# Chapter 98

# Challenges for Pakistani SMEs in Industry 4.0:
## Applications of Disruptive Technologies

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## ABSTRACT

*Small and medium enterprises (SMEs) play a vital role in the development of any economy. The disruptive technologies of the fourth industrial revolution have ignited the flexibility and dynamic nature of the market. Industry 4.0 requires firms to deliver highly customized and high-quality products at low price and on time. However, the SMEs sector is not performing up to the standard, which is quite disturbing in the current economic situation of the country. This chapter has elaborated the application of advanced information and communication technologies of Industry 4.0 in the context of SMEs. Based on the requirements of Industry 4.0, this chapter has also explored the challenges faced by SMEs in Pakistan. The SMEs in Pakistan are presently coping the challenges such as limited access to finance, the undue compliance and excessive paperwork imposed by regulators, lacking mechanism of talent management, lacking skilled workforce, absence of networking and collaboration, mismanagement of raw material, and insufficient infrastructure.*

## INTRODUCTION

The fourth industrial revolution extensively fluctuates production in the manufacturing industry (Kagermann, Helbig, Hellinger, & Wahlster, 2013). Germany has taken the initiative of industry 4.0. A few countries from the U.S., Europe, and Asia are presently considering this framework (Ślusarczyk, 2018). Disruptive technologies of industry 4.0 drive the creation of innovation (Strandhagen, Alfnes,

Strandhagen, & Vallandingham, 2017). Presently, most firms are adopting high technologies in the era of industry 4.0 (Oláh, Karmazin, Pető, & Popp, 2018). The firms in Pakistan so far could not achieve significant growth due to low technological improvements (Khan & Khan, 2010).

Pakistan is facing an extensive decline in its growth rate (Iqbal, Ahmad, & Ahmad, 2018). Pakistani exports are also consistently and massively declining for a long time. Because of this, a gross domestic product of Pakistan is only in 2019 (Pakistan Bureau of Statistics, 2016). Pakistan is lagging in the growth of gross domestic product (GDP) behind other countries such as Bangladesh, Vietnam, Cambodia, and Laos. Pakistani firms are lacking modern technologies and the market is highly volatile so its growth is lagging behind neighboring countries namely India, Malaysia, and China (Waseem-Ul-Hameed, Azeem, Aljumah, & Adeyemi, 2018). Disruptive technologies of industry 4.0 such as cyber-physical systems, smart factories, big data, and interoperability can tackle many issues through their applications.

SMEs play a vital role in the economic development of Pakistan. In Pakistan, SMEs comprise of a total of 90% enterprises. SMEs contribute to 40% of GDP and 30% in all exports. SMEs are located across the whole Pakistan such as 65.4% in Punjab, 18% in Sindh, 14.3% in Khyber Pakhtunkhwa, and 2.3% in Baluchistan (Zafar & Mustafa, 2017). SMEs in Pakistan employs 75 percent of the non-agriculture workers with 30 percent manufacturing output (Iqbal et al., 2018). Therefore, there is substantial significance to explore the potential challenges faced by SMEs in Pakistan. In the era of the fourth industrial revolution, there is also a pivotal need to elaborate on the application of its disruptive technologies in the domain of SMEs. According to Iqbal et al. (2018), there is also lacking research in SMEs in the context of industry 4.0. Therefore, the present chapter aims to explore the application of industry 4.0 technologies and challenges faced by Pakistani SMEs.

## FOURTH INDUSTRIAL REVOLUTION INDUSTRY 4.0

Industry 4.0 undertakes the automation and data exchange in different manufacturing technologies. industry 4.0 consists of cognitive computing, cloud computing, internet of things, and cyber-physical systems which are generally known as the fourth industrial revolution (Stverkova & Pohludka, 2018). Currently, adaptable organizations are in a position to exploit numerous opportunities and deliver optimum performance (Rajnoha & Lesníková, 2016). Organizations have increased their productivity and profit by applying steam engine, power, and the transition from simple to computerized innovation.

### Big Data

Big data is the sum of polluted and quality data or information (Iqbal & Nawaz, 2019; Iqbal, Yang, Nawaz, & Iqbal, 2019) where polluted information rises exponentially and quality information is increasing linearly. Big data is an umbrella term, refers to any technique that process a large volume of data or information-capture, transfer, storage, analysis curation, search, privacy, and visualization, includes both structured and unstructured data (Xu & Duan, 2019) (Xu and Duan, 2018). According to Hashem et al. (2015), big data refers to a rise in the volume of data that is hard to store and process. The big data requires substantial procedures to identify and translate the data into new insights. Big data constitutes three Vs; volume, velocity, and variety (Zhu, Yu, Wang, Ning, & Tang, 2018). Iqbal and Nawaz (2019) have claimed that big data is a new form of capital in today's market. In the presence of polluted information, practitioners are still unsuccessful to exploit the big data in terms of its advantages (Iqbal et al., 2019).

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