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Measuring digital economic activities in Canada: initial estimates

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Introduction

Advancements in technology and the Internet have fundamentally changed how people and businesses interact and how they produce, distribute and consume goods and services. Not long ago people would typically hire a travel agent to book a vacation, or go to a store to buy a new pair of shoes or rent a movie. Today we can search and compare hundreds of hotel prices ourselves, rent someone else's home for our vacation, buy products from all over the world and stream a seemingly endless supply of videos—all from the comforts of our home.

As technological advancement continues and digitalization rapidly expands to affect more segments of the economy, there is an increasing need to accurately measure and assess its impacts. Statistics Canada is responding to this challenge by working towards defining and measuring the economic value of digital economic activities in Canada, the provinces and territories.

This paper presents Statistics Canada's working definition of the digital economy as well as initial estimates on the output, gross domestic product (GDP) and jobs associated with those activities. The first section provides an overview of the methodology and data sources used to compile the estimates. From there the initial estimates are presented and analysed in context of the total Canadian economy. Finally, the paper outlines some of the limitations of these initial estimates as well as next steps in improving measures of the digitalization of the economy in the Canadian System of Macroeconomic Accounts (CMEA).

Methodology

The estimates presented in this paper were derived within the Canadian Supply and Use Framework following the same methods used by Statistics Canada for deriving other satellite accounts. The Supply and Use Tables (SUTs) capture and present the production of products by domestic industries, imports of products as well as their use, either as inputs, final consumption, investment or exports. However, at times, the classifications that are used in the SUTs hide economic activity that may be important for analytical purposes. Satellite accounting involves disaggregating and recompiling the information from the SUTs into new categories in order to better understand an activity or sector, such as digital transactions.

While built with the Canadian SUTs, this paper applies the same concepts and definitions of the digital economy as used by the U.S. BEA in "Defining and Measuring the Digital Economy".¹ These estimates build upon the work done by U.S. BEA by including some "partial" digital products where data was available.

This work also borrows heavily from the digital economy measurement literature from the Organisation of Economic Co-operation and Development (OECD), including its proposed framework for a satellite account for measuring the digital economy.² However, due to limitations in available data on the nature of all digital economy transactions, it was not feasible at this time to do a full breakdown of the Canadian SUTs into the recommended digitally-ordered,

1. U.S. Bureau of Economic Analysis (2018).

2. OECD (2017).

digitally-delivered and platform-enabled transactions. As a first step we have identified products within the SUTs that either primarily or partially fall into one of the above transaction categories.

The methodology for deriving the estimates of the digital economy in Canada consisted of the following three steps:

1. Developing a product framework for the digital economy;
2. Identifying 'full' and 'partial' digital products, based on the above definition, within the Canadian SUTs;
3. Estimating the economic value of digital economic activities, in terms of output, GDP and jobs.

Using this methodology, estimates of the digital economy were derived for Canada and the provinces and territories for the period from 2010 to 2015. Estimates for reference years 2016 and 2017 relied on projections of GDP by industry to derive preliminary estimates of gross output and GDP by industry. These preliminary estimates assume the same production function and output distribution as the latest available SUT benchmark year. The output and GDP estimates presented in this paper are valued in nominal basic prices.

1. Product framework for the digital economy

Perhaps the biggest challenge with measuring the digital economy is the lack of a clear and agreed upon definition as to what it should include. As technology and business models continue to evolve at a rapid pace so too should a definition of the digital economy. For this reason, rather than attempting to solidify a complete definition of the digital economy, this paper presents a working list of products that reflect activities within a digitalized economy. The list of products is based on the OECD's digital economy measurement framework and can be broken down into the following categories: 1) digitally-enabled infrastructure, 2) digitally-ordered transactions (e-commerce), and 3) digitally-delivered products.³

Digitally-enabled infrastructure

Technology is the foundation for digitalization and therefore computers and their networks should be captured in estimates of the digital economy. Digital-enabling infrastructure includes the information technology equipment, systems, software, services, and structures upon which the digital economy relies to function (OECD 2011). The U.S. BEA proposed the following categorization of digital-enabling infrastructure⁴ :

- **Computer hardware:** The manufactured physical elements that constitute a computer system.
- **Software:** The programs and other operating information used by computing devices and servers.
- **Telecommunications equipment and services:** The equipment and services required for the digital transmission of information over a distance by cable, telegraph, telephone, broadcasting, or satellite.
- **Support services:** Services necessary for the function of digital infrastructure such as education services, consulting services and computer repair services.
- **Structures:** The construction of buildings where digital economy producers create digital economy goods or supply digital economy services. This category also includes buildings that provide support services to digital products, including data centers, semiconductor fabrication plants, the installations of fiber optic cables, switches, repeaters, etc.
- **The Internet of Things (IoT):** Devices and objects whose state can be altered using the Internet, with or without active involvement from individuals.⁵

Digitally-ordered transactions (e-commerce)

A defining feature of a digitalized economy is the ability to conduct transactions through digital channels, in other words e-commerce. In measuring e-commerce, Statistics Canada follows the OECD definition which is "the sale

3. OECD (2017).

4. U.S. Bureau of Economic Analysis (2018).

5. OECD (2015).

of goods or services where the order is received and the commitment to purchase is made via the Internet, even if payment is made by other means”.⁶ Some examples of e-commerce transactions include purchasing goods online and either picking them up in store or having them shipped to your house. E-commerce can also include buying a movie admission ticket via a mobile app, making a hotel reservation on the hotel’s website, or purchasing products that are delivered digitally (i.e. in digital format) such as music downloads or video streaming.

E-commerce, or digitally-ordered transactions, can be business-to-business (B2B), business-to-consumer (B2C) or peer-to-peer (P2P). B2B and B2C e-commerce transactions consist of the sale of goods and services over the Internet. While P2P transactions also use the Internet to sell goods and services, they can also be classified as platform-enabled as they often involve a third party to facilitate transactions via a digital platform.

The OECD proposed framework for a digital economy satellite account also recommends that platform-enabled transactions be distinguished from traditional e-commerce transactions. However, there are many challenges in identifying and measuring platform-enabled transactions.

Digitally-delivered products

Digitally-delivered products consists of content transmitted and consumed in digital format. It seems as though every day more and more products are being delivered and consumed in digital format, whether it is purchasing or renting music and videos, reading books and newspapers, storing photos and documents or accessing banking services online.

For the purposes of these estimates, Statistics Canada considers digitally-delivered products as those that are created, delivered, accessed or consumed in digital format. In addition to digital products themselves, any legal rights or licences that accompany the sale and distribution of digitally-delivered creative content are included.

This definition allows for the inclusion of free media, which is content accessed with no direct cost to consumers. For the time being, however, Statistics Canada has limited the estimates to direct sales of digitally-delivered content. The consumption of free digital content, while important for discussions about consumer surplus and social welfare, is not directly measured within the CMEA.

2. Identifying digital products within the Canadian Supply and Use Tables

Once the working definition of the digital economy was developed, products that fit within each domain were identified in the Canadian SUTs. The Canadian SUTs use the Supply and Use Product Classification (SUPC) system, a variant based on the North American Product Classification System (NAPCS), to classify products within the economy. Products within the SUPC were identified as either ‘full’ or ‘partial’ digital economy products and grouped into their corresponding digital economy domains. A complete list of the included products can be found in Annex A.

A product is classified as a ‘full’ digital economy product if its purpose is exclusively or primarily within one of the digital economy domains outlined above. Some examples of ‘full’ digital economy product include computers, computer peripherals and parts, general purpose software as well as mobile and fixed internet access services. The functions of these products are exclusively to enable digital computing, processing and communication and therefore are included in measures of the digital economy in their entirety.

Products are classified as ‘partial’ digital economy products if they are comprised of both digital and non-digital components. For example, books can either be in digital format (e-books) or in physical print format. These products were evaluated to determine if they could be split into digital and non-digital components. In the end, not all identified ‘partial’ products could be included as, in many cases, data was not available to identify the digital components.

6. OECD (2011).

Digitally-enabled infrastructure

Following this approach, nearly all computer hardware and software products, telecommunication goods and services and support services were identified as full digital economy products and included within the digitally-enabled infrastructure domain. One exception was in the support services category, where education services were identified as a partial digital economy product. Including education as a support service to the digital economy is based on the idea that for the digital economy to function it requires the necessary knowledge and skills to create, maintain and develop digitally-enabled infrastructure and other resulting digital products.

To meet this requirement, a portion of postsecondary education services, as well as trade, technical and professional training services assumed to support the digital economy, were included. Statistics Canada's Postsecondary Student Information System (PSIS), a national survey providing information on student enrollments in Canadian public postsecondary institutions, was used to estimate the share of enrollments in identified digital-enabling education programs relative to total enrollments. The PSIS classifies enrollments using the Classification of Instructional Program (CIP) from which digital-enabling programs were identified. The complete list of digital-enabling programs identified and used can be found in Annex B.

While the PSIS only tracks enrollments in public postsecondary institutions, it was used to estimate the share of digital-enabling education services for both public and private education services. This was necessary due to a lack of data available on the types of education and training programs offered by private organizations in Canada.

Although arguments could be made to include a wider list of education programs supporting the digital economy, (for example business management), at this time, only programs that provide knowledge and skills directly related to the creation and use of digital technology were included. Additionally, it would make sense to include a portion of primary and secondary education services as the resulting knowledge and skills are necessary to pursue postsecondary education and in turn support the digital economy. However, due to data limitations, no primary or secondary education services could be included in the digital economy estimates.

Similarly, the production of government organizations and regulators supporting the digital economy were not included. Government finance statistics do not currently contain sufficient detail to support this analysis. Future releases of these estimates may identify these amounts.

Finally, within the digital-enabling infrastructure domain, Statistics Canada did not include structures and IoT because of the difficulty in determining an accurate split of these products into their digital and non-digital components.

Digitally-ordered transactions (e-commerce)

When it comes to digitally-ordered transactions, the portion of wholesale and retail margins attributable to e-commerce were included. Data from the e-commerce modules on the Annual Wholesale Trade Survey, the Annual Retail Trade Survey and the Annual Retail Non-store Survey were used to estimate the portion of sales attributable to e-commerce transactions for each wholesale and retail industry. These e-commerce ratios were then applied to each wholesale and retail margin by industry.

The only non-margin product included within the digitally-ordered domain was travel arrangements, reservation and planning services. This product category includes services associated with planning and booking transportation and accommodation services as well as entertainment and recreation services. Research identified that these types of services are primarily conducted via the Internet, even when there is an intermediary or travel agent facilitating the transaction. While the presence of intermediary platforms suggests this product be separated into its own category, there is a lack of detail to separate out those transactions that are platform enabled and those that are not. For the time being Statistics Canada decided to include this product within the digitally-ordered (e-commerce) domain.

Digitally-delivered products

Statistics Canada identified several full and a few partial digitally-delivered products to be included within the estimates. Most of the full digitally-delivered products were media products, such as movies, videos, music and other sound recordings, which today are most often created and delivered (either to intermediaries or final consumers) in digital format. In addition to these digital media products, the associated licensing and broadcasting rights were included, as content creators typically sell rights to others to distribute their content. From the broadcasting side, fees for distribution as well as advertising revenue generated based on their distribution were included.

The identified partial digitally-delivered products include other media products sometimes created and delivered in digital format, such as books, newspapers and magazines. For these products digital ratios were derived using data from the corresponding service industry, which collect information on the proportion of sales attributable to the digitally-delivered version of the industries' main products. For books, a ratio for sales of e-books was derived, while for newspapers and magazines, digital ratios were based on sales for digital versions of the products themselves, including advertising in the digitally-delivered products.

A limitation of these partial digitally-delivered media products is that data on the digital components were only available for the primary producing industry. For example, sales of e-books was only available for the book publishing industry. The result is that these partial digitally-delivered products could not be split between the digital and non-digital components for the entire economy.

As mentioned earlier, Statistics Canada does not directly measure the consumption of free media products, such as watching videos broadcasted on the Internet. Advertising revenue earned by platforms that distribute free media content are captured in the CMEA and included in digital economy estimates as internet advertising. Additionally, income earned by individuals from posting creative content on free distribution sites or social media 'influencers' is included in the CMEA. However, there are challenges in capturing this activity as with all household production, due to potential under-reporting and misclassification of revenues.⁷ For these reasons, it is difficult to identify which products to include in this activity.

The final partial digitally delivered product included in these initial estimates is explicit banking service fees. Everyday more and more financial services, such as checking account balances, depositing cheques, transferring funds, paying bills or applying for credit, are provided online. In fact some financial institutions only offer online services and do not have a physical presence in the form of 'bricks and mortar' branches for consumers to access their services.

There are several challenges with including banking service fees within these estimates. First, financial institutions do not necessarily charge a direct fee for accessing or using their online services, but rather bundle access to online services within other charges. Moreover, some explicit banking service fees are charged for financial services that are not digitally delivered, for example, an overdrawn account or a non-sufficient fund charge on an account are not associated with online access to banking services. Despite these challenges it is important to include, at least partially, some of the explicit banking fees charges by financial institutions in estimates of the digital economy.

The portion of explicit banking fees included was derived using detailed information on the types of explicit service fees charged by banks and credit unions in Canada relative to their total revenue from explicit charges. Additional information on the proportion of Canadians who use online or mobile banking as their primary method of banking was also taken into consideration.⁸

3. Estimating the economic value of digital economic activities

After identifying the full and partial digital products, the output of these products were aggregated by industry. As indicated above, all of the output is taken for those products identified as full while only a portion of the output for the partial products is included. The digital portions for each of the partial products were estimated using additional data from surveys and administrative sources, regarding the products components.

7. Statistics Canada (2017).

8. Canadian Bankers Association (2016).

The aggregate output of all the identified digital products by industry was divided by the total output for each industry taken from the supply table. The resulting ratios were then used to estimate the GDP and jobs, by industry. Table 1 illustrates how the digital output ratios were calculated and applied to GDP and jobs by industry and for the entire economy.

Table 1
Example of the method used for calculating digital output, gross domestic product (GDP), and jobs using the supply and use tables

	Industry A	Industry B	Total economy
	number		
Output			
Product A: fully digital product	5,000	10,000	15,000
Product B: partially digital product	3,000	0	3,000
Product B.1: digital portion	2,000	0	2,000
Product B.2: non-digital portion	1,000	0	1,000
Product C: all other products (non-digital)	12,500	2,000	14,500
Total output	23,500	12,000	35,500
Digital output (product A + product B.1)	7,000	10,000	17,000
Digital output ratio (digital output ÷ total output)	0.29	0.83	0.48
Total GDP	12,750	8,000	20,750
Digital economy GDP (total GDP × digital output ratio)	3,570	6,640	10,210
Total jobs	1,000	2,500	3,500
Digital economy jobs (total jobs × digital output ratio)	280	2,075	2,355

Note: Above are some hypothetical data that are used as examples to illustrate the method used for calculating digital output, GDP, and jobs using the supply and use tables.

Source: Statistics Canada.

The approach taken assumed that the relationship between an industry's intermediate inputs and output for digital products was the same as its total output. The same assumption was applied when estimating jobs for the digital economy. The methodology used to derive the estimates in this paper assumed that the production function of an industry is the same for digital and non-digital output.

While this assumption is limiting, there is currently a lack of available data on the intermediate inputs associated with the production of digital products versus non-digital products. Incorporating more information on intermediate inputs and jobs attributable to the production of digital products is something that can be improved as Statistics Canada continues to refine estimates of the digital economy. This and other challenges are discussed later in the paper.

Results

The following estimates of the digital economy were derived according to the methods outlined previously. They represent a first attempt at estimating the size, growth and nature of digital economic activities in Canada. Digital economic activities, commonly referred to as the digital economy, include those activities that enable digitization or are highly affected by it. All dollar values are expressed in nominal basic prices. A complete set of tables, by province and territory, are available at the end of this report.

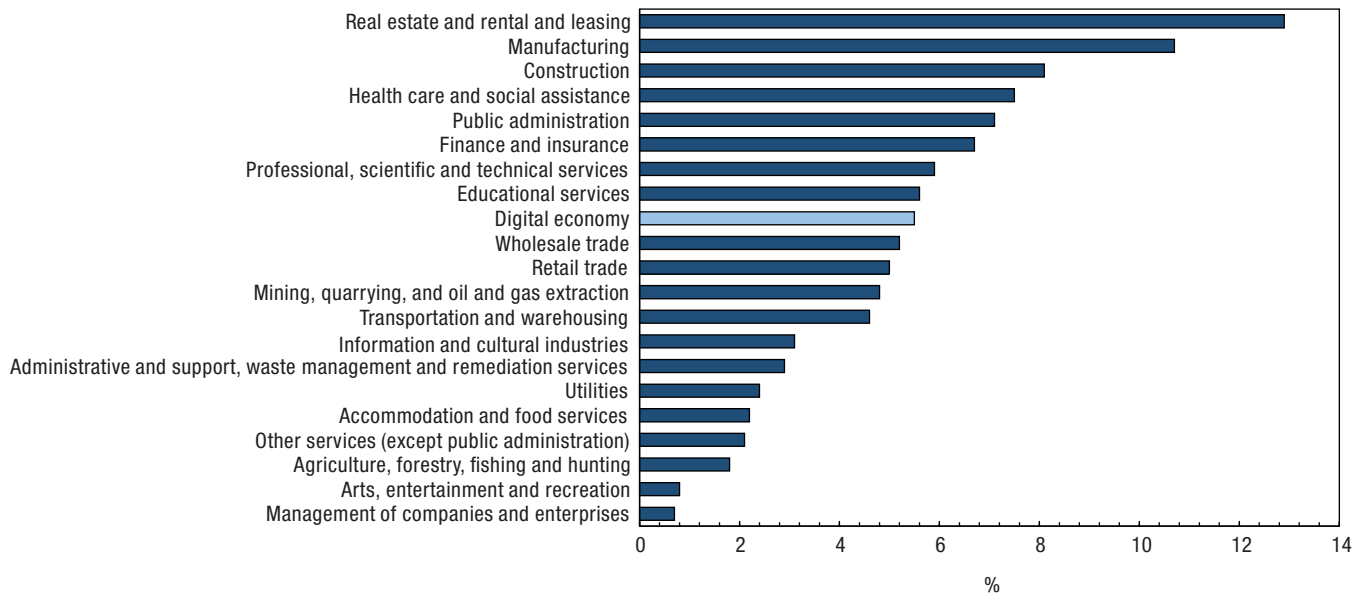
Gross domestic product

The nominal GDP associated with digital economic activities in Canada totalled \$109.7 billion in 2017 or 5.5% of the total economy.

While the digital economy is not an industry, to give a scale of its importance, in 2015 it was larger than mining, quarrying and oil and gas extraction (4.8%), transportation and warehousing (4.6%) and utilities (2.4%).⁹

9. The initial estimates of the digital economy presented in this paper are only available in nominal terms. As a result, comparisons of the digital economy to other sectors of the economy can only be done up to 2015 as nominal GDP by industry is not available for later reference periods.

Chart 1
Proportion of total gross domestic product (GDP) by sector, Canada, 2015

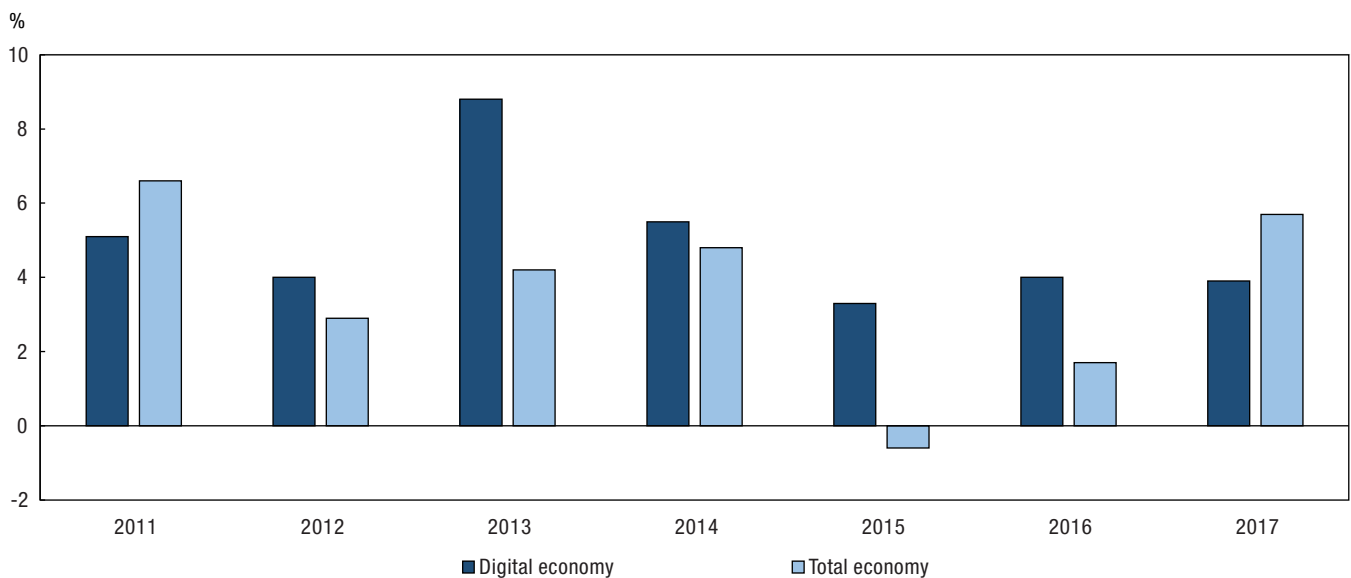


Note: The initial estimates of the digital economy presented in this paper are only available in nominal terms. As a result, comparisons of the digital economy to other sectors of the economy can only be done up to 2015 as nominal GDP by industry is not available for later reference periods.

Source: Statistics Canada, "Measuring digital economic activities in Canada: initial estimates", *Latest Developments in the Canadian Economic Accounts* (13-605-X), special tabulation, 2019.

Between 2010 and 2017, nominal GDP for the digital economy (+40.2%) grew more than the total economy (+28%). On an annual basis, the digital economy increased more than the total economy every year except 2011 and 2017, which were years of strong growth in the energy sector.

Chart 2
Growth in gross domestic product (GDP) for the digital economy and the total economy, Canada, 2011 to 2017

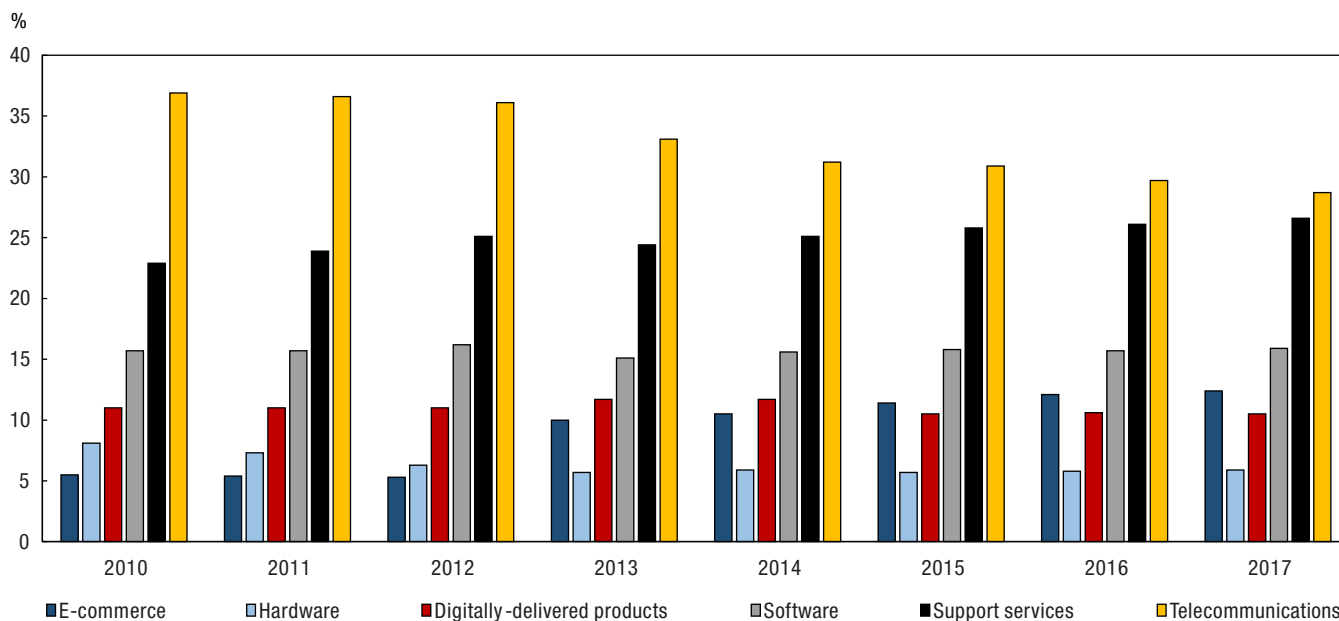


Note: The initial estimates of the digital economy presented in this paper are only available in nominal basic prices. In order to compare the digital economy to the total economy, GDP in nominal market prices was adjusted for taxes less subsidies on products and imports. This adjustment provides an approximate estimate of GDP in nominal basic prices.

Source: Statistics Canada, "Measuring digital economic activities in Canada: initial estimates", *Latest Developments in the Canadian Economic Accounts* (13-605-X), special tabulation, 2019.

Telecommunications and support services, part of the digital-enabling infrastructure domain, were the largest contributors to the digital economy in Canada. However, between 2010 and 2017 the contribution of the telecommunications sub-domain declined from roughly 37% in 2010 to slightly under 30% by 2017. During the same period, the contribution of e-commerce more than doubled, increasing from 5.5% of the digital economy in 2010 to 12.4% in 2017.

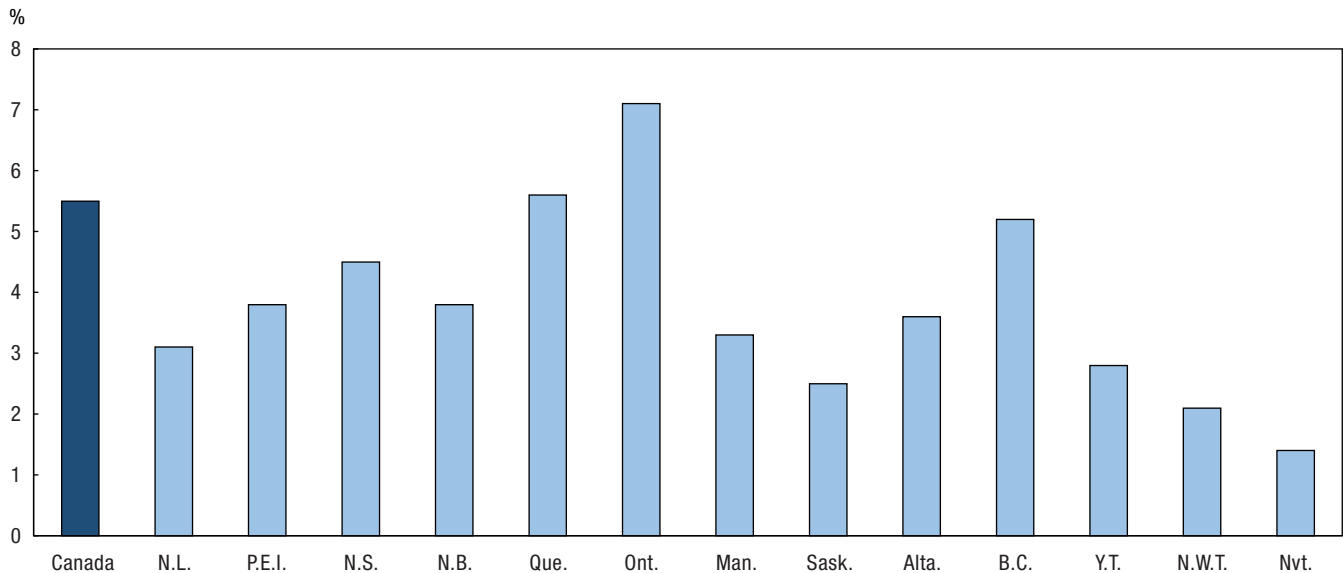
Chart 3
Contribution to digital economy gross domestic product by domain, Canada, 2010 to 2017



Source : Statistics Canada, "Measuring digital economic activities in Canada: initial estimates", *Latest Developments in the Canadian Economic Accounts* (13-605-X), special tabulation, 2019.

On a regional basis, the nominal value added of the digital economy in 2017 was the largest in Ontario, Quebec and British Columbia. The three territories and Saskatchewan had the smallest digital economy GDP as a proportion of their total economies.

Between 2010 and 2017 the nominal GDP of digital economic activities grew in all provinces and territories. However, when compared to growth in the total economy, Manitoba, Yukon and Nunavut saw slower growth in digital economy GDP over the seven year period.

Chart 4**Digital economy gross domestic product (GDP) as a proportion of the total economy, by province and territory, 2017**

Note: The initial estimates of the digital economy presented in this paper are only available in nominal basic prices. In order to compare the digital economy to the total economy, GDP in nominal market prices was adjusted for taxes less subsidies on products and imports. This adjustment provides an approximate estimate of GDP in nominal basic prices.

Source: Statistics Canada, "Measuring digital economic activities in Canada: initial estimates", *Latest Developments in the Canadian Economic Accounts* (13-605-X), special tabulation, 2019.

Output

In 2017, the digital economy produced \$207.7 billion of goods and services, an increase of 6.4% from the previous year. This growth was led by increased output of support services (+11.1%), followed by e-commerce (+9.2%).

Of all the provinces and territories, Ontario produced the most digital economy goods and services in 2017, while British Columbia saw the largest increase in digital economy output in 2017. Yukon and the Northwest Territories were the only two jurisdictions where output of the digital economy declined in 2017.

Jobs

In 2017 there were 886,114 jobs¹⁰ associated with digital economic activities, representing 4.7% of all jobs in Canada.

This estimate includes all jobs, paid and self-employed, associated with the production of digital economy output. For example, a custodian working in the telecommunications industry is captured in these estimates because they contribute to the output of telecommunications services. A data analyst or computer engineer working in the agriculture industry, however, is not reflected in these job estimates as the agriculture industry does not have any digital output, according to the definition used in this paper.

This proportion of digital economy jobs was smaller than the digital economy share of total GDP and output. Nevertheless, jobs associated with the digital economy (+37.0%) grew three times more than the total economy (+8.6%) between 2010 and 2017.

The largest contributors to digital economy jobs in 2017 were the support services domain (30.2%), followed by e-commerce (18.6%). The hardware domain (6.4%) had the smallest share of digital economy jobs in Canada.

10. Estimates of jobs are based on the [Canadian Productivity Accounts](#) and include both employee and self-employed jobs.

On a regional basis, British Columbia (+49.1%) and Quebec (+41.0%) saw the largest gains in digital economy jobs between 2010 and 2017, while Newfoundland and Labrador (-9.1%) and the Northwest Territories (-3.5%) recorded losses in digital economy jobs over the same time period.

Future improvements

The estimates presented in this paper are an important first step towards measuring digital economic activities in Canada. They provide a working definition of the digital economy, which can be built upon as measurement frameworks progress and new data sources become available.

The methodology used to derive these initial estimates follows the same approach used for other satellite accounts, focusing on the output of certain products to estimate the economic importance of a desired sector. While this approach does provide useful information on, in this case, the digital economy, it comes with certain limitations.

First, as mentioned above, the assumption that an industry's production function is the same for the production of digital and non-digital output, is not precise. However, a lack of data on the inputs specific to the production of digital output makes it a necessary assumption. The limitations of this assumption are less significant for those industries that primarily produce one type of output, in this case, digital products, as the production function would be more homogenous.

Another limitation of the approach is that it only measures the output, GDP and jobs of industries that produce digital economy goods and services. These initial estimates do not include the uses of digital products in the production process. For example, industries such as health care and agriculture, while users of digital technologies, do not produce digital goods and services. Expanding the estimates to include the uses of digital products would be more provide a more complete picture of the digitalization of the economy. The ability to include more partial digital products would also increase the representativeness of the estimates.

As discussed above, consumption of free media products are not included in initial estimates of the digital economy. As with official measures of GDP, advertising revenue earned by platforms in Canada that distribute free media are included. Income earned from posting creative content should be included according to existing concepts and recommended treatment, although it is difficult to evaluate the extent to which it is fully captured in available measures. Statistics Canada will continue to collaborate with international organizations and national statistics offices to advance concepts and measures in this area.

In addition to free media, data were not measured as a distinct product and/or asset in GDP. Statistics Canada is working jointly with the United States Bureau of Economic Analysis and other international organizations to develop a framework for defining and measuring data within the CMEA.

In order to enhance these initial estimates, as well as ensure that core economic measures, such as GDP, reflect our economic reality, Statistics Canada needs to look beyond traditional data sources. Digitalization is changing the way people interact and how goods and services are produced, delivered and consumed. Changing business models and new technologies mean that products can easily be produced by anyone and purchased from anywhere in the world. Many traditional household and business surveys are not well-suited to measure the globalization or digitalization of consumption, increasing household production or the role of digital intermediary platforms in economic transactions. New data sources, collection and estimation methods, such as crowdsourcing, web scrapping and machine learning, must be exploited so that new and emerging phenomenon related to the digitalization of the economy are captured in our economic and social statistics.

Tables, by province and territory

Table 2.1
Digital economy gross domestic product, output and jobs, by domain, Canada

	2010	2011	2012	2013	2014	2015	2016	2017
	thousands of dollars							
Gross domestic product	78,241,137	82,200,478	85,516,034	93,074,795	98,186,598	101,475,422	105,519,259	109,660,277
Digitally-delivered products	8,586,003	9,050,186	9,415,068	10,846,392	11,517,080	10,664,434	11,202,083	11,563,074
E-commerce	4,284,598	4,471,156	4,539,987	9,345,810	10,313,104	11,543,788	12,807,034	13,601,934
Infrastructure - Hardware	6,333,350	6,021,472	5,359,931	5,289,109	5,822,335	5,743,070	6,127,301	6,425,921
Infrastructure - Software	12,251,200	12,915,963	13,854,843	14,067,015	15,309,882	16,029,321	16,578,163	17,440,779
Infrastructure - Support services	17,939,011	19,649,060	21,505,328	22,694,132	24,597,061	26,171,741	27,488,529	29,184,800
Infrastructure - Telecommunications	28,846,975	30,092,641	30,840,877	30,832,336	30,627,137	31,323,067	31,316,150	31,443,768
	thousands of dollars							
Output	140,788,370	146,481,255	151,341,553	165,849,761	176,769,864	184,630,222	195,172,921	207,704,048
Digitally-delivered products	19,325,957	19,963,530	20,724,420	22,985,543	23,517,419	24,409,604	25,804,745	27,205,891
E-commerce	6,936,212	7,094,883	7,433,489	15,553,008	17,185,760	19,675,675	22,458,594	24,529,278
Infrastructure - Hardware	15,956,821	15,464,885	14,263,469	14,007,227	16,568,839	16,228,816	17,725,585	18,714,587
Infrastructure - Software	20,822,804	21,670,526	22,900,088	23,030,973	24,930,702	26,096,540	27,346,218	29,477,225
Infrastructure - Support services	29,831,690	32,089,663	34,539,355	37,568,746	40,413,547	43,111,149	45,763,561	50,830,033
Infrastructure - Telecommunications	47,914,886	50,197,768	51,480,733	52,704,265	54,153,596	55,108,438	56,074,219	56,947,034
	number of jobs							
Jobs	646,729	664,970	678,029	765,367	781,698	811,590	852,012	886,114
Digitally-delivered products	88,644	91,385	93,687	115,787	116,782	124,959	134,599	135,908
E-commerce	66,407	66,298	66,821	127,893	134,426	149,223	160,469	164,549
Infrastructure - Hardware	57,361	55,515	51,349	51,823	56,179	52,962	56,439	56,995
Infrastructure - Software	127,401	132,242	136,212	130,213	137,494	138,658	144,017	152,170
Infrastructure - Support services	182,801	195,254	205,469	218,502	225,498	237,246	248,816	267,746
Infrastructure - Telecommunications	124,115	124,275	124,491	121,148	111,319	108,542	107,672	108,745

Notes: All dollar values are expressed in nominal terms. Canada includes Canadian territorial enclaves abroad (that is, embassies, consulates, military bases, scientific stations, information or immigration offices, aid agency offices, and central bank representative offices with diplomatic immunity).

Source: Statistics Canada, "Measuring digital economic activities in Canada: initial estimates", *Latest Developments in the Canadian Economic Accounts* (13-605-X), special tabulation, 2019.

Table 2.2
Digital economy gross domestic product, output and jobs, by domain, Newfoundland and Labrador

	2010	2011	2012	2013	2014	2015	2016	2017
	thousands of dollars							
Gross domestic product	680,925	742,362	806,711	808,589	806,387	841,214	951,300	952,222
Digitally-delivered products	53,734	59,514	58,346	59,719	59,963	58,065	47,981	48,227
E-commerce	38,953	35,288	33,101	45,884	62,142	56,459	71,270	56,543
Infrastructure - Hardware	6,669	20,984	12,894	20,561	13,337	7,705	17,628	19,822
Infrastructure - Software	62,887	77,861	92,533	81,951	85,950	93,219	90,489	95,334
Infrastructure - Support services	73,507	81,529	71,507	61,149	61,875	79,207	81,440	87,891
Infrastructure - Telecommunications	445,175	467,186	538,331	539,327	523,120	546,559	642,493	644,406
	thousands of dollars							
Output	1,211,061	1,312,668	1,332,504	1,378,216	1,434,903	1,513,226	1,714,918	1,750,989
Digitally-delivered products	84,996	91,463	94,066	95,663	93,200	92,290	92,121	94,308
E-commerce	65,016	60,795	57,308	72,971	99,741	90,401	125,738	102,180
Infrastructure - Hardware	28,768	58,283	34,678	64,742	50,004	27,388	67,190	78,084
Infrastructure - Software	99,744	127,327	143,569	135,131	131,369	142,397	154,145	167,966
Infrastructure - Support services	105,389	122,897	103,123	89,028	86,849	112,863	126,625	143,052
Infrastructure - Telecommunications	827,147	851,903	899,760	920,681	973,740	1,047,887	1,149,098	1,165,400
	number of jobs							
Jobs	4,727	4,858	4,753	4,425	4,479	4,478	4,789	4,297
Digitally-delivered products	596	637	638	613	605	622	626	542
E-commerce	746	717	706	804	1,097	892	1,265	892
Infrastructure - Hardware	67	194	121	176	90	60	110	119
Infrastructure - Software	726	828	979	881	805	818	813	773
Infrastructure - Support services	907	871	809	720	656	779	789	770
Infrastructure - Telecommunications	1,684	1,610	1,501	1,232	1,226	1,307	1,186	1,200

Note: All dollar values are expressed in nominal terms.

Source: Statistics Canada, "Measuring digital economic activities in Canada: initial estimates", *Latest Developments in the Canadian Economic Accounts* (13-605-X), special tabulation, 2019.

Table 2.3
Digital economy gross domestic product, output and jobs, by domain, Prince Edward Island

	2010	2011	2012	2013	2014	2015	2016	2017
	thousands of dollars							
Gross domestic product	180,306	185,284	200,997	214,217	229,273	246,228	223,953	232,812
Digitally-delivered products	11,739	12,849	14,992	16,780	16,534	16,359	13,267	13,370
E-commerce	3,467	2,964	2,437	7,077	11,535	9,555	23,102	26,344
Infrastructure - Hardware	7,726	3,666	4,908	6,089	5,570	5,186	5,701	6,898
Infrastructure - Software	30,484	31,950	31,193	32,587	37,233	43,904	34,897	35,128
Infrastructure - Support services	26,092	28,699	29,295	29,940	29,888	34,878	34,310	34,858
Infrastructure - Telecommunications	100,798	105,156	118,171	121,744	128,513	136,346	112,676	116,215
	thousands of dollars							
Output	280,596	284,971	298,250	330,539	363,983	376,215	394,501	423,701
Digitally-delivered products	19,132	21,096	25,036	25,973	27,121	24,190	24,212	24,776
E-commerce	6,859	5,516	4,651	26,658	43,594	36,322	38,372	46,606
Infrastructure - Hardware	18,828	10,352	13,163	16,253	13,795	12,378	16,900	22,400
Infrastructure - Software	45,967	47,089	44,042	44,996	51,851	59,903	56,844	58,753
Infrastructure - Support services	40,580	44,483	43,617	45,088	46,827	53,148	56,664	61,007
Infrastructure - Telecommunications	149,231	156,435	167,741	171,571	180,795	190,274	201,510	210,159
	number of jobs							
Jobs	1,387	1,403	1,608	1,635	1,710	1,771	1,678	1,876
Digitally-delivered products	138	155	189	220	205	195	188	174
E-commerce	82	66	60	150	218	195	194	279
Infrastructure - Hardware	144	80	95	120	90	85	105	150
Infrastructure - Software	402	425	440	417	473	559	523	554
Infrastructure - Support services	355	423	495	459	489	515	490	508
Infrastructure - Telecommunications	265	255	329	269	235	222	178	212

Note: All dollar values are expressed in nominal terms.

Source: Statistics Canada, "Measuring digital economic activities in Canada: initial estimates", *Latest Developments in the Canadian Economic Accounts* (13-605-X), special tabulation, 2019.

Table 2.4
Digital economy gross domestic product, output and jobs, by domain, Nova Scotia

	2010	2011	2012	2013	2014	2015	2016	2017
	thousands of dollars							
Gross domestic product	1,482,910	1,499,622	1,597,063	1,633,559	1,704,047	1,835,856	1,736,274	1,768,496
Digitally-delivered products	124,073	118,644	130,704	159,003	144,039	143,802	141,603	139,456
E-commerce	102,294	97,686	104,175	116,786	127,568	138,089	149,982	147,870
Infrastructure - Hardware	55,128	50,313	22,082	45,916	45,782	39,862	42,582	43,360
Infrastructure - Software	172,469	152,816	185,130	172,526	201,862	211,282	211,776	223,624
Infrastructure - Support services	260,813	265,597	268,865	227,431	268,792	375,063	388,359	422,357
Infrastructure - Telecommunications	768,132	814,565	886,107	911,898	916,004	927,759	801,971	791,829
	thousands of dollars							
Output	2,454,752	2,424,970	2,484,985	2,590,164	2,707,110	2,943,517	3,110,623	3,244,191
Digitally-delivered products	269,437	258,412	279,667	313,926	282,800	297,986	291,948	295,125
E-commerce	154,134	162,102	161,612	188,143	199,433	218,328	255,574	260,618
Infrastructure - Hardware	160,034	156,097	62,051	134,342	125,912	109,745	133,925	141,490
Infrastructure - Software	289,114	255,009	307,379	278,193	324,162	340,968	352,824	383,723
Infrastructure - Support services	414,470	410,415	407,108	360,583	415,804	593,511	642,086	731,299
Infrastructure - Telecommunications	1,167,562	1,182,935	1,267,169	1,314,977	1,358,999	1,382,979	1,434,265	1,431,937
	number of jobs							
Jobs	13,248	14,004	14,007	15,102	14,591	15,484	16,116	16,632
Digitally-delivered products	1,756	1,657	1,722	2,329	2,214	2,389	2,528	2,561
E-commerce	2,197	2,162	2,332	2,426	2,409	2,628	2,760	2,700
Infrastructure - Hardware	928	869	384	743	534	554	676	729
Infrastructure - Software	2,220	2,110	2,527	2,378	2,651	2,437	2,542	2,656
Infrastructure - Support services	2,994	3,353	3,362	3,255	3,574	4,578	5,013	5,399
Infrastructure - Telecommunications	3,153	3,854	3,679	3,970	3,209	2,897	2,597	2,587

Note: All dollar values are expressed in nominal terms.

Source: Statistics Canada, "Measuring digital economic activities in Canada: initial estimates", *Latest Developments in the Canadian Economic Accounts* (13-605-X), special tabulation, 2019.

Table 2.5
Digital economy gross domestic product, output and jobs, by domain, New Brunswick

	2010	2011	2012	2013	2014	2015	2016	2017
	thousands of dollars							
Gross domestic product	1,025,930	1,115,184	1,146,066	1,232,750	1,274,031	1,297,203	1,239,243	1,249,876
Digitally-delivered products	71,267	67,963	75,272	83,002	83,978	82,993	80,828	80,598
E-commerce	37,524	49,421	48,499	102,080	125,206	133,948	108,305	127,065
Infrastructure - Hardware	19,373	19,882	13,748	22,775	23,946	26,443	47,348	62,314
Infrastructure - Software	146,817	137,799	145,004	135,018	148,410	164,696	160,482	153,183
Infrastructure - Support services	203,533	244,908	243,969	251,753	250,476	255,363	255,031	237,071
Infrastructure - Telecommunications	547,415	595,210	619,575	638,122	642,014	633,760	587,249	589,644
	thousands of dollars							
Output	1,706,455	1,808,173	1,836,939	1,930,895	2,054,761	2,084,279	2,265,936	2,369,443
Digitally-delivered products	126,795	119,093	128,702	137,195	147,749	147,772	141,187	141,114
E-commerce	60,171	69,211	74,928	165,453	202,047	202,506	188,654	232,760
Infrastructure - Hardware	64,473	68,698	36,626	72,700	80,821	80,220	174,903	239,645
Infrastructure - Software	260,663	239,994	248,625	208,045	242,234	262,446	291,393	286,767
Infrastructure - Support services	327,594	386,300	376,707	353,129	364,363	376,420	419,306	402,583
Infrastructure - Telecommunications	866,760	924,876	971,352	994,373	1,017,546	1,014,916	1,050,493	1,066,576
	number of jobs							
Jobs	8,630	9,444	9,195	10,732	10,921	10,565	10,108	10,570
Digitally-delivered products	932	853	967	1,144	1,082	1,028	968	931
E-commerce	588	825	813	1,756	1,997	1,892	1,669	1,849
Infrastructure - Hardware	356	341	198	379	372	346	683	860
Infrastructure - Software	1,713	1,699	1,748	1,566	1,795	1,787	1,793	1,824
Infrastructure - Support services	2,410	2,949	2,839	2,979	2,956	2,842	3,006	3,083
Infrastructure - Telecommunications	2,632	2,776	2,630	2,907	2,719	2,670	1,990	2,024

Note: All dollar values are expressed in nominal terms.

Source: Statistics Canada, "Measuring digital economic activities in Canada: initial estimates", *Latest Developments in the Canadian Economic Accounts* (13-605-X), special tabulation, 2019.

Table 2.6
Digital economy gross domestic product, output and jobs, by domain, Quebec

	2010	2011	2012	2013	2014	2015	2016	2017
	thousands of dollars							
Gross domestic product	15,888,980	16,884,334	17,673,976	19,735,681	20,636,592	20,649,717	21,171,041	21,733,633
Digitally-delivered products	1,655,290	1,648,881	1,758,300	1,937,774	1,978,689	1,831,133	1,996,259	1,923,370
E-commerce	663,204	557,818	546,961	1,677,652	1,937,189	2,149,895	2,287,149	2,239,669
Infrastructure - Hardware	1,599,006	1,743,001	1,590,207	1,723,150	2,041,119	1,804,357	1,671,040	1,819,352
Infrastructure - Software	2,798,304	3,022,881	3,210,465	3,191,790	3,460,433	3,407,135	3,334,955	3,534,911
Infrastructure - Support services	3,672,806	4,026,593	4,638,063	5,454,187	5,868,405	5,697,425	5,865,071	6,267,290
Infrastructure - Telecommunications	5,500,369	5,885,160	5,929,979	5,751,128	5,350,758	5,759,771	6,016,567	5,949,041
	thousands of dollars							
Output	29,246,333	31,074,818	32,320,522	36,526,356	37,886,062	38,489,795	39,719,968	41,725,193
Digitally-delivered products	3,633,183	3,738,583	3,975,335	4,487,943	4,370,963	4,644,764	4,765,159	4,651,973
E-commerce	1,167,431	987,374	1,086,648	2,892,518	3,286,674	3,689,500	4,042,574	4,077,020
Infrastructure - Hardware	4,066,895	4,320,103	4,042,444	4,537,071	5,148,385	4,626,308	4,785,149	5,171,849
Infrastructure - Software	4,678,699	4,969,857	5,198,373	5,181,305	5,472,786	5,479,259	5,607,598	6,100,991
Infrastructure - Support services	6,025,485	6,414,865	7,332,090	8,729,409	9,076,528	9,231,631	9,758,076	10,963,898
Infrastructure - Telecommunications	9,674,639	10,644,036	10,685,632	10,698,110	10,530,726	10,818,333	10,761,412	10,759,462
	number of jobs							
Jobs	145,775	150,944	158,198	175,623	181,340	184,365	198,460	205,496
Digitally-delivered products	20,622	19,635	20,818	25,190	26,199	26,968	31,332	31,998
E-commerce	13,021	11,738	12,144	27,036	28,412	30,585	32,423	31,411
Infrastructure - Hardware	15,984	17,087	16,316	18,023	20,420	17,752	18,540	18,437
Infrastructure - Software	30,112	33,048	33,754	30,669	32,390	32,162	34,006	36,075
Infrastructure - Support services	38,851	42,434	47,927	51,952	54,147	57,016	60,116	65,432
Infrastructure - Telecommunications	27,186	27,002	27,240	22,754	19,771	19,881	22,043	22,143

Note: All dollar values are expressed in nominal terms.

Source: Statistics Canada, "Measuring digital economic activities in Canada: initial estimates", *Latest Developments in the Canadian Economic Accounts* (13-605-X), special tabulation, 2019.

Table 2.7
Digital economy gross domestic product, output and jobs, by domain, Ontario

	2010	2011	2012	2013	2014	2015	2016	2017
	thousands of dollars							
Gross domestic product	37,060,410	38,834,921	40,042,978	43,232,419	45,465,840	47,723,639	51,722,483	54,408,617
Digitally-delivered products	4,683,622	4,873,529	5,060,456	5,990,060	6,299,832	5,792,106	6,013,868	6,225,957
E-commerce	2,080,655	2,539,573	2,536,539	4,625,308	4,977,309	5,551,813	6,410,427	7,073,897
Infrastructure - Hardware	3,781,728	3,362,900	2,891,706	2,620,336	2,782,562	2,789,606	3,263,854	3,334,586
Infrastructure - Software	5,767,974	6,058,373	6,388,069	6,579,579	7,060,705	7,862,039	8,495,256	9,054,930
Infrastructure - Support services	9,334,513	10,277,726	11,143,292	11,554,826	12,309,416	13,469,520	14,631,374	15,600,645
Infrastructure - Telecommunications	11,411,917	11,722,821	12,022,916	11,862,310	12,036,017	12,258,555	12,907,705	13,118,602
	thousands of dollars							
Output	69,909,617	72,303,810	74,010,378	80,082,945	85,077,974	89,681,333	95,944,862	103,043,925
Digitally-delivered products	11,017,902	11,335,574	11,686,625	12,827,609	13,084,022	13,172,442	13,898,090	14,564,130
E-commerce	3,307,734	3,812,389	3,912,291	7,718,636	8,286,592	9,579,787	11,284,279	12,753,159
Infrastructure - Hardware	9,149,725	8,516,910	7,763,737	6,854,361	8,572,662	8,417,919	9,365,000	9,644,155
Infrastructure - Software	9,987,784	10,354,281	10,709,968	10,902,389	11,733,284	12,931,128	13,843,883	15,092,529
Infrastructure - Support services	15,817,908	17,103,984	18,200,031	19,717,937	21,002,959	22,821,394	24,408,120	27,188,821
Infrastructure - Telecommunications	20,628,563	21,180,672	21,737,727	22,062,012	22,398,456	22,758,663	23,145,490	23,801,131
	number of jobs							
Jobs	304,402	314,646	317,366	361,468	365,682	378,900	398,973	416,464
Digitally-delivered products	40,432	41,943	43,601	56,332	52,980	57,626	61,510	61,911
E-commerce	28,915	31,042	31,115	58,597	61,476	67,679	73,254	77,268
Infrastructure - Hardware	30,958	28,372	26,282	24,422	26,056	24,914	26,753	27,181
Infrastructure - Software	58,058	59,767	61,284	59,710	62,804	64,620	67,458	71,886
Infrastructure - Support services	89,819	96,722	101,229	108,653	110,067	115,860	122,338	132,279
Infrastructure - Telecommunications	56,220	56,799	53,854	53,753	52,300	48,200	47,662	45,939

Note: All dollar values are expressed in nominal terms.

Source: Statistics Canada, "Measuring digital economic activities in Canada: initial estimates", *Latest Developments in the Canadian Economic Accounts* (13-605-X), special tabulation, 2019.

Table 2.8
Digital economy gross domestic product, output and jobs, by domain, Manitoba

	2010	2011	2012	2013	2014	2015	2016	2017
	thousands of dollars							
Gross domestic product	1,809,548	1,908,449	2,031,377	2,247,575	2,309,877	2,343,864	2,098,268	2,187,943
Digitally-delivered products	203,626	200,264	202,133	216,342	228,108	241,926	236,479	231,712
E-commerce	129,631	101,818	98,280	205,313	229,281	252,187	272,236	301,612
Infrastructure - Hardware	20,927	30,636	27,893	101,586	111,666	114,267	106,987	115,174
Infrastructure - Software	206,571	221,061	245,795	206,951	218,958	203,637	191,993	199,942
Infrastructure - Support services	279,445	299,620	328,357	323,040	338,967	343,732	302,619	323,264
Infrastructure - Telecommunications	969,347	1,055,051	1,128,919	1,194,341	1,182,898	1,188,116	987,955	1,016,240
	thousands of dollars							
Output	2,928,066	3,088,626	3,193,114	3,532,265	3,729,154	3,812,092	3,908,060	4,159,029
Digitally-delivered products	443,393	440,000	453,415	485,683	509,311	546,374	519,394	521,527
E-commerce	214,103	180,248	172,058	347,926	389,058	424,656	479,754	558,693
Infrastructure - Hardware	78,582	111,097	94,509	218,286	284,281	324,875	313,765	336,849
Infrastructure - Software	346,757	369,566	398,619	334,780	352,291	320,808	332,979	351,599
Infrastructure - Support services	448,586	476,262	498,958	491,378	519,156	502,606	495,191	552,491
Infrastructure - Telecommunications	1,396,645	1,511,453	1,575,555	1,654,213	1,675,057	1,692,773	1,766,977	1,837,870
	number of jobs							
Jobs	13,316	13,583	14,010	15,807	16,098	16,287	16,159	16,642
Digitally-delivered products	1,923	1,880	1,973	2,337	2,284	2,713	2,699	2,701
E-commerce	1,478	1,460	1,617	3,072	3,417	3,690	3,963	4,031
Infrastructure - Hardware	335	454	377	802	996	1,011	899	621
Infrastructure - Software	2,503	2,477	2,666	2,310	2,395	2,158	2,084	2,182
Infrastructure - Support services	3,496	3,603	3,609	3,486	3,598	3,478	3,464	3,702
Infrastructure - Telecommunications	3,581	3,710	3,769	3,800	3,409	3,237	3,049	3,404

Note: All dollar values are expressed in nominal terms.

Source: Statistics Canada, "Measuring digital economic activities in Canada: initial estimates", *Latest Developments in the Canadian Economic Accounts* (13-605-X), special tabulation, 2019.

Table 2.9
Digital economy gross domestic product, output and jobs, by domain, Saskatchewan

	2010	2011	2012	2013	2014	2015	2016	2017
	thousands of dollars							
Gross domestic product	1,425,038	1,496,562	1,662,702	1,788,698	1,854,567	1,893,899	1,916,234	1,879,829
Digitally-delivered products	128,409	136,727	155,592	185,634	172,294	175,150	167,987	166,396
E-commerce	90,309	106,636	104,843	191,817	199,230	187,364	197,064	188,108
Infrastructure - Hardware	82,352	66,551	78,002	75,276	82,627	125,503	126,238	118,315
Infrastructure - Software	119,600	109,238	141,759	137,827	146,776	160,784	159,894	166,363
Infrastructure - Support services	233,014	314,839	340,118	323,787	375,482	359,022	354,544	379,584
Infrastructure - Telecommunications	771,354	762,571	842,389	874,356	878,158	886,075	910,507	861,062
	thousands of dollars							
Output	2,450,018	2,561,180	2,879,605	3,068,425	3,223,211	3,309,704	3,503,910	3,514,797
Digitally-delivered products	273,983	259,232	299,450	341,574	317,228	322,335	324,992	328,416
E-commerce	133,978	160,476	165,540	294,058	314,910	301,278	341,367	337,404
Infrastructure - Hardware	250,957	217,957	258,883	242,811	225,746	304,676	353,825	349,409
Infrastructure - Software	196,515	177,415	225,772	218,739	231,480	252,306	263,927	280,025
Infrastructure - Support services	357,768	494,070	515,011	492,819	589,450	545,362	587,869	658,787
Infrastructure - Telecommunications	1,236,818	1,252,029	1,414,948	1,478,423	1,544,397	1,583,746	1,631,932	1,560,757
	number of jobs							
Jobs	12,680	12,936	14,429	15,954	16,094	16,114	16,090	16,244
Digitally-delivered products	1,734	1,774	2,043	2,577	2,465	2,216	2,151	2,171
E-commerce	1,357	1,418	1,488	2,353	2,449	2,368	2,488	2,340
Infrastructure - Hardware	838	684	720	750	769	1,140	1,185	1,250
Infrastructure - Software	1,444	1,217	1,581	1,431	1,491	1,530	1,520	1,587
Infrastructure - Support services	2,568	2,920	3,508	3,520	3,782	3,709	3,739	3,882
Infrastructure - Telecommunications	4,738	4,922	5,089	5,323	5,137	5,152	5,008	5,013

Note: All dollar values are expressed in nominal terms.

Source: Statistics Canada, "Measuring digital economic activities in Canada: initial estimates", *Latest Developments in the Canadian Economic Accounts* (13-605-X), special tabulation, 2019.

Table 2.10
Digital economy gross domestic product, output and jobs, by domain, Alberta

	2010	2011	2012	2013	2014	2015	2016	2017
	thousands of dollars							
Gross domestic product	9,156,158	9,768,897	10,030,036	11,015,001	11,869,427	11,797,867	11,266,294	11,370,882
Digitally-delivered products	810,988	839,053	828,087	980,810	927,101	985,909	1,012,384	1,016,098
E-commerce	460,211	435,660	452,116	1,080,327	1,125,816	1,187,488	1,506,769	1,525,068
Infrastructure - Hardware	302,423	284,050	245,123	254,159	262,479	332,936	297,674	334,148
Infrastructure - Software	1,283,656	1,382,064	1,594,946	1,671,411	1,866,959	1,704,447	1,502,184	1,524,267
Infrastructure - Support services	2,058,933	2,238,412	2,402,851	2,310,415	2,701,586	2,806,869	2,625,881	2,633,642
Infrastructure - Telecommunications	4,239,947	4,589,658	4,506,913	4,717,880	4,985,486	4,780,219	4,321,403	4,337,660
	thousands of dollars							
Output	14,622,070	15,424,279	15,989,671	17,453,110	19,355,616	19,640,698	20,034,981	20,775,191
Digitally-delivered products	1,550,837	1,537,082	1,608,417	1,876,762	1,825,005	2,030,884	2,019,464	2,061,525
E-commerce	710,182	743,497	795,048	1,713,443	1,859,298	2,020,611	2,590,263	2,729,234
Infrastructure - Hardware	823,369	792,644	652,530	702,764	736,888	875,677	868,625	992,354
Infrastructure - Software	2,159,077	2,309,492	2,636,886	2,637,221	2,903,977	2,688,293	2,458,716	2,556,822
Infrastructure - Support services	3,352,087	3,621,185	3,848,150	3,638,242	4,314,099	4,457,677	4,368,628	4,590,271
Infrastructure - Telecommunications	6,026,518	6,420,379	6,448,641	6,884,677	7,716,349	7,567,556	7,729,285	7,844,984
	number of jobs							
Jobs	57,720	57,558	58,438	65,174	67,722	70,849	72,697	73,237
Digitally-delivered products	7,021	7,420	7,382	8,503	7,855	8,941	9,113	8,771
E-commerce	6,036	6,005	5,840	11,946	13,040	14,042	17,230	17,074
Infrastructure - Hardware	3,146	2,946	2,349	2,571	2,332	2,562	2,715	2,833
Infrastructure - Software	11,175	11,599	12,334	12,161	13,470	12,339	11,928	11,959
Infrastructure - Support services	19,022	19,109	19,346	19,357	22,010	22,497	21,901	22,695
Infrastructure - Telecommunications	11,319	10,478	11,187	10,636	9,014	10,467	9,811	9,905

Note: All dollar values are expressed in nominal terms.

Source: Statistics Canada, "Measuring digital economic activities in Canada: initial estimates", *Latest Developments in the Canadian Economic Accounts* (13-605-X), special tabulation, 2019.

Table 2.11
Digital economy gross domestic product, output and jobs, by domain, British Columbia

	2010	2011	2012	2013	2014	2015	2016	2017
	thousands of dollars							
Gross domestic product	9,344,902	9,563,085	10,113,578	10,920,813	11,787,173	12,599,339	12,974,861	13,660,612
Digitally-delivered products	844,105	1,093,935	1,134,846	1,216,288	1,606,112	1,334,167	1,478,750	1,705,083
E-commerce	674,227	540,446	607,882	1,289,389	1,511,679	1,867,741	1,767,549	1,903,040
Infrastructure - Hardware	452,149	435,879	469,656	415,511	447,794	485,390	530,610	558,390
Infrastructure - Software	1,652,294	1,717,215	1,816,468	1,844,046	2,076,952	2,169,568	2,379,690	2,435,934
Infrastructure - Support services	1,769,366	1,844,467	1,999,966	2,127,307	2,360,910	2,721,623	2,943,151	3,191,227
Infrastructure - Telecommunications	3,952,761	3,931,142	4,084,761	4,028,272	3,783,725	4,020,851	3,875,110	3,866,938
	thousands of dollars							
Output	15,676,011	15,891,557	16,679,510	18,588,113	20,550,020	22,381,030	24,141,812	26,272,927
Digitally-delivered products	1,886,197	2,144,252	2,154,260	2,370,594	2,837,164	3,108,339	3,704,388	4,498,661
E-commerce	1,109,383	905,379	994,500	2,117,523	2,486,586	3,090,391	3,089,627	3,408,999
Infrastructure - Hardware	1,290,418	1,199,710	1,291,030	1,143,811	1,302,375	1,402,124	1,577,904	1,683,854
Infrastructure - Software	2,733,390	2,796,376	2,961,274	3,068,040	3,459,633	3,592,022	3,949,421	4,162,207
Infrastructure - Support services	2,908,768	2,989,667	3,187,193	3,634,092	3,984,354	4,403,985	4,889,540	5,525,631
Infrastructure - Telecommunications	5,747,855	5,856,173	6,091,253	6,254,052	6,479,908	6,784,169	6,930,932	6,993,575
	number of jobs							
Jobs	82,870	83,041	84,295	98,246	102,734	111,702	116,004	123,543
Digitally-delivered products	13,382	15,276	14,256	16,340	20,718	21,935	23,071	23,644
E-commerce	11,630	9,990	10,122	19,703	21,030	26,401	26,667	27,794
Infrastructure - Hardware	4,591	4,397	4,653	3,883	4,310	4,402	4,754	4,921
Infrastructure - Software	19,314	19,312	19,368	18,830	19,517	19,734	20,778	22,077
Infrastructure - Support services	21,360	22,063	21,514	23,765	23,795	25,645	27,564	29,712
Infrastructure - Telecommunications	12,593	12,003	14,382	15,726	13,364	13,585	13,170	15,395

Note: All dollar values are expressed in nominal terms.

Source: Statistics Canada, "Measuring digital economic activities in Canada: initial estimates", *Latest Developments in the Canadian Economic Accounts* (13-605-X), special tabulation, 2019.

Table 2.12
Digital economy gross domestic product, output and jobs, by domain, Yukon

	2010	2011	2012	2013	2014	2015	2016	2017
	thousands of dollars							
Gross domestic product	66,354	69,321	69,396	82,491	87,450	78,569	80,483	79,543
Digitally-delivered products	2,431	2,263	2,616	3,519	4,419	5,248	4,978	5,015
E-commerce	1,324	1,585	1,783	2,788	2,831	3,075	3,967	4,036
Infrastructure - Hardware	1,787	1,261	1,171	1,826	3,305	4,217	4,874	3,235
Infrastructure - Software	6,224	5,628	5,811	4,174	4,444	4,596	4,826	4,957
Infrastructure - Support services	10,395	5,194	5,779	4,998	3,995	3,875	3,457	3,916
Infrastructure - Telecommunications	44,194	53,391	52,235	65,186	68,456	57,558	58,382	58,385
	thousands of dollars							
Output	117,898	110,808	112,223	138,304	152,803	148,123	156,002	153,288
Digitally-delivered products	6,640	4,937	5,758	7,214	8,260	8,735	10,486	10,729
E-commerce	2,255	2,612	2,973	4,606	4,657	4,984	6,686	7,136
Infrastructure - Hardware	9,436	6,329	5,492	8,457	15,342	19,243	18,900	13,000
Infrastructure - Software	10,185	8,980	8,942	6,460	7,247	7,700	9,838	10,237
Infrastructure - Support services	16,137	7,872	9,227	7,021	6,182	5,880	5,656	6,577
Infrastructure - Telecommunications	73,245	80,078	79,831	104,547	111,115	101,582	104,436	105,610
	number of jobs							
Jobs	639	558	564	552	589	602	677	703
Digitally-delivered products	70	65	55	60	71	95	128	123
E-commerce	21	21	38	50	48	46	54	57
Infrastructure - Hardware	20	19	15	25	40	50	45	25
Infrastructure - Software	76	63	57	49	54	53	58	58
Infrastructure - Support services	130	56	74	71	67	55	61	69
Infrastructure - Telecommunications	320	334	324	297	309	303	332	372

Note: All dollar values are expressed in nominal terms.

Source: Statistics Canada, "Measuring digital economic activities in Canada: initial estimates", *Latest Developments in the Canadian Economic Accounts* (13-605-X), special tabulation, 2019.

Table 2.13
Digital economy gross domestic product, output and jobs, by domain, Northwest Territories

	2010	2011	2012	2013	2014	2015	2016	2017
	thousands of dollars							
Gross domestic product	86,631	89,352	92,687	111,872	110,041	117,291	100,320	96,736
Digitally-delivered products	6,495	6,665	6,689	7,961	6,424	5,799	6,087	6,095
E-commerce	2,577	2,617	2,670	6,393	7,224	9,536	7,781	7,261
Infrastructure - Hardware	4,141	1,879	1,076	2,952	3,102	7,162	11,398	9,009
Infrastructure - Software	6,096	6,048	6,675	6,219	7,145	6,296	6,931	7,211
Infrastructure - Support services	9,468	9,639	10,092	3,211	2,279	1,892	2,052	1,820
Infrastructure - Telecommunications	57,854	62,504	65,485	85,135	83,866	86,606	66,071	65,340
	thousands of dollars							
Output	135,887	136,348	136,743	165,878	165,688	183,137	202,917	195,033
Digitally-delivered products	10,916	11,320	10,842	12,553	10,987	10,274	10,390	10,522
E-commerce	3,988	4,019	4,124	9,304	10,431	14,283	13,181	12,912
Infrastructure - Hardware	13,521	6,152	3,990	11,613	12,437	27,494	44,200	36,199
Infrastructure - Software	10,890	11,011	12,376	11,392	13,236	11,473	13,368	13,850
Infrastructure - Support services	13,685	14,975	14,696	4,849	3,666	3,168	3,587	3,359
Infrastructure - Telecommunications	82,887	88,870	90,715	116,167	114,932	116,446	118,191	118,191
	number of jobs							
Jobs	475	470	468	476	450	479	484	459
Digitally-delivered products	66	64	73	94	76	77	80	71
E-commerce	44	53	44	79	75	99	96	85
Infrastructure - Hardware	25	15	10	20	20	35	60	70
Infrastructure - Software	50	49	56	52	58	50	51	47
Infrastructure - Support services	77	59	63	26	22	18	21	24
Infrastructure - Telecommunications	213	230	222	206	200	200	176	161

Note: All dollar values are expressed in nominal terms.

Source: Statistics Canada, "Measuring digital economic activities in Canada: initial estimates", *Latest Developments in the Canadian Economic Accounts* (13-605-X), special tabulation, 2019.

Table 2.14
Digital economy gross domestic product, output and jobs, by domain, Nunavut

	2010	2011	2012	2013	2014	2015	2016	2017
	thousands of dollars							
Gross domestic product	33,024	43,105	48,467	51,130	51,853	50,736	38,505	39,075
Digitally-delivered products	1,407	1,414	1,682	1,598	2,102	2,129	1,611	1,698
E-commerce	377	499	770	709	1,055	1,315	1,434	1,420
Infrastructure - Hardware	937	267	2,187	7	80	311	1,367	1,319
Infrastructure - Software	1,924	1,992	1,991	2,256	3,480	3,973	4,790	4,996
Infrastructure - Support services	2,056	1,688	2,267	3,606	1,833	2,405	1,241	1,236
Infrastructure - Telecommunications	26,323	37,244	39,570	42,954	43,303	40,603	28,062	28,406
	thousands of dollars							
Output	49,572	59,044	67,108	64,553	68,505	67,073	74,431	76,341
Digitally-delivered products	2,546	2,487	2,848	2,854	3,535	3,220	2,914	3,085
E-commerce	977	1,263	1,809	1,767	2,740	2,628	2,525	2,557
Infrastructure - Hardware	1,815	553	4,336	16	191	769	5,300	5,300
Infrastructure - Software	4,019	4,129	4,263	4,282	7,152	7,837	11,280	11,759
Infrastructure - Support services	3,234	2,686	3,443	5,171	3,311	3,505	2,213	2,258
Infrastructure - Telecommunications	36,980	47,926	50,409	50,462	51,576	49,114	50,198	51,382
	number of jobs							
Jobs	97	102	110	131	146	140	139	135
Digitally-delivered products	22	23	23	35	40	44	44	43
E-commerce	9	9	9	15	25	17	16	17
Infrastructure - Hardware	10	5	20	5	5	5	10	10
Infrastructure - Software	20	20	21	23	37	37	37	37
Infrastructure - Support services	12	11	11	27	17	13	9	9
Infrastructure - Telecommunications	24	33	26	27	23	23	23	18

Note: All dollar values are expressed in nominal terms.

Source: Statistics Canada, "Measuring digital economic activities in Canada: initial estimates", *Latest Developments in the Canadian Economic Accounts* (13-605-X), special tabulation, 2019.

Annex A

Canadian digital economy product framework

Supply and Use Product Code (SUPC)	SUPC Title	Full or partial digital product	Method for splitting partial products
Hardware			
MPG23C400	Communication engineering construction	Full	...
MPG334100	Computers, computer peripherals and parts	Full	...
MPG334201	Telephone apparatus	Full	...
MPG334209	Other communications equipment	Full	...
MPG334A01	Audio and video equipment and unrecorded media	Full	...
MPG334A02	Navigational and guidance instruments	Full	...
MPG334A06	Measuring, control and scientific instruments	Full	...
MPG334401	Printed and integrated circuits, semiconductors and printed circuit assemblies	Full	...
MPG334409	Other electronic components	Full	...
MPG335902	Communication and electric wire and cable	Full	...
MPG335903	Wiring devices	Full	...
MPG335909	Other electrical equipment and components	Full	...
Software			
MPS511200	General purpose software	Full	...
MPS541501	Custom software design and development services	Full	...
IMS541502	Own-account software design and development services	Full	...
Telecommunications			
MPS517002	Mobile telecommunications services	Full	...
MPS517003	Cable, satellite and other program distribution services	Full	...
MPS517004	Fixed Internet access services	Full	...
MPS517001	Fixed telecommunications services (except Internet access)	Full	...
Support services			
MPS518000	Data processing, hosting, and related services	Full	...
MPS532A01	Computer equipment rental and leasing services	Full	...
MPS541503	Computer systems design and related services (except software development)	Full	...

Canadian digital economy product framework

Supply and Use Product Code (SUPC)	SUPC Title	Full or partial digital product	Method for splitting partial products
MPS610002	Tuition and similar fees for colleges and CEGEPs	Partial	
MPS610003	Tuition and similar fees for universities	Partial	
MPS610004	Tuition and similar fees for trade, technical and professional training	Partial	
MPS610009	Other educational training and services	Partial	Share of enrollments in 'digitally-enabled' education programs relative to total enrollments. Derived using Statistics Canada's Postsecondary Student Information System.
NGS611200	Community college and C.E.G.E.P services provided by governments	Partial	
NGS611300	University services provided by governments	Partial	
NGS611A00	Other educational services provided by governments	Partial	
E-commerce			
MPS411000	Wholesale margins - farm products	Partial	
MPS412000	Wholesale margins - petroleum and petroleum products	Partial	
MPS413000	Wholesale margins - food, beverages and tobacco products	Partial	
MPS414000	Wholesale margins - personal and household goods	Partial	
MPS415000	Wholesale margins - motor vehicles, motor vehicle parts and accessories	Partial	Margins associated with e-commerce wholesale transactions derived using e-commerce data collected in Statistics Canada's Annual Wholesale Trade Survey.
MPS416000	Wholesale margins - building materials and supplies	Partial	
MPS417000	Wholesale margins - machinery, equipment and supplies	Partial	
MPS418000	Wholesale margins - miscellaneous products	Partial	
MPS410002	Wholesale trade commissions	Partial	
MPS441000	Retail margins - motor vehicles and parts	Partial	
MPS442000	Retail margins - furniture and home furnishings	Partial	
MPS443000	Retail margins - electronics and appliances	Partial	
MPS444000	Retail margins - building materials, garden equipment and supplies	Partial	
MPS445000	Retail margins - food and beverages	Partial	
MPS446000	Retail margins - health and personal care products	Partial	Margins associated with e-commerce retail transactions derived using e-commerce data collected in Statistics Canada's Annual Retail Trade Survey and Annual Retail Non-store Trade Survey.
MPS447000	Retail margins - automotive fuels	Partial	
MPS448000	Retail margins - clothing and clothing accessories	Partial	
MPS451000	Retail margins - sporting and leisure products	Partial	
MPS453000	Retail margins - miscellaneous products	Partial	
MPS454310	Retail margins - household fuels	Partial	
MPS4A0004	Retail trade commissions	Partial	

Canadian digital economy product framework

Supply and Use Product Code (SUPC)	SUPC Title	Full or partial digital product	Method for splitting partial products
Digitally-delivered products			
MPG511111	Newspapers	Partial	Share of digital newspaper sales or advertising in digital newspapers. Derived using information collected in the Survey of Service Industries: Newspaper publishers.
MPS511112	Advertising space in newspapers	Partial	
MPG5111A1	Periodicals	Partial	Share of digital periodical sales or advertising in digital periodicals. Derived using information collected in the Survey of Service Industries: Periodical publishers.
MPS5111A4	Advertising space in periodicals and in other publications	Partial	
MPG5111A2	Books	Partial	Share of digital book sales derived using information collected in the Survey of Service Industries: Book publishers.
MPS5121A1	Recorded movies, television programs and videos	Full	...
MPS5121A2	Movie, television program and video production, post-production and editing services	Full	...
MPS5121A3	Licensing of rights to use audiovisual works	Full	...
MPS512201	Recorded music and other sound recordings	Full	...
MPS512202	Audio recording services and copyright administration	Full	...
MPS512203	Licensing of rights to use musical works and sound recordings	Full	...
MPS515100	Advertising air time on radio	Full	...
MPS515A01	Advertising air time on television	Full	...
MPS515A02	Fees for the distribution of television and radio program channels (affiliation payments)	Full	...
MPS519001	Subscriptions for online content	Full	...
MPS519002	Internet advertising	Full	...
MPS519008	Other information services	Full	...
MPS5221A0	Banking and other depository credit intermediation services - explicit charges	Partial	Share of explicit fees associated with the access to online 'digitally-delivered' banking services. Derived using data from schedules reported to Financial Information Committee.
MPS561500	Travel arrangement, reservation and planning services	Full	...
MPS71A009	Broadcast and other media rights	Full	...

... not applicable

Source: Statistics Canada.

Annex B

Digitally-enabled education programs¹

Classification of Instructional program (CIP) ² Code	CIP Title
09.07	Radio, television and digital communication
10.01	Communications technology/technician
10.02	Audiovisual communications technologies/technicians
10.03	Graphic communications
10.99	Communications technologies/technicians and support services, other
11.02	Computer programming
11.03	Data processing and data processing technology/technician
11.04	Information science/studies
11.05	Computer systems analysis/analyst
11.06	Data entry/microcomputer applications
11.07	Computer science
11.08	Computer software and media applications
11.09	Computer systems networking and telecommunications
11.10	Computer/information technology administration and management
11.99	Computer and information sciences and support services, other
14.09	Computer engineering
14.10	Electrical, electronics and communications engineering
15.00	Engineering technology, general
15.03	Electrical and electronic engineering technologies/technicians
15.12	Computer engineering technologies/technicians
30.15	Science, technology and society
30.16	Accounting and computer science
47.01	Electrical/electronics maintenance and repair technology
50.0102	Digital arts, general
50.0706	Intermedia/multimedia
52.0208	E-commerce/electronic commerce
52.21	Telecommunications management
52.2101	Telecommunications management

1. The following programs were identified from Statistics Canada's Postsecondary Student Information System

2. The Classification of Instructional Program 2011 was used.

Source: Statistics Canada.

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