

# **Agile Management and VUCA-RR**

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# **Agile Management and VUCA-RR: Opportunities and Threats in Industry 4.0 towards Society 5.0**

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INVESTOR IN PEOPLE

*This book is dedicated to one of our Late editors, Dr Helena Bulinska-Stangrecka*

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# Preface

Quite too often, pithy and sometimes humorous, but usually relevant examples are used to stimulate interest and increase understanding of the business ideas and strategic concepts presented in books to emphasize the importance of understanding cultural uniqueness and relevant environmental development. Not only does this book explain Agile Management and VUCA-RR but also shows different ways that organization leadership globally possess radical mindsets and implement strategies necessary to create agile, entrepreneurial organizations that are innovating and thriving in complex, ever-changing contexts.

Prior to the announcement of Society 5.0 – in the Fifth Science and Technology Basic Plan (FY16–FY20) and adopted by the Japanese Government ([Cabinet Office, 2016](#)) – numerous efforts were made to explore the possibility of science, technology and innovation coming together to develop an innovative model of sustainable development ([Dinana, 2020](#)). The Japanese Cabinet identifies Society 5.0 as a development strategy for Japan as a country. Moreover, the concept of Society 5.0 is recognized as a main component of the growth strategies for the “Council on Investments for the Future,” established in September 2016 as a headquarters for innovation strategy to facilitate Japan’s development potential ([Harayama, 2017](#)). That vision of Society 5.0 was spotlighted as a strategic part of the policy for economic fiscal management and reform, while the Japanese Government had aimed to realise a “Super Smart Society” that offers a shared societal infrastructure for prosperity through an advanced service platform ([Medina-Borja, 2017](#)).

More than half a decade later, this book illustrates a collaborative partnership and emotional resilience which significantly promotes an influential Society 5.0 as normal. The book does acknowledge a popular assumption that a Super Smart Society is attainable with cooperation between technology and human beings. Several chapters in this book detail digital features of I4.0 – artificial intelligence, Internet of Things, big data and cloud computing – meant to form a collaborative partnership with human resources for the advancement of society and the general wellbeing of individuals. The resulting synergy between advanced technologies and human competencies guarantees the existence of a formidable techno-human force that is capable of transforming lives and societies ([Matt, 2016](#)).

Agile Management and VUCA-RR: Opportunities and Threats in Industry 4.0 toward Society 5.0 adds value to the huge body of literature on modern technology in society. To my knowledge, ours is the first book looking at this paradigm of literature in the modern technology discipline. Thus, this book allows

students to benefit from following a diverse path to technology, management and environment, instead of following one path and believing that it is the only means to develop any given society or improve a selected organization. While several categories of readers can benefit from this book, the main intended audience include the following:

- Undergraduate senior students majoring in technology, business or management majors.
- Graduate students on MBA courses.
- Graduate students taking technology management courses.
- Graduate students researching technology management and society development.
- Young technology professionals looking towards moving in leadership roles.
- Mid-level managers in industry.

### ***Using This Book***

Technology and management courses can be taught in variety of ways, by instructors with various approaches to the subject, different intellectual and pedagogical goals, and teaching format. Thus, we are yet to see a textbook to serve as all things to all instructors. Yet, this textbook covers a range of management topics, types of materials, evidence and reference materials provided, all for the purpose of to allow the instructor flexibility in usage and course organization. While some instructors still prefer teaching a textbook from cover to cover, there are some who prefer to linger on certain topics, briefly touching on others and completely skipping parts of the book. All chapters in this book can be considered as a case study and relatively self-contained. Each chapter invites the student to debate current environmental, social and cultural issues that are inseparable from VUCA. This allows for instructors to focus classes in a course on the reading and analysis of a single chapter.

Much effort was made to ensure this book is explicitly international in the way it considers VUCA. By treating the international society development problem as a norm, the text seeks to meet the increasing need for greater international course content on management and leadership programs. This currently unmet demand reflects the realities of the environment of many organizations and the needs of managers and aspiring leaders.

In conclusion, this book provides a scholarly referenced work of original and previously unpublished research manuscripts that provide cutting-edge, multidisciplinary research and expert insights on advancing technologies and new strategies being used in businesses settings as well as for administrative and leadership roles in organizations. The various chapters above improve the research and practice of Agile software development through sharing knowledge gained from both the academic and practitioners in education, healthcare, and tourism sectors. The challenges and solutions expressed by each group serve to inform and teach as well guide us to where future work should be done. Understanding the best practices that have emerged in the Agile world can help each of us become more

effective and serve as a launching point for future generations. Furthermore, this research book contributes in several ways.

- It addresses the significant problems when transforming or managing an organization by embracing a Society 5.0-based new normal model (a new function of the organization).
- It also goes in-depth into making use of small(er) agile teams and exposes many ways in which a once fashionable coterie of management growth infiltrated the traditional old-style leadership practices with providential consequences for leadership theory development.

The editors have assembled together innovative leadership researchers, whose work have boosted the innovative and creative development in VUCA today. With a number of meticulously researched chapters, the book not only offers explanations as to how Industry 4.0 has reached its conclusions but also suggests the best path to the continuous development of business environment is to welcome Industry 5.0. The best way to effectively respond to the unexpected and unplanned Agility facing most organizations today and quickly turn challenges into opportunities is through Agility. In times of VUCA, Agile Management facilitates the competence, capacity, and confidence to adapt and innovate.

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Bülent Akkaya, Editor-in-Chief

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## Chapter 1

# VUCA-RR Toward Industry 5.0

*Bülent Akkaya and Junaid Ahmed*

### Abstract

The future will see a new revolution in both industry and society in Industry 5.0. Human–robot collaboration and robotic management will be critical components of Industry 5.0. In this revolution, humans and robots will collaborate to improve process efficiency by utilizing human intelligence and innovation. Industry 5.0 creates a powerful framework for modern digital smart factories and manufacturing technologies through complex systems, and it is constructed to interact with powerful computing power, to solve complex problems more efficiently and with less human intervention in this Volatile, Uncertain, Complex, Ambiguous, Radicality, and Rapidity (VUCA-RR) world. To overcome VUCA-RR world, Industry 5.0 involves a combination of human and robotic systems for sustainable development. Managers, practitioners, researchers, and educators are scrambling to understand and implement the method as well as to find best practices toward Industry 5.0. This chapter will draw attention to research and practice topics in the VUCA-RR and business agility development methodology in perspective of Industry 5.0.

*Keywords:* Industry 5.0; VUCA-RR; VUCA; business agility; Society 5; risk management; strategic decision making

## 1. Introduction

The COVID-19 outbreak has given an unprecedented shock to the global economy. It has also laid bare the vulnerabilities of many practices that had overtime become defining and sacrosanct features of our economic systems. In particular, business management and administrative have come under scrutiny as different

production facilities are closed down, demand patterns shifted, and mobility of goods came to a virtual halt. Nowadays, it is impossible to imagine a business without technology. Most industries are becoming “smarter” and more tech-driven. New ways of working, such as Agile and DevOps, are introduced, leading to new risks. These risks do not restrict themselves to the technology domain; new challenges arise by teams working together in a distributed manner to deliver high paced value at a higher pace by reducing the time to market. We see smart cities emerge, and society is taking a more holistic view of the regulation of such high-tech developments. For policymakers and business leaders, technology is no longer a domain that is shrouded in mystery; instead, it is an essential business discipline that is here to stay. Business agility has gathered much more attention and interest in the management world, in response to the high uncertainty and fast change brought by changing social norms, (de)globalization, climate change, and digital disruption. COVID-19 outbreak has accelerated this interest. In the academic literature, the concept of agility, it is the overall capacity to react quickly to rapidly changing circumstances and is a set of specific tools and methods that has gained more importance.

The world in which today’s businesses operate has become not only riskier but also more volatile, uncertain, complex, and ambiguous. For these reasons, organizations that manage innovation in the traditional way will be hampered in their ability to survive. In contrast, success depends on a company’s ability to understand the new elements of the environment that, coupled with business model innovation, will unleash the initiative, imagination, creativity, and innovation needed to survive. Both business and leadership agility are needed more than before.

For executives in large, non-digital native firms, business agility has become a key imperative as they seek to adapt to the fast-changing business environment noted above. Business agility and VUCA require a multi-layered effort – at the strategic, organizational, team and leadership levels of analysis, and in different functions such as IT, HR, marketing, finance, and operations. Most organizations already probe for new opportunities and threats on a periodic base. We need strategy that is context-aware and malleable, with a strong focus on a bigger vision or mission.

To do this, it is important to understand the future today and adapt as it changes. The best way to do it is on an ongoing basis, always aware of what is happening that might affect your organization, and to get people involved in the process. This process is called VUCA. V = Volatility, U = Uncertainty, C = Complexity, A = Ambiguity is the new world for organizations in competitive business environment. Neither an organization’s leadership nor its strategies can be spared in today’s VUCA world. Because VUCA is a set of challenges that individuals, teams, managers, and organizations in affected industries all have to face. Individually, these challenges can be significant, but they can be formidable when they’re combined. Both business and leadership agility are needed more than VUCA due to the VUCA world is becoming old. Therefore, in this chapter, VUCA-RR is proposed in a perspective where the double RR stands for Rapidity and Radicality. The new normal world in which today’s business operate has

become both riskier and Volatile, Uncertain, Complex and Ambiguous (Moccia, García, & Tomic, 2021), that is why Radicality (change & flexibility) is needed with Rapidity. The acceleration of VUCA situations may need a radical change in decision-making techniques to manage innovation and competition in a VUCA environment (Schoemaker, Heaton, & Teece, 2018). Moccia et al. (2021) emphasized the importance of updating the VUCA paradigm to include two additional strategic forces: Radicality and Rapidity. Radicality is about innovation that is dependent on dynamic and organizational capacities, as well as individual and organizational human capital. Organizations that handle innovation in the old manner will struggle to survive. Rapidity the most important human survival skill will be managers'/leaders' ability to consistently create value out of new ideas (Turner, 2018) in the VUCA-RR world.

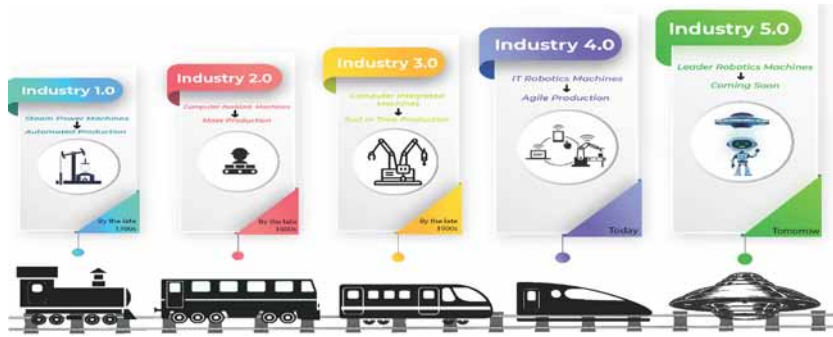
After Industry 4.0, digital transformation through automation and artificial intelligence (AI) has changed the nature of work. This change has moved companies/organizations to a strict competitive. Companies/organizations had to follow some stages/steps in order to survive with innovation strengths and get competitive advantages. Companies/organizations can discover their innovation strengths and develop their creative potential by passing each stage step by step in the VUCA-RR world:

- Volatile firms that can manage an ever-increasing change and the confusion caused by the pace of change.
- Uncertainty demands that firm needed to be highly proactive in its future planning and other endeavors.
- Complexity required from firm to sketch out the relationship with stakeholders in an effective manner.
- Ambiguity demands an adoptability to changing landscape of internal and external industrial environment.
- Radical innovation firms that have dynamic and agile capabilities being able to change even create radical changes.
- Rapid companies that can respond to consumers' expectations at the right time and place through flexible product innovation, along with agile management skill to efficiently organize and repurpose internal and external capabilities.

Managers, practitioners, researchers, and educators are scrambling to understand and implement the method as well as to find best practices toward Industry 5.0. This chapter will draw attention to research and practice topics in the VUCA-RR and business agility development methodology in perspective of Industry 5.0.

## 2. Theoretical Background

The world was already moving toward Industry 4.0, but the global pandemic of COVID-19 has really rushed the things up. In different aspects of life in general and business in particular, optimized computerization, digitalization, and artificial intelligence are being used with never-seen-before speed and impact.



Transition of Industrial revolutions. *Source: Akkaya and Tetik (2021, p. 370).*

Moving to digital management approach forces the solutions to be thought in relation to another defining concept of the future days: VUCA-RR approach.

The dynamics of international political environment, ecological, and technological areas fully cover the components of VUCA that influence the mission and vision of managers and make it very difficult (Mack & Khare, 2016).

### 3. Industry 5.0

The term Industry 4.0 created a lot of interest in academic community to undertake the research for the purpose to understand its impact upon various aspects especially organizational and economic (Mrugalska & Ahmed, 2021; Oztemel & Gursev, 2020). But, it is being observed that academic community has its renewed interests in terms of Industry 5.0. Many people would also argue that it would not be suitable to argue that world is entering or ready to enter into the fifth industrial revolution (Industry 5.0) and new addition should be referred as Industry 4.1 and from now onward rather than Industry 5.0. But, it is being argued that,

Over its ten years of life, Industry 4.0 has focused less on the original principles of social fairness and sustainability, and more on digitalization and AI-driven technologies for increasing the efficiency and flexibility of production. The concept of Industry 5.0 provides a different focus and highlights the importance of research and innovation to support industry in its long-term service to humanity within planetary boundaries. (Breque, De Nul, & Petridis, 2020, p. 08)

Further, it has also been postulated that Industry 5.0 is neither replacement nor a substitute to Industry 4.0 but it is a reasonable continuance of Industry 4.0 (Müller, 2020).

The various attempts which are consistent in nature have been made to define the Industry 5.0. Based upon the review of current, existing, and limited literature, Industry 5.0 is being defined under the renewed lens of purpose to Industry 4.0.

It is said that Industry 4.0 is more focused toward automating and digitalizing value and supply chain, Industry 5.0 must be defined in broader perspective of human, ecology, and society (Xu, Lu, Vogel-Heuser, & Wang, 2021). Various researchers and authors have given the definition consistent with such paradigm shift. The current research also attempts to provide definition of Industry 5.0 based upon the literature reviewed and consistent the paradigm of social, ecological, and human values. The Industry 5.0 is defined as “The industrial and technological infrastructure whose deployment is aimed at creating a value for everyone including humans, society and environment.” The current definition is based on the idea that technologies of Industry 4.0 have earlier been focusing narrowly upon the automation of manufacturing and value chain system, Industry 5.0 will shift their purpose toward human-centric approach, building a wide range of social and organizational resilience and protecting environment as depicted in Fig. 1. Sir David Attenborough a famous British broadcaster, historian, and author in his speech at 2021 United Nations Climate Change Conference has argued that,

A new industrial revolution powered by sustainable innovation is essential and is indeed already beginning. We will all share in benefits, affordable clean energy, healthy air and enough food to sustain us all.

Thus, it can be argued that what Sir David Attenborough has argued in his speech can better be defined as Industry 5.0.



Fig. 1. Industry 5.0 Adopted from Breque et al. (2021).

## **5. VUCA-RR World**

Climate change, global warming, and the manifestation of the warming of the planet, waste water and food, technological changes through the transition from Industry 4.0 to Industry 5.0, ensuring peoples' health, mutual support, and cooperation are all topics of discussion in today's hyper dynamic world. This necessitates that all businesses and organizations conduct digital management in the face of reality and the complexity of the environment in which people live. In this hyper dynamic environment, it becomes more important for organizations both to direct and to manage their digital management strategies to survive in future digital business world that is deeply impacted by VUCA-RR.

To remain in this complicated and dynamic environment, businesses must adhere to the idea of continual and future digital learning. In other words, firms must initially gather as much environment and technological data as possible in order to generate trustworthy predictions. Because in VUCA-RR world, it is important to employ advanced methodologies in order to predict as many occurrences and events as possible, ranging from the most diversified and complex to the most little. VUCA-RR is a set of concepts that explain digital management of the future, offering the possibility to build, to design, and to implement new digital management strategy.

The world was already moving toward Industry 4.0, but the global pandemic of COVID-19 has really rushed the things up. In different aspects of life in general and business in particular, optimized computerization, digitalization, and artificial intelligence are being used with never-seen-before speed and impact.

To effectively address this problem, company must consider a dynamic and strategic agility, with ongoing and real improvements. Organizations can benefit from dynamic and strategic agility because it allows for continual updating of circumstances, resulting in faster and more effective reactions. Various strategic management strategies, such as organizational agility, can assist in achieving dynamic and strategic agility. Organizational agility through constant adaptation, learning, and integration with new normal information provides a more efficient implementation of the company's plan. Finally, it may be stated that dynamic and strategic agility have important qualities in the management of the future of organizations in the VUCA-RR world: Volatility, Uncertainty, Complexity, Ambiguity, Rapidity, and Radicality.

This new approach provides digital transformation, adaptive, visibility, transparency, and update to the company's strategic objectives.

## **6. From VUCA to VUCA-RR**

In terms of networking, resources and responsibilities are networked, while the collective wisdom of many individuals is networked in order to build unique business solutions. Openness implies that all information and concerns are discussed in a transparent manner among all parties concerned. Participation takes into account the fact that each employee must be involved in important choices. Agility implies that people are encouraged to work individually despite making errors

in groups or teams. VUCA-RR provides a versatile framework for merging network operations with hierarchical structure. Furthermore, it aspires to develop a sense of direction and mental comfort in all workers.

Communication and management are no longer constrained to certain physical and temporal situations or limited to face-to-face engagement, as they formerly were. In contrast, it increasingly refers to an unphysical location that transcends geographical and social boundaries. Along with these processes, the rising pervasiveness of the so-called “artificial intelligence” (AI) in everyday life is creating unprecedented societal upheaval in terms of speed and radicality, completely unlike earlier transitions. Technology, with its various communication places and times, is integrated into our everyday materiality through the “Internet of things” and the availability of mobile devices that keep us constantly interconnected (Rabelo, Bhide, & Gutierrez, 2019). The stages are developed by making use of two dimensions of social change beyond VUCA (“rapidity” and “Radicality”) and described.

## 7. Industry 5.0 and VUCA-RR

One of the key values which is being provided by the industrial and technological infrastructure of Industry 5.0 is effective management of VUCA and RR world (VUCA-RR). The paradigm shifts from Industry 4.0 to Industry 5.0 provide unique opportunities to both organization and policy makers which pertain that technologies and infrastructure of Industry 5.0 will specifically help to encounter VUCA-RR environment effectively. Müller (2020) has identified several enabling technologies of Industry 5.0 which include human-machine interaction, smart material, digital twin and simulation, data transmission, storage, and analysis technologies, AI and technologies for energy efficiency, renewables, storage, and autonomy. These technologies will specifically help organizations specifically to encounter the challenges posed as results of VUCA-RR environment. Although a negligible research has been undertaken on this perspective, present research attempts to initiate a discussion among academic community on the perspective of enabling technologies of Industry 5.0 encountering VUCA-RR. The perspective of Industry 5.0 enabling technologies encountering VUCA-RR environment is highly important because previous researches such Mohanta, Nanda, and Patnaik (2020) and Ahmed, Mrugalska, and Akkaya (2021) have argued that enabling technologies of Industry 4.0 such as smart manufacturing, cloud computing, big data and analytics, simulation, 3D printing, Internet of Things will contribute to gravity and intensity of VUCA environment. Thus, it is argued here that Industry 5.0 will contribute in enabling organization to better manage VUCA-RR environment. The present research provides an introductory framework of relationship between Industry 5.0 and VUCA-RR environment (Fig. 2).

## 8. Conclusions

When discussing strategic management procedures, it is necessary to include both the macro and micro levels of company. This assists in giving a more

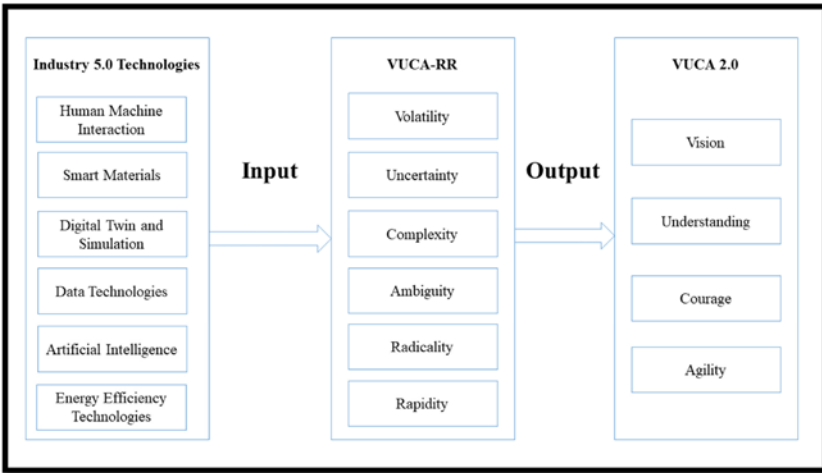


Fig. 2. Industry 5.0 and VUCA-RR.

comprehensive picture of strategic analysis and developing a full grasp of generic strategies. It is critical to integrate “predicted” concerns of VUCA connected to business settings in this process. In this environment, organizations should seek out new ways to strategy, such as new business paradigm strategies, foresight-based strategies, adaptive strategy, vanguard design thinking and strategies, and creative approaches to having a competitive advantage.

As previously mentioned, the United Nations has undoubtedly developed some broad frameworks for management models that may be used to take some initial steps in the correct direction. However, company executives must constantly enhance the internal management structures. This improvement begins with corporate social responsibility, which views social responsibility as a value contributed to the desired profits. Among the components of social responsibility, managers must pay attention to work–life balance, which has been identified as the driving factor behind employee engagement (Bulińska-Stangrecka, Bagińska, & Iddagoda, 2021). Aside from social responsibilities, businesses must consider environmental problems.

There are efforts to further improve the notion of VUCA-RR. However, we must underline that in addition to global frameworks at the macro-level, each corporation must establish acceptable procedures within their organization. This means that managers and leaders must constantly review and balance their goals while remaining open to adjustments and improvements (Lawrence, 2013).

The abbreviation VUCA, introduced by the United States Army to describe the post-Cold War environment, is made up of the initials of the English terms volatility, uncertainty, complexity, and ambiguity (Casey, 2014; Codreanu, 2016). The first element of the VUCA world is the idea of volatility, which describes the rate of change in the environment, its pace, and the model of dynamics (Schick,