

Does digital transformation affect energy storage innovation?

Table 3 shows the impact of digital transformation on energy storage innovation estimated by a negative binomial model. Our findings show that digitalization strategies have a significant positive impact on technological innovation in energy storage after controlling for years and industry fixed effects.

Does digital strategy affect firm energy storage innovation?

It is observed that the positive impact of digital strategy on firm energy storage innovation is much more significant in the regions and industries with higher convergence between digital and energy storage technologies.

What is the relationship between energy storage and digitalization?

Digital trends in energy storage technology With continuous technological iteration, the entire energy system has undergone enormous changes in the context of digitalization. We demonstrated a novel and promising trend in the interaction of energy storage and digitalization using patent co-classification analysis.

How does the digital economy contribute to sustainability?

Moreover, the digital economy plays a pivotal role in contributing to sustainability goals by curbing carbon emissions through optimized industrial output, real-time energy consumption monitoring, and support for eco-friendly sectors like smart and shared transportation.

Does digital energy storage technology improve system operation and maintenance?

It is also related to previous evidence on the significance of digital energy storage technology in enhancing system operation and maintenance[1,55], which implies the global efforts towards the development of digital and intelligent energy-storage systems.

How does the digital economy drive economic growth in China?

Therefore, reducing the level of energy consumption and promoting the clean consumption of energy has become an important component for China's high-quality economic development and sustainable energy development. Academic research on how the digital economy drives economic growth can be divided into three main levels: macro, meso, and micro.

VPPs leverage digital connectivity, software, and AI to aggregate and manage distributed energy resources (DERs), such as solar, wind, energy storage, and more. This integration enables DERs to function as a unified, flexible power plant, addressing key challenges in the modern energy system via the integration into energy markets.

Our findings demonstrate a significant upward digital trend in energy storage technology, with main

interaction fields ranging from daily life power supplies to regional ...

In the context of global digitization and sustainable development development, the interplay between digital infrastructure (DI) and energy utilization efficiency (EUE) has emerged as a crucial issue that deserves to be exploration. This paper attempts to investigate the impact of DI on EUE. Theoretically, an endogenous growth model is constructed in which data ...

2 ???&#0183; Xiang Ligang, director-general of the Information Consumption Alliance, an industry association, said the application of cutting-edge digital technologies including the industrial internet, 5G and cloud computing in the ...

This study explores the influence of the Digital Economy (DE) on the Energy Trilemma (ET) across Chinese cities from 2008 to 2021. Leveraging an extensive panel dataset encompassing 276 cities, we constructed a city-level ET index, categorized cities using k-means clustering, and employed IV-GMM regression to scrutinize the impact of DE.

To better explore the link between the digital economy and household energy poverty, and to achieve the goal of testing the effectiveness of digital energy poverty reduction, in this section we comb through the literature dealing with the end-to-end impacts of the digital economy on the energy side, as well as the factors influencing the front-end of energy poverty, ...

Digital economy and renewable energy development. The expansion of the global DE has had an irreversible and far-reaching impact on the way society produces and lives (Wang et al. 2023a, b, c, d; Lei et al. 2022).With a growing emphasis on sustainable development, scholars are increasingly examining its influence on RE development (Haldar and Sethi 2022; ...

Second, the digital economy promotes the development of energy storage technology, improves the development and utilization rate of renewable energy such as solar energy and wind energy, reduces the use of fossil energy, thereby achieving SERPCE because the "common origin" nature of multiple pollutants (Cao et al., 2024).

Particularly in the renewable energy sector, it has become highly dependent on emerging digital technologies to make energy production and distribution more efficient, sustainable and safe [].When academic researchers are examined, it is seen that these studies on this subject are focused on a single technology, not on multiple technologies, and focus on ...

Total factor energy efficiency: Digital economy: Xue et al. [21] Province: ... contributes to resource sharing, promotes technology spillovers in the processes of energy production, transmission, storage and consumption, ... which is dynamically superimposed. Compared with strategic digital transformation, substantial digital transformation has ...

The results indicate that digital economy significantly reduces energy poverty in China. Specifically, such positive impact is more pronounced in the eastern China, and the ...

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