Study: Measuring digital intensity and its impact on the Canadian economy

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Adoption of digital technologies by Canadian industries is associated with higher labour productivity growth and greater resilience to the economic impacts of the COVID-19 pandemic. From 2002 to 2019, labour productivity grew 22.1% in digitally intensive sectors—more than three times higher than in non-digitally intensive sectors.

Over the past two decades, Canada has embraced digital technologies at an unprecedented pace and breadth as businesses and individuals have relied increasingly on digital products and services. Two articles released today in *Economic and Social Reports* provide results from a new composite index developed by Statistics Canada researchers to provide a comprehensive measure of digitalization so that its impact on the Canadian economy can be better analyzed and understood.

The articles released today use the index to describe the intensity of digitalization in Canadian industries, as well as to measure and compare the economic performance between sectors in which digital inputs have been used more intensively in the production process and those in which they have not.

High but uneven growth of digital intensification across industries

The final composite index suggests that Canada's economy-wide digital intensity increased continually from 2000 to 2015, growing by more than 60% across industries. However, this intensification of digitalization has been uneven across industries. Digital intensity in some industries was high at the beginning of the sample period and grew markedly over time. These industries were information services; telecommunications; professional, scientific and technical services; machinery, computer and electronic product manufacturing; and transportation equipment manufacturing. The digital intensity of other industries such as agriculture, mining and construction, as well as most manufacturing and transportation industries, was low in the beginning and increased slightly over the period.

The composite index can also be used to rank industries based on their digital intensities. A digitally intensive sector can be defined as having an intensity within the top quartile. For the period from 2013 to 2015, the digitally intensive sectors were utilities; plastics and rubber products; primary metal manufacturing; machinery manufacturing; computer and electronic product manufacturing; transportation equipment manufacturing; pipeline transportation; publishing and data processing; broadcasting and telecommunications; and professional, scientific and technical services. In contrast, agriculture, construction, food product manufacturing, and accommodation and food services were ranked among the least digitally intensive industries.

This characterization of digitally intensive sectors provides a useful tool for future studies on the effects of digitalization on the economy and quality of life that will help inform and measure the impact of policy.

For information on the other articles released today in *Economic and Social Reports* please see the *Economic and Social Reports* release.

Note to readers

Multidimensional metrics were constructed to measure the extent to which firms use digital inputs to produce goods and services, and the analysis uses data on information and communications technology (ICT) capital, the use of intermediate ICT goods and services, digital workforce, and robot adoption. The metrics are then aggregated into a single composite index based on weights derived from a principal component analysis.

The Spotlight on Data and Research article titled "Economic performance associated with digitalization in Canada over the past two decades" and the study titled "Measuring digital intensity in the Canadian economy," part of *Economic and Social Reports, February 2021* (36-28-0001), are now available.

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