

Chapter 1

The Impact of the COVID-19 Pandemic and Crisis on Doing E-Business in Industry 4.0

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ABSTRACT

The chapter aims to determine the impact of the COVID-19 pandemic and crisis on e-business in Industry 4.0. Dynamic modeling by regression and trend analysis methods found that e-business in Industry 4.0 showed a decline in the COVID-19 pandemic and crisis. The regression analysis method reveals that doing e-business in Industry 4.0 in the COVID-19 pandemic and crisis environment is determined by the demand of information society and the factors of telecommunication infrastructure, the management of which allows supporting e-business in Industry 4.0 in these conditions. The contribution of this research to the literature lies in the development of scientific positions of e-business theory by clarifying the effects of the COVID-19 pandemic and crisis on doing e-business in Industry 4.0, as well as identifying the managerial apparatus for mitigating these effects.

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INTRODUCTION

In an Industry 4.0 environment, today's markets are dominated by e-business, the features and benefits of which include continuous and flexible digital transformation (Astafeva et al., 2020), application of advanced technology (Digilina et al., 2022), and improved cross-sectoral interactions and optimized value chains (Zharikova et al., 2021). The COVID-19 pandemic and crisis have changed the business environment, which is covered by many contemporary authors (Nguyen & Hoang Dinh, 2021; Wang et al., 2021). The specifics of doing e-business in Industry 4.0 in the COVID-19 pandemic and crisis are poorly understood and are still ambiguous.

Some scholars draw attention to the overall economic downturn in 2020, the total restrictions caused by the COVID-19 pandemic that hold back entrepreneurial development, and the reduced availability of innovation for business. Thus, Engidaw (2022) noted that small businesses in developing countries faced particularly great problems during the COVID-19 pandemic (shown by the example of Ethiopia). Gao (2022) also noted that COVID-19 has made the activity of small businesses more difficult. Fairlie and Fossen (2022) indicated a marked decline in business sales under the impact of the COVID-19 pandemic.

Zhou et al. (2022) pointed to a direct link between the potential risk of COVID-19 incidence and urban density with doing business in a pandemic setting, highlighting serious spatial differences. Vazirani and Bhattacharjee (2022) proved the necessity, possibility, and high complexity of launching new businesses (start-ups) during the COVID-19 pandemic. B. H. Meyer et al. (2022) also substantiated the significant impact of the COVID-19 pandemic on business expectations, leading to a revision of business strategies toward less ambitious goals.

Other researchers point out that e-commerce has received a new impetus for development in the context of social distance. In their study, Giantari et al. (2022) pointed out the important role of digital marketing in mediating the impact of the COVID-19 pandemic and the intensity of competition on business performance. Vardari et al. (2022) pointed to the positive impact of information technology on business during the COVID-19 pandemic outbreak, associated with increased business resilience.

Xie et al. (2022) proved the relationship between business networks and the potential for organizational resilience in the digital age during COVID-19, outlining a perspective using organizational information processing theory. Popkova et al. (2021b) substantiated that corporate social responsibility can support business sustainability in conditions of social distancing during the COVID-19 crisis using the experience of BRICS and OECD countries as an example, considering their specifics.

Nevertheless, the impact of the COVID-19 pandemic and crisis on e-business in Industry 4.0 is only indirectly and fragmentedly addressed in the existing literature,

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