# China's Digitalized Industry Chains: Value Scale and Network Structure

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Digitalized industry chains are crucial to the deep integration of the digital and real economies in Chinaâ€™s New Era and play a significant role in the global advancement of digital technologies. A robust accounting framework supported by comprehensive dataâ€”namely, the digital economy input-output tableâ€”is essential for understanding the systematic development and future trends of digitalized industry chains worldwide. This paper undertakes two key tasks: first, the construction of Chinaâ€™s digital economy input-output tables for 2018 and 2020, and second, the application of these tables to analyze digitalized industry chains.

Building on the overarching framework of the digital economy, we propose a systematic approach for compiling the digital economy input-output table, grounded in theoretical accounting principles, foundational compilation processes, and methodological considerations. The sector classification and structure of Chinaâ€™s digital economy input-output table are aligned with the Statistical Classification of the Digital Economy and Its Core Industries (2021) and the sector-setting rules of Chinaâ€™s input-output table. The datasets integrate both micro- and macro-level data from diverse sources, including the 2018 Economic Census of China, national input-output tables, and various Statistical Yearbooks. A critical step involves disaggregating industrial sectors into digital and non-digital components using digitalized share coefficients, which are mainly derived from Economic Census data, Industrial Statistics, and Fixed Asset Investment Statistics. By reconciling sectoral classifications and balancing the tables for 2018 and 2020, we ensure the accuracy and reliability of our data. A comparative analysis of the value-added contributions of core digital economy industries and industrial digitalization structures with existing research confirms that this compilation approach represents a meaningful step forward in improving Chinaâ€™s digital economy statistical accounting.

This paper further conducts an in-depth analysis of the structural characteristics of digital industry chains related to both digital industrialization and industrial digitalization. We categorize the digital industry chain into two types: the digital product industry chain and the digital-empowered industry chain. By examining the substitutive and synergistic characteristics of digital technologies, we explore the mechanisms driving value creation and structural formation within industry chains. Furthermore, we develop an industry chain network model and adaptively enhance input-output modeling and complex network methods for digital industry chain accounting. The evaluation of Chinaâ€™s digital industry chains is conducted from two perspectives: value-added scale and industry network structure. The findings reveal that from 2018 to 2020, the average annual growth rate of value added in Chinaâ€™s digital industry chains was 9.54%. By 2020, this figure had reached 13.86 trillion CNY, representing 13.63% of the total annual value added by Chinaâ€™s industry chains. The industrial digitalization process emerges as the primary driver of this expansion, with the service sector being the primary area of penetration. In 2020, digital sector participation in Chinaâ€™s industry chains stood at 10.05%â€”not yet dominant but exhibiting an evident upward trend. Moreover, the enabling factors of digital sectors were highly diverse and dispersed across upstream, midstream, and downstream segments. The findings also highlight notable disparities in participation levels, positional distributions among digital sectors, and significant structural differences between the two types of digital industry chains.