# Chapter 3
# Organizational Design for Digital Technologies in Industry 4.0:
## "Best Practice" From Italy

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## ABSTRACT

*Digital technologies offer a great opportunity to small and medium-sized enterprises (SMEs) as they can adopt digital transformation more rapidly than large enterprises due to their greater flexibility and lean decision-making processes. So far there is no universal vision for a potential organizational model or design for Industry 4.0 SMEs. The research aimed to address this important gap by exploring the impact of digital technologies on organizational design in Industry 4.0 SMEs. The research builds on culture, staff, processes, and governance framework and follows a qualitative embedded case study design drawing on both employees' interviews and company documentation. The study provides insights about the main features, opportunities, and risks that are characterizing the current digital revolution in Industry 4.0 SMEs. Furthermore, the analysis of a notable Italian entrepreneurial reality revealed a set of practical suggestions and guidelines for other international SMEs that need to face the Industry 4.0 revolution with confidence and a proactive approach.*

DOI: 10.4018/978-1-6684-4265-4.ch003

## INTRODUCTION

Digital technologies are causing a transformation in the way the business operates and is carried out (Llopis-Albert et al., 2021) and companies that are aware of the potential of these technologies are promised to grow faster and have a competitive advantage over those who do not use them (Bean, 2021).

Also, the industrial environment has radically changed in recent years thanks to the introduction of the "*Fourth Industrial Revolution*" related concepts and technologies. Since the term "Industry 4.0" refers to a technological mixture of robotics, sensor technology, high levels of connection, and programming tools (Javaid et al., 2021), there seems to be a further revolution in manufacturing products and organizing work. Indeed, the suffix "4.0" corresponds to the steps of a specific evolution: from the introduction of the steam engine to the increasing use of automation, interconnection, computerization, and digitalization (Liu et al., 2020). Thus, companies are moving towards a new dimension called "*bimodal"*, which is characterized by both physical and virtual resources (Parmentola et al., 2021). Furthermore, *environment 4.0* is characterized by two key factors: 1) Integration and 2) Interoperability (Bousdekis & Mentzas, 2021). The former allows to enrich innovative functionalities through the network among various stakeholders within the organizational structure and along the production chain. It enables a tighter connection of physical reality operations with virtual reality. Interoperability, instead, allows new productions, even without any kind of interruption, within and beyond the boundaries of the company thanks to the interconnection among production systems and the exchange of knowledge and skills among production structures and different companies. Integration and interoperability, thus, enable some phenomena such as mass production, mass customization, and mass personalization.

Industry 4.0 is at the heart of digital transformation (Butt, 2020).

Digital technologies, often defined as a collection of various intelligent and innovative technologies in the era of Industry 4.0 (Li, Dai, & Cui, 2020), offer a great opportunity to both large and small and medium-sized enterprises (SMEs). The latter, in particular, adopt digital transformation more rapidly than large enterprises as they can easily develop and implement new information technology structures (Deloitte, 2015) and are characterized by greater flexibility and by lean decision-making processes (Garzoni et al., 2020). Though, previous literature has also underlined the complexity of the Industry 4.0 perspective for SMEs as digital technologies have implications for their organizational design (Garzoni et al., 2020). Nevertheless, there is a limited understanding of how or what organizations (including SMEs) need to change to embrace digital technologies and how these technologies can bring a business value (Mikalef et al., 2017), while there is a recognized urgency for supporting new technologies with appropriate organizational design and models.