, quality, and effectiveness of the impact made by everyone. Everyone places demand on society and thus on businesses and companies, and someone will fulfill them. Thus, the nature of the industry and businesses directly results from demands, needs, and desires that need fulfillment. Needs are few and rational: food, drink, water, energy, and shelter. However, business and companies meet additional social and behavioral needs differently. These other needs refer to individual and collective needs for accomplishment, recognition, and esteem, delivering self-worth and self-respect and respecting other social and occupational sense of community and interactions. The Fourth Industrial Revolution is widely believed to be where we are currently living. It exemplifies

technology's more or less universal accessibility and the extent to which it pervades all aspects of a society, financial and cultural activities. Everyone now has access to devices and operating systems for economic, work, interpersonal, and recreational purposes. Additionally, this new industrial revolution resulted in significant advancements in biometric data, health care, travel, and transportation (along with the resulting economic, social, and organizational disruption). Moreover, it has already had a tremendous impact on the business processes deployed by various business organizations worldwide (Toma & Marinescu, 2013; Toma & Marinescu, 2015).

The industrial revolutions have had far-reaching social consequences. These effects have shaped society – and business – today and into the foreseeable future (Toma, 2013). Several key characteristics include the following: rapid urbanization and the transition from small – scale subsistence neighbourhoods to larger economic communities; the transition from agricultural to industrial sustenance to wage-work bargains and the growth of businesses and institutions; the transition to widespread employment and the communities created by large numbers of workers; the evolution of main (mining and extraction), secondary (manufacturing), and tertiary (services) commercial and industrial sectors; and the development of companies and organizations (Pettinger, 2020).

Based on the foregoing perspectives, the following sub-questions for this research were formulated as follows:

Q1: What factors contributed to the Fourth Industrial Revolution's natural progression?

Q2: What are some of the Fourth Industrial Revolution's primary characteristics?

Q3: What are some of the potential ramifications of the Fourth Industrial Revolution's current events?

The purpose of this article is to consider the effects and opportunities that the latest Industrial Revolution has brought about. To accomplish this, the authors begin by tracing the events that have occurred since the First Industrial Revolution more than two centuries ago, all the way up to the current circumstances in which we live. This paper consists of the following structure. The next section contains a literature review, which provides an overview of the subject's published literature. The third section describes the research methodology employed in this study. In the fourth section, the authors summarize the study's findings and observations, and, lastly, the final section illustrates the conclusions.

Literature Review

To begin, technological progress and economic growth have shifted the emphasis of competitiveness away from cost and market share and toward production efficiency. Intense automation in the fourth industrial revolution can supplant low-cost labor, thereby reducing the competitiveness of nations and firms that rely on low-cost labor. Similarly, nations and businesses facing high labour costs could improve their competitiveness through automation. We see an increasing emphasis on innovation and the need to boost productivity to maintain and gain competitiveness throughout all stages within the Fourth Industrial Revolution. It has significant policy implications – to achieve prosperity, financial and business policies should enable companies' access to emerging technologies and their integration into their advancement and operational processes. Second, when applying the Fourth Industrial Revolution's technology advancement to competitiveness theories, one must highlight the significance of technology in shaping a nation's competitiveness and technological transition from developed to developing markets, pursuing the path of the innovation theory (Liu, 2017). It is necessary to take a step back and examine the evolution of the industries to appreciate how society came to be so reliant on technology.

The first three Industrial Revolutions have taken place over the last 250 years and have altered the way individuals produce value and significantly changed the world. These coevolved technologies, political systems, and social institutions, transforming industries and how people perceived themselves, interacted with one another, and cooperated with the natural world. The first Industrial Revolution began in the mid-eighteenth century in Britain's textile industry, prompted by the mechanization of cloth weaving. It converted every existing market and spawned numerous new ones over the next century, from industrial machinery to steel production, the steam engine, and railways. Changes in competition and cooperation resulted in the emergence of altogether new production systems, exchange, and distribution, upending industries ranging from agriculture to industry, transportation communications. The way one uses the term “industrial” presently is far too limited to encapsulate the revolution's scope. Perhaps a more appropriate framing is how nineteenth-century thinkers used the time to describe all activities resulting from human endeavour. Between 1870 & 1930, a fresh wave of related technologies added to the growth and opportunity brought about with

the first Industrial Revolution. Radio, telephone, television, other home appliances, and electric lighting exemplified electricity's transformative potential. There were chemical breakthroughs: the world gained new components, such as thermoplastics, and innovative solutions, such as ammonia synthesis, helped pave the way for cost-effective nitrogen fertilizer, the 1950s “green revolution”, and the subsequent population explosion. A second Industrial Revolution shepherded in the modern world, from sanitary conditions to international air travel. Around 1950, ground-breaking advances in data theory and digital computer technology occurred, laying the groundwork for the following Industrial Revolution. As with previous eras, the Third Industrial Revolution has been ignited by how digital technologies alter the framework of the economy and society. The ability to store, process, and transmit data in digital form revolutionized nearly every industry and profoundly altered individuals' professional and personal lifestyles. The three industrial revolutions have resulted in an unprecedented increment in wealth and opportunity (Schwab, 2018).

When reviewing the available literature on The Fourth Industrial Revolution, the authors noted the absence of a single, unambiguous definition for this era. Numerous authors have attempted to emphasize the period's defining characteristics to understand what this Industrial Revolution represents. In Table 1, the authors compiled four prominent authors' perspectives over the last four years and extracted some of the key points they made. The authors have developed their definition and understanding of what this period entails based on these.

Table 1. Perspectives on The Fourth Industrial Revolution

Author(s) and Year of Publication	View on The Fourth Industrial Revolution	Comments
Özkan et al., 2018	The Fourth Industrial Revolution, also dubbed as Industry 4.0, was built on research into the integration of humans and machines. It aims to lessen costs and boost productivity using a new manufacturing tool that enables human-machine collaboration via industrial robots, combining human intellectual capacity and machine labour force.	The primary characteristic of the Fourth Industrial Revolution that can be deduced from this perspective is the attempt at cost reduction while increasing productivity through human-machine interactions. The primary driving force that defines this era is technological advancement.
Johannessen, J.A., 2020	The Fourth Industrial Revolution's core organizational doctrine will be tied to a concise purpose and visionary leadership capable of promoting innovations through a continual chain of affiliations. This organizational structure will place a premium on functions rather than positions and authority in a power pyramid.	From this vantage point, one can see how critical innovation is to this new Industrial Revolution, but also how, unlike in the previous era, pragmatism takes precedence over power plays, and connectivity and inter-relationships are more essential than ever.
Şen and İrge, 2020	The Fourth Industrial Revolution, dubbed Industry 4.0 or I4.0, has been conceived as the fusion of the tangible and virtual worlds via cyber-physical processes and self-sufficient machine-to-machine information exchange. Industry 4.0 can be identified as the Fourth Industrial Revolution, which is characterized by the fusion of physical and digital labour via cyber-physical production processes. Several of the most significant new implementations, such as digitization, business intelligence, artificial intelligence, automation technologies, machine learning, and complex algorithms, have a direct impact on the competition between companies in the global market.	As can be seen, the Fourth Industrial Revolution has ushered in a new era of hyper-competitiveness, which has facilitated not only new entrants' access to the market, but also created numerous opportunities for existing products to be innovated and elevated to better meet customers' wants and needs.
Schiele et al., 2021	The Fourth Industrial Revolution, dubbed Industry 4.0 or I4.0, has been conceived as the fusion of the tangible and virtual worlds via cyber-physical processes and self-sufficient machine-to-machine information exchange.	Schiele makes an important argument when he discusses the significance of technology and its applications in the world. One can see how the digital world has elevated Globalization and created new opportunities. Combining knowledge sharing via the virtual world with access to new and improved technology in the physical world has enabled unprecedented levels of agility in advances made.

Source: Compiled by the authors

The authors have attempted to summarize some of the key characteristics of The Fourth Industrial Revolution in the preceding table. They have developed their definition for this period: The Fourth Industrial

Revolution is an era of rapid technological advancements that emphasizes the integration of the physical and digital worlds to increase productivity while decreasing costs. Innovation and hyper-competitiveness have been the market's central tenets alongside the Internet of Things and digitalization (Toma & Tohänean, 2018). Using this definition as a starting point for understanding what this Industrial Revolution represents, the authors conducted additional research in the business world to better understand the available tools that business owners use to navigate this era. Among these are the critical role of business models and strategies in achieving their objectives during these turbulent times.

There is widespread agreement that the Fourth Industrial Revolution significantly impacted established business models (Tohänean & Toma, 2018; Toma & Tohänean, 2019) and led to the expansion of creativity and innovation (Marinescu & Toma, 2017; Tohänean et al., 2018). The most significant shift has occurred in supply. In keeping with earlier strong assumptions of this Industrial Revolution, one can observe the process by which supply chains are becoming increasingly digitized, automated, tracked in real-time, and possibly even eliminated through 3D printing. It led to new markets, decreased waste, and significantly lower consumer prices. Entire industries have emerged because of novel technologies and methods. It results in increased economic growth; however, the scenario is more complex for individual businesses. The Fourth Industrial Revolution is an era of profound disruption, and a firm's survival depends on its ability to adapt continuously. Successful businesses must innovate with digital platforms, forge new partnerships, incorporate data into their products, and develop a deeper understanding of their customers. As such, this era distinguishes itself through its method of value creation. Unlike the previous ones, where price and localization were critical, competition is growing in the online services that have become more widely available. Data is significantly more accessible and easier to obtain, a double-edged sword. While the outcome will be favorable for businesses that know how to utilize their resources efficiently, safely, and proactively, it will also be easier for businesses that lack experience or knowledge regarding the use of their digital resources to bow down to this hypercompetitive atmosphere. That is why a well-designed business model can frequently mean the difference between success and failure (Soh & Connolly, 2020).

Another business model that has flourished and grown in this newest Industrial Revolution relies on what some refer to as the gig economy. It is a well-known fact that entertainers frequently rely on gigs, or interim engagements, to supplement their income. This practice has expanded rapidly throughout the economy as businesses rely heavily on seasonal jobs and contract workers rather than permanent employees. Technology is a significant driver of this cultural shift. The gig economy is the economic model of the coming years and even the present. Gig economies are frequently associated with sharing economies. This economy is one in which individuals share their assets, such as tools or other resources, whether human or material in nature, with others for a fee. It has increased the use of outsourcing as a low-cost option for businesses. The advancement of technology has enabled businesses to connect with customers from all over the world to determine the most cost-effective way to conduct business (Hooker & Kim, 2019).

The Fourth Industrial Revolution could be defined as the transition from simple digitization to innovation enabled by technological combinations that allow businesses to innovate their business models, including manufacturing and industrial engineering. The revolution can enhance economic development and human well-being. Additionally, it will inevitably result in creating new jobs, innovation management, and product innovation. Due to The Fourth Industrial Revolution's impact on business models, it has the potential to reshape customer expectations, product and service quality, open and constructive innovation, and the organizational forms used to deliver value. Job descriptions and competence in a range of unique business models should adapt to these changes. While new technologies and platforms enable citizens to engage with governments more personally, governments are being pressed to adjust their public engagement and policymaking systems. Power redistribution and decentralization are now possible as a result of emerging technologies. Technological advancements also affect aspects of our personal lives, including our sense of security, consumption habits, career development, working and personal time, social networks, and relationships. Our imagination may limit the consequences, but disruptive implementations are possible.

The Fourth Industrial Revolution brings both opportunities and challenges, notably from an institutional standpoint. The opportunities stem from the possibility of efficiency and productivity gains that will expand market opportunities and stimulate economic growth. Simultaneously, the revolution raises concerns about the possibility of increased inequality, particularly in terms of its potential to disrupt labour markets. The larger advantage would be that The Fourth Industrial Revolution seems to have the potential to improve people's quality of life by enabling them to work less and better and have their wants and needs met more efficiently and productively through more effective and accurate production technology network platforms.

Everything that is digitized as well as automated will also be integrated into intelligent machines, and fundamentally, jobs requiring codified or codifiable expertise will be conducted by automatons. Thus, routine jobs will vanish, and individuals' roles within organizations will increasingly be defined by auditing process and, most pertinently, innovative and critical reasoning (Lee et al., 2018).

It is necessary to acknowledge one of the most significant moments in modern history to have a complete picture of what this same Fourth Industrial Revolution implies today. The global crisis precipitated by the coronavirus pandemic is unprecedented in modern history. It is among the most defining moments of the twenty-first century's second decade. Presently, civilization is dealing with the fallout from the attack and will do so for years. Many things are going to change, possibly permanently. This virus has wreaked havoc on the economy, resulting in a risky and turbulent period on multiple fronts, including political, social, and geopolitical, raising serious concerns about the environment and expanding the scope of technology into everyone's lives. No sector or company has been entirely spared from the effects of these changes, and they will continue to have an impact. Thousands of businesses are on the verge of extinction or have already succumbed to the crisis. Numerous industries face significant challenges, and only a few will thrive in these new conditions due to their ability to adapt. As mentioned previously, this Industrial Revolution is markedly different from those of previous centuries. It is vastly more interconnected, intricate, and complex than in the past. At the industry and corporate level, the Great Reset, as some have dubbed it, will entail a lengthy and complicated number of changes and adaptations.

When faced with this, some management teams and senior execs may be tempted to equate reset with restart, hoping to return to the previous normal and reinstate what worked in the past: traditions, tried and proper procedures, and tried and proper ways of doing things. In a nutshell, a return to normalcy. It has not occurred because it is not possible. For the most part, COVID-19 put an end to so-called "business as usual". Specific industries have been decimated due to the economic hibernation induced by lockdowns and social distancing measures. Others have struggled to recoup lost income before having to navigate an ever-narrower trajectory to sales and profits due to the world's economic recession. However, for the large percentage of companies seeking to transition to a post-coronavirus world, the critical issue will be striking the complete reverse balance between what worked previously and what is required to thrive in the new normal. For these businesses, the pandemic represents a once-in-a-generation opportunity to reimagine their organization and implement positive, sustainable, and long-lasting change (Schwab & Malleret, 2020).

Laborers in certain industry sectors were flooded with work during the crisis's early stages. As numerous countries imposed a state of emergency, the travel industry immediately came under fire. Apart from airline companies, online ticket booking companies were inundated with inquiries from travelers. Most of these businesses responded by directing questions to their website or app, where they made extensive use of artificially intelligent (AI) chatbots for customer service. Such AI bots were not limited to travel alone. Vital pandemic knowledge was also communicated via AI chatbots by organizations like the World Health Organization. Numerous governments and media organizations have also launched their chatbot support to assist coronavirus disease-related inquiries. The use of AI increased significantly in social media content moderation, as content moderators were forced to return home due to lockdowns. Due to privacy concerns, not all information moderation could be performed remotely. Another emerging paradigm linked with the fourth industrial revolution was deployed rapidly for critical applications. It was 3D manufacturing used by businesses worldwide to rapidly fabricate face shields for health care workers, ventilator machine components, and nasal swabs for coronavirus screening. Automobile manufacturers and space travel companies, for example, used their original 3D printing capabilities to create face shields. Comparable efforts were made by smaller firms all over the World as well. It alleviated the shortage caused by the conjunction of a spontaneous worldwide surge in demand for these components and the global supply chain's sudden freezing. Robots, as well, were pressed into service for specific tasks (Choudhury, 2020). Consequently, one could argue that without the resources introduced by the Fourth Industrial Revolution, a global pandemic would have had an even more devastating effect on the modern economy.

Methodology and Research Methods

The current study took a quantitative approach in that it gathered and analyzed secondary data on the chosen topic, such as scientific papers and existing books on the subject. Taking the defined objective as a starting point, we examine The Fourth Industrial Revolution from a business standpoint, focusing on the opportunities it has created for hyper-competitiveness to thrive even during a global economic downturn. As a result, several theoretical concepts such as the Industrial Revolution, innovation, business models, and adaptability were applied during this process. As is customary in the existing research, the study started with

the briefing and comprehension of the terms that were later amalgamated to accomplish the research's stated objectives. This perspective on the evolution of the structure complements previous study conducted by Schwab (2020) and Soh and Connolly (2020).

Results

As the literature review indicates, the First Industrial Revolution sparked a desire for innovation and a push for commodity and convenience. What once was a process that required only human resources has evolved into a trend toward automated processes to maximize the likelihood of each need or desire being met most rapidly and reliably possible. This process has resulted in a much more competitive market that has become slightly less concerned with price and differentiation (Porter, 1980) and more concerned with convenience and accessibility. While technological advancements have enabled operations to become more cost-effective, allowing economies of scale to thrive in these circumstances, they have also enabled more players than ever to enter an overcrowded market, providing customers and consumers with more options and choices than ever before. Because entering the market is much easier nowadays, sustaining a position over time has become the most challenging aspect of business management. As a result, business models have evolved to adapt to the current era and enable businesses to incorporate a tool that allows more efficient management of new and unexpected situations. It demonstrates that the authors' proposed definition applies to the Fourth Industrial Revolution. Additionally, it exemplifies how certain technological advancements influenced recent events.

The global pandemic that began in 2020 is a prime example of the Fourth Industrial Revolution's accomplishments. It has provided businesses with the ability to adapt to this unprecedented circumstance. Those who possessed the knowledge and understanding necessary to exploit the resources given by the Industrial Revolution have survived and, in some cases, thrived. New businesses have emerged, offering services that restore people's sense of normalcy, and existing businesses have either reprofiled or reorganized their resources to continue operating. Not everyone has remained afloat, and those businesses that have been unable to adapt to the changing times have been forced to close. The significance of planning and taking calculated risks is frequently underestimated, which has resulted in the demise of numerous individuals in that position.

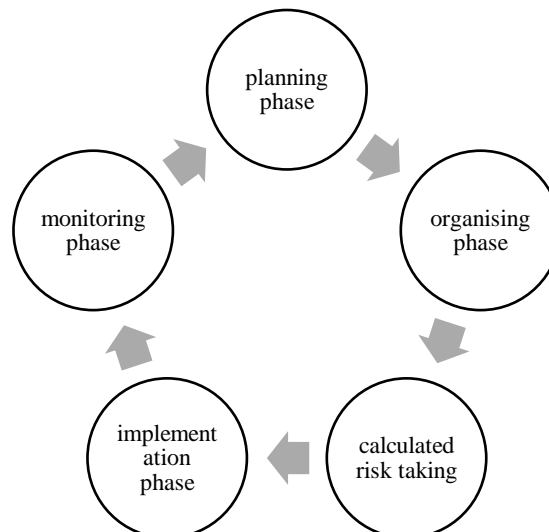


Figure 1. Adaptability Cycle

Source: Compiled by the authors

The authors have highlighted the stages of adaptability that businesses have had to go through in a short period to stay afloat during this crisis period in the figure above. This process introduced numerous risks as businesses were forced to reinvent themselves; however, with the tools available during the Fourth Industrial Revolution, businesses transitioned more smoothly. It is also critical for businesses to account for the post-pandemic period, as this will be crucial. While many will cling to their previous business models, and some services offered now may become obsolete, it is essential to realize that we have entered a new normal. As such, stakeholders will want to adhere to the new format. As such, a hybrid environment combining traditional and contemporary business models may be the way of the future.

Conclusion

According to the outset of this article, the purpose was to consider the effects and opportunities of the most recent Industrial Revolution. The authors accomplished this by tracing key events dating back to the First Industrial Revolution well over two centuries ago, all the way up to the current conditions in which we live. This paper contained a synthesized literature review that provided an overview of the published literature on the subject. The following section discussed the quantitative research methodology used in this study. The fourth section summarizes the study's findings and observations and discusses possible future scenarios. The authors have adequately addressed the primary questions posed at the outset of this research paper and have illustrated the answers throughout. However, the study presented above has limitations. One such limitation is that it focuses exclusively on socioeconomic factors. However, the current state of the world provides an opportunity for study from various angles. One perspective that would provide valuable insight into the Fourth Industrial Revolution's advancements and could be discussed in a future paper is a militaristic-economic one. Recent events demonstrate the impact of the virtual front, which can be used to inflict significant damage on the physical world, affecting businesses and economies on a worldwide scale.

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