

Digital-intensive industries not always more resilient, study finds

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It is widely assumed that digitalization improves the capacity of companies and sectors to cope with crises. But is it the case that digital

intensive sectors proved more resilient during the COVID-19 crisis? Researchers from the Research Institute for Sustainability (RIFS) investigated this by analyzing data relating to various socio-economic indicators pre- and post-crisis.

Their findings are surprising: In some cases, less digital-intensive industries were actually more resilient. Pandemic-related assistance provided by the German government is one possible explanation for this.

In 2020, the global spread of the SARS-CoV-2 virus led to a year-on-year decline in global economic activity of 3.5%. In Germany, too, key [economic indicators](#) declined across all sectors during the crisis; however, not all sectors were equally affected. Observed differences in sectoral resilience in this context have stimulated debate about the potential benefits of digitalization for the economy (through automation and remote working, for example) and prompted calls to embrace digitalization more broadly.

However, according to a new study prepared by a team of researchers at RIFS, the connection between the digital intensity of sectors and their [economic performance](#) during the pandemic is less than clear cut, with only limited evidence available for this period on sectoral socio-economic performance and digital intensity.

In order to uncover differences in socio-economic resilience to the COVID-19 crisis between more and less digitalized industry sectors in Germany, the researchers analyzed sectoral stock market performance, gross value added (GVA) and sectoral employment data and linked this to data relating to the digital intensity of various sectors in Germany during the pandemic year of 2020.

According to the team of researchers, the results of this analysis do not confirm the hypothesis that highly digitalized sectors consistently proved

more resilient in the context of the COVID-19 crisis. High and medium-high digital intensity sectors did perform better on [stock markets](#) than sectors of low and medium digital intensity. However, a high degree of uncertainty and stock market volatility is detrimental to the resilience of the economy.

Less digitalized sectors outperformed high and medium-high digital intensity sectors in terms of GVA and employment in 2020, with the exception of the information and communication sector. Notably, the data shows that low and medium-low digital intensity sectors such as [public administration](#), education, defense, health, [social work](#), and construction were the only sectors that saw employment gains during the pandemic.

"These observations led us to the hypothesis that digitalization may not be a silver bullet to achieving social and economic resilience in times of crisis," explains lead author Stefanie Kunkel. And while the improved stock market performance of highly digitalized sectors is relevant for investors, the evidence suggests that less digitalized branches of the public sector such as health and education played a crucial role in maintaining employment stability and reducing the adverse socio-economic impacts of the crisis.

However, Kunkel and her co-authors point out that the study does not establish causal relationships. The authors conclude that financial support programs significantly strengthened the resilience of multiple sectors throughout the crisis, with some studies going one step further to argue that state aid was the main driver of resilience.

Recommendations for economic policy

Policies with a narrow focus on promoting digitalization to mitigate future crises could prove to be misguided. Not only does digitalization

result in changes in job profiles, potentially favoring better skilled workers and leading to increased wage inequality, it also presents ecological risks such as increased energy and resource consumption.

Instead, during crises, policy measures that promote resilience and financial support programs should focus on strengthening social and environmental resilience by targeting sectors that foster stability and support a broader socio-ecological transformation in line with international sustainability goals, such as the United Nations Sustainable Development Goals.

Recommendations for companies

The authors recommend that companies should seek to create work environments in which remote and on-site tasks are evenly distributed among employees in order to avoid widening the digital divide within the workforce in times of crisis.

Digital technologies should also be used to measure environmental parameters and impacts, reduce energy and material consumption along supply chains, and identify more environmentally friendly business models and practices such as circular material flows. This could enable employees to benefit more equally from digitalization during future crises, enhance their digital competencies, and align social, economic, and environmental goals.

Ultimately, this analysis raises an important question for efforts to mitigate the negative effects of future crises for people and the planet: Which factors must be addressed by industry and policymakers in order to steer the effects of digitalization towards improving socio-economic and environmental outcomes? This would be an important departure from many current political and economic agendas that focus purely on creating economic gains through [digitalization](#).

The work is published in the *International Journal of Technological Learning, Innovation and Development*.

More information: Simon Terhorst et al, Digitalization and resilience of industry sectors: A descriptive analysis of the Covid-19 crisis in Germany, *International Journal of Technological Learning, Innovation and Development* (2023). [DOI: 10.1504/IJTLID.2023.10055714](https://doi.org/10.1504/IJTLID.2023.10055714)

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