Chapter 2
Understanding Digital Congruence in Industry 4.0

Berna Ulusoy
Hochschule Fresenius University of Applied Sciences, Germany

ABSTRACT

Industry 4.0 is a type of revolution that brings profound changes around the world. Industry 4.0 has both broadened the scope of digital transformation and raised its importance to organizations. The interconnection of digital and physical processes is fundamentally increasing. In this respect, digital transformation becomes a major driving force of Industry 4.0 for organizations. While Industry 4.0 presents key opportunities to boost competitiveness and promotes digital change, development of digital capabilities is significant for organizations to be better prepared to implement these advances. Thus, according to some authors, digital capabilities refer to digital congruence. Digital congruence relates to culture, people, structure, and tasks in organizations. It is therefore considered that explaining the link between digital congruence and Industry 4.0 will provide a unique insight into the research agenda of Industry 4.0.

INTRODUCTION

Today, the digital change which is happening at an exponential pace, is dramatically affecting us. According to Klaus Schwab, we are at the beginning of a revolution that is fundamentally changing the way we live, work and relate to one another. This revolution, Industry 4.0 is characterized by a range of new technologies that are spreading around the world by impacting all disciplines, economies and industries. Rapid technological advances with new ideas make Industry 4.0 unique and these profound advances highlight the potential to connect billions more people to digital networks (Schwab, 2016). Transactions are being digitized, data is being generated and analysed in new ways, people and activities are connected (Iansiti & Lakhani, 2014). While the role of digital technology is changing, digital transformation provides opportunities for value creation and capture. The strategic implications of these changes are indispensably critical for organizations (Digital Transformation of Industries: Digital Enterprise, 2016). With the changes being so profound, adopting and implementing Industry 4.0 present

a special challenge for organizations throughout the world. German Trade and Invest (GTAI) defines Industry 4.0 as the technological evolution from embedded systems to cyber-physical systems, an approach that connects embedded production technologies and smart production processes (MacDougall, 2014). Incredible progress of digital technologies becomes important and transformational for organizations. The transformation that has been brought about by digital technology is extremely beneficial because technology provides more choices (Brynjolffsson & McAfee, 2016). Industry 4.0 encompasses digital transformation of organizations around the globe. In other words, Industry 4.0 has both widened the scope of digital transformation and increased its significance for organizations. Industry 4.0 combines digital and physical technologies-artificial intelligence, Internet of Things, additive manufacturing, robotics, cloud computing and others, to foster more adaptive and interconnected organizations (Hagel, Brown, & Lui, 2013). Digital transformation can be defined as adopting business practices that help organizations to sustain their competitiveness. It is about how organizations adapt to digital trends as well as adapting to how customers, employees and competitors use digital technologies (Michelman, 2018). The ways organizations use digital technologies to drive their businesses forward are crucial to successful transformation. Thereby, using technology better than their competitors do, is important in building a digital advantage for organizations. While digital technologies are tools for organizations to transform their business processes, excelling in different dimensions play an important role in transforming digitally. Sustaining the momentum of digital transformation is crucial to the long-term success of organizations. In order to make the change possible, building new skills is necessary for organizations. Digital transformation demands integrating technology and business processes (Westerman, Bonnet, & McAfee, 2014). Moreover, the focus of digital transformation is both about strategy and new ways of thinking. Transforming for the digital age requires organizations to improve their strategic mindset and having a broader scope of business strategy (Rogers, 2016). In order to remain competitive, transformation efforts of organizations should be well designed.

Acquiring the right capabilities plays a crucial role for organizations to better prepare for their digital future. MIT Sloan and Deloitte recently examined how organizations can prepare for and survive the digital future. In their study, emphasis is given to development of digital capabilities, in which organizations' activities, people, culture and structure are compatible with a set of organizational goals. These digital capabilities refer to digital congruence. In the competitive landscape, organizations should consider a new concept which is called *digital congruence*, -culture, people, structure and tasks- aligned with each other and organization strategy and challenges of digital environment (Kane G. C., Palmer, Phillips, Kiron, & Buckley, 2016). The Congruence Model developed by Nadler and Tushman in the 1980s suggests, organizations to be systems that are made up of components or parts that interact with each other. The model is based on how well components fit together; that is the congruence among the components (Nadler, Tushman, & Hatvany, 1982). The Congruence Model is a powerful tool in order to analyse how well the key components of an organization interact. This means, organizational success depends on how the four key components -tasks, people, structure and culture- work well together. For instance, with a bureaucratic organizational culture, decision-making approaches will be problematic even if the organization follows the latest digital trends. The Congruence Model provides a framework for analysing organizational components in today's digital age. By adopting the four components as digital congruence, culture, people, structure and tasks as seen in Figure 1; organizations may able to compete the digital transformation driving Industry 4.0. Organizations will be able to benefit from the digital congruence thanks to the visibility which Industry 4.0 has given them. To remain competitive and successful in today's digital world, organizations should embrace the digital transformation Industry 4.0

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