

# Digital Product Diversity in the Digitization of Global Value Chains: Based on a Supply-Use Table Accounting Framework

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**Research question:** With the rapid advancement of digital technologies, industrial production structures are undergoing profound transformations. The production of digital products has transcended traditional industrial boundaries, exhibiting cross-sectoral and interdisciplinary characteristics. However, existing literature rarely systematically deconstructs the value-added created by digital products in global value chains from an industry-product dual perspective, particularly overlooking the value contributions of digital products in traditional industries. This study innovatively constructs an industrial product diversity analysis framework and uses it to explore the characteristics of digital transformation in global value chains.

**Methodology:** This study proposes a novel cross-measurement approach for global value chains based on the dual dimensions of industry and product, systematically extending the existing framework for measuring digital transformation. Building on a supply-use table distinguishing digital and non-digital products, we formulate two equations of product structure and product distribution for industry, establishing a global input-output analysis framework incorporating digital product information. Within this framework, the study decomposes global total value added into digital product demand-driven and non-digital product demand-driven components. Furthermore, we use indicators such as digital product dependency and participation in global value chains, along with their measurement methods, to comprehensively characterize the diversity features of digital products.

**Data:** We utilize the FIGARO-MRSUT multi-regional supply-use table dataset compiled by Eurostat to quantitatively measure the extent of digital transformation in global value chains and to evaluate the role of digital product diversity in this transformation process.

**Novelty:** This study innovatively focuses on the diversified production structures of industries and adopts a digital product diversity perspective. We examine the characteristics of digital and non-digital product diversity within both traditional industries and core digital industries. By comparing the production structures of differentiated product diversity across industries, this approach provides a more realistic framework than the traditional assumption of single-product production. In the current context of accelerating digital transformation in traditional industries, the conventional single-product perspective may underestimate the enabling effects of digital product-driven technological innovation in the digital transformation of global value chains. Therefore, introducing an industrial product diversity perspective is both necessary and valuable for analysis.