Australian Bureau of Statistics

ABS SUBMISSION ON THE DIGITAL ECONOMY: OPENING UP THE CONVERSATION CONSULTATION PAPER

5 DECEMBER 2017

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The Australian Bureau of Statistics (ABS) welcomes the opportunity to respond to the Department of Industry Innovation and Science's Digital Economy consultation paper and contribute to the development of a plan to maximise Australia's productivity and competitiveness through the enhanced use of digital technology.

This submission sets out how the ABS is currently placed to support the Digital Economy Strategy through the provision of relevant, trusted, and objective data, statistics and insights.

The ABS is Australia's official national statistical agency, with the purpose of informing Australia's important decisions by partnering and innovating to deliver relevant, trusted, and objective data, statistics and insights.

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INTRODUCTION

The ABS publishes and supports others to collect and publish a range of statistics that help Governments to understand the penetration of the digital economy to businesses and the Australian community.

This response provides an overview of how the ABS can currently support the Digital Economy Strategy against the themes identified in discussion paper "The Digital Economy: Opening up the Conversation" and some known gaps. There are three key messages from this submission:

- The ABS is confident that the digital economy is captured through the System of National accounts and is reflected in our economic data.
- While the ABS currently publishes a range of information to support the development and evaluation of a digital economy strategy, there are a number of known gaps and unmet demand for data that cannot be met without additional user funding.
- Through the Data Integration Partnership for Australia (DIPA) initiative, the Government and ABS are investing in the integration of administration and survey data that will enable further research relating to the impact of the digital economy. A key resource is the integrated Business Longitudinal Analysis Data Environment (BLADE).

1. ABS STATISTICS AVAILABLE TO SUPPORT UNDERSTANDING OF THE DIGITAL ECONOMY

The ABS provides a range of measures to support components of the digital economy as articulated in the discussion paper.

Some of these statistical outputs are described below, with further detail provided in Appendix A.

1.1.1 Business use of information technology

The extent to which business uses selected technology is captured in the Business Use of Information Technology survey. Some of the indicators of digital economy utilisation by business it collects include: the extent of internet access; the use of broadband; web presence; social media presence; and internet commerce (i.e. the placing and receiving of orders via the internet). This information is available by industry facilitating development of industry specific ICT strategies.

Measurement of Australian business take up of on-line trade is being explored through experimental estimates of online retail turnover produced from the monthly Retail Business Survey. Whilst enhancements to the estimates to improve the coverage and presentation of estimates require further investigation by the ABS, they provide useful data about the extent of take up of on-line trade by Australians and the impact on the economy.

1.1.2 Measuring innovation

Measuring innovation and its impact on the economy is a large and evolving subject domain in Australia and internationally. The ABS measures the level of innovating businesses in Australia via the Business Characteristics Survey. In 2014-15, 45% of businesses were innovation-active, and 38% of businesses introduced innovation.

In 2011 the ABS released a research paper exploring the association between the intensity of use of information and communications technology by businesses, and innovation. This research was

based on data collected in the Business Characteristics Survey and the Business Use of Information Technology survey combined longitudinally in the Business Longitudinal Database. With data from these surveys now included in the Business Longitudinal Analytical Environment (BLADE), there are opportunities for this research to be revisited by policy agencies.

There is, however, an acknowledged need to review the range of innovation statistics the ABS produces to ensure that they continue to meet international standards of measurement whilst meeting the needs of Australian policy agencies.

1.1.3 Expenditure on research and development

Research and development is viewed as a driver of innovation and take up of digital technologies within the economy. ABS statistics cover expenditure on research and experimental development, and investment in the development of digital technologies. This includes expenditure by businesses, higher-education institutions, and government. In 2015-16 expenditure on R&D in the field of Information and Computing Sciences accounted for 40% of total business expenditure on R&D, up $561 million (9%) from 2013-14

1.1.4 Integrated Datasets

The Australian Government is investing in data integration to maximise the value of the Governments data assets through the Data Integration Partnership for Australia (DIPA) initiative. Through data integration and analysis, the DIPA creates new insights into important and complex policy questions. The ABS is one of two agencies integrating data for the DIPA, the other being the Australian Institute of Health and Welfare (AIHW).

As an Accredited Integrating Authority, the ABS is able to provide an environment that enables privacy protecting analysis to take place to understand the impacts of the digital economy. This environment is used exclusively for policy analysis, research, and statistical purposes.

Australians and Australian businesses supply a considerable amount of information through surveys and other means to governments and other organisations. Through data integration - safely bringing information from different sources together for statistical and research purposes - the ABS is enabling new insights, without adding to the reporting burden on households and businesses.

Analysis of integrated datasets offers valuable opportunities to investigate more complex and expanded policy and research questions than would be possible using only separate, unlinked data sources. In addition, integration of program data from policy agencies with administrative and survey data provides opportunities for program evaluation. Through understanding the effectiveness of programs with specific cohorts, this analysis assists the development of targeted policy and associated programs.

Two data integration projects of relevance to the measurement and analysis of the digital economy are the Business Longitudinal Analysis Data Environment (BLADE) and the Multi-Agency Data Integration Project (MADIP). Additional information on the MADIP is set out in Appendix B.

The BLADE, which was developed in partnership with the Department of Industry, Innovation and Science (DIIS), links administrative and survey data over the period 2001-02 to 2013-14 for all active businesses in Australia. This integrated data environment enables analysis of businesses over time and includes numerous microeconomic variables.

Administrative data is primarily sourced from the Australian Tax Office and contains core information necessary to understand the drivers of productivity at the firm level. ABS survey data in BLADE encompass characteristics such as innovation, use of information technology and research and development expenditure. The survey and administration data is further supplemented by selected program data from policy agencies.

To ensure the confidentiality of business information is maintained, all identifying information (e.g. business name, number, address) is removed from analysis datasets. That is, analysis is performed on a file that does not contain identifying information. Access to the analysis datasets is restricted to authorised persons and analysis performed within a secure environment.

An example of the work that has been conducted using the BLADE is the evaluation of participation in the South Australian Innovation and Investment Funds (IFFs) on firm performance. Analysis of these impacts was not possible prior to the development of the BLADE, and the ability to link program data to longitudinal business data.

The BLADE is also currently being used to undertake analysis on the performance of SMEs, the impact of innovation on business performance, and the flow-on impacts of businesses undertaking research and development.

Given the data already integrated into the BLADE, and the ability to integrate other business data, BLADE is an asset that could be used for a significant amount of analysis about the economic impact and benefits of the digital economy.

2. ENSURING THE IMPACT OF THE DIGITAL ECONOMY IS CAPTURED WITHIN OFFICIAL STATISTICS

While there is no agreed definition of the digital economy in the literature, the G20 has recently defined it as "economic activity that includes using digitised information and knowledge as the key factor of production". There is speculation that mismeasurement of digital economy activity may be impacting output measures in the National Accounts. However most mismeasurement issues raised relating to digital economy activity are not new – they are all well-known issues, presented through a different lens.

At the 2017 United Nation Statistical Commission, it was concluded that the conceptual framework of System of National Accounts (SNA) is robust in capturing the digital economy, noting there may be problems in measuring some transactions, and the price and volume of transactions, with more guidance on the measurement of these activities needed.

The activities of the digital economy are included in the Australian SNA framework. If the enterprise operating in the digital economy is engaged in the Australian tax system, then the activity is captured in Australia's national accounts. Other, less regular sources of data (such as the Household Expenditure Survey) will capture expenditure and production relating to the digital economy (albeit with a lag).

Increasing digitalisation is also providing solutions to adequately capturing source data (e.g. scanner data is now incorporated into the ABS CPI dataset), while 'web-scraping' is being progressively integrated into CPI data. This type of data can produce prices both more accurately and more efficiently, thereby improving the measurement of prices and the economy. Its use will grow over time, and will narrow the role of CPI Field Officers to areas of the CPI that are difficult to price, say due to quality adjustment (e.g. motor vehicles). This is in line with current international best practice, where price indexes are quality adjusted to reflect the pure price change.

Arguments have been made that the official Australian System of National Accounts (ASNA) and productivity estimates do not include increases in consumer surplus, which is where much of the productivity impact of the digital economy can be seen (e.g. paying bills via a bank app creates additional leisure time for the consumer). This is true. The National Accounts framework measures production, not consumer surplus. Indeed most household production for own use has never been captured in the National Accounts (such as domestic cleaning, cooking etc.).

Another view is that the ASNA framework should be extended to include output which had been traditionally included, but is now being undertaken by the consumer (e.g. consumers now booking holidays on line instead of going to a travel agent). However, this again falls into the category of household production for own use, not production in the economy.

That is not to say that data regarding these activities should not be compiled or identified. For example, satellite accounts could draw together data from various sources to put the spotlight on the digital economy in a way that is not currently possible in the established set of macro-economic statistics. This has proven successful in the past, for example with the Tourism satellite accounts.

There are two main areas of ongoing consideration in relation to the digital economy:

- **Classifications**: the digital economy is not visible in current industry classifications used by the ABS, or other NSOs. This is often the case where a sector contains elements of different Australian and New Zealand Standard Industry Classification (ANZSIC) industry classifications.
- **Deflators:** The deflators used to arrive at volume data may not be appropriate for digital economy activity. For example, the deflator that is currently used for taxi and other ride sharing services sector may not be the appropriate deflator for Uber if Uber has different pricing and quality attributes compared to taxi services (i.e. a different production function). If the growth rates of the two different units are substantially different, this would impact productivity growth.

Internationally, the Bureau of the OECD Committee on Statistics and Statistical Policy (CSSP), of which the Australian Statistician is vice chair, has been considering the issues of the measurement of the digital economy through an OECD Working Party for the National Accounts advisory group.

The work of the group, of which ABS is a member, will help to shape the discussion on quantifying the effects of the digital economy on the economy and productivity measures.

Specifically the group is tasked with the following four issues:

1. Clarify the statistical concepts relevant to the digital economy (products, industries, potential data sources, new opportunities to collect data, potential indicators etc.).
2. Quantify potential mismeasurement issues, including the adequacy of price indexes and investment due to the partial use of consumer durables as business assets.
3. Quantify the value of ‘free’ goods and services.
4. Quantify cross border digital economy related trade, including e-commerce, digital services and IP products.

An interim report is due late 2017, with the final report to be presented at the 2018 Working Party of National Accounts meeting (November 2018).

3. GAPS IN AVAILABLE DATA

There is a high level of unmet demand for statistics to support the measurement of the digital economy, exceeding that which the ABS currently has funding to produce.

In 2016-17, the ABS consulted with stakeholders on the shape of the statistical forward work program. Consultations occurred with the Australian Statistics Advisory Council, the Economic Statistics Advisory Group, the Population and Social Statistics Advisory Group, relevant Commonwealth agencies and the states and territories. The advisory groups comprise academics, private sector representatives, and other Commonwealth and state and territory public service agencies.

The review confirmed that the ABS is focusing its funding from Government on the priority economic, demography and household expenditure and income statistics, as well as on statistical infrastructure (such as standards and classifications) used to support these programs.

Some of the known gaps that would require user funding include:

- A Time Use Survey could potentially be used to measure aspects of the digital economy, such as goods and services bought and sold online, amount of time spent managing online businesses, and amount of time saved by using online rather than face to face services (as well as what people are doing with the time they save).
- Any requirements for new or changed measures of innovation to meet the requirements of Innovation and Science Australia's 2030 strategic plan, such as tracking the impact of innovation in the Australian economy from inception through to its introduction, and flow on impact.
- A joint review of Information and Communications Technology (ICT) statistics by the Department of Communications and the Arts and the ABS in 2015 concluded that the current suite of ICT surveys and statistics do not provide a holistic view of ICT contribution to the economy and productivity in Australia.
- The biennial Household Use of Information Technology statistics will be ceased from the 2018-19 cycle as part of the review of the ABS work program. This survey provided insights into the extent to which households utilise digital technologies, and could provide insights into the extent, and impact, of the digital divide.

The ABS has expertise that allows it to collaborate with agencies in developing solutions to the measurement and evaluation of 'wicked' policy problems such as the digital economy and programs associated with its development.

This expertise includes:

- The development of standards. The ABS develops standards in collaboration with other statistical agencies, and contributes to the development and maintenance of a range of international standards that enable international comparisons to be made.
- The development of methods to measure the outcomes of policy interventions and how to embed capture of relevant data into programs during their development.
- The development of innovative solutions to combine existing data sources in a way that is safe and maintains business and personal confidentiality to evaluate policy and program outcomes.

This expertise could be applied to assisting those developing policy and associated programs to ensure evaluation data collected has national and international comparability.

APPENDIX A – SELECTED STATISTICS ABOUT THE DIGITAL ECONOMY

1. Business Use of Information Technology

The Business Use of Information Technology survey is conducted biennially, and reviewed prior to each survey being run to ensure that relevant measures are included.

Selected findings from the Business Use of Information Technology survey 2015-16 indicate that:

- Just under a third of all businesses (31%) had both a social media and web presence and the most frequently reported use of social media was to develop company image or market products (79%), followed by communicating with customers (70%).
- Financial activities (including online banking, invoicing and making payments) were the most commonly reported business internet activity by all businesses (87%).
- The use of paid cloud computing services increased with employment size (25% for businesses with 0-4 persons employed to 60% for businesses with 200 or more persons employed).
- The Information media and telecommunication industry had the highest proportion of businesses that used paid cloud computing services (57%).
- The Information, media and telecommunication industry reported the highest proportion of businesses that implemented management practices for the use of ICT through the introduction or change a digital business strategy (13%) and approval of investment in new digital technologies or infrastructure (17%).

2. Measuring innovation

In 2014-15, 45% of businesses were innovation-active, and 38% of businesses introduced innovation.

3. Expenditure on Research and development

Latest statistics from the ABS Survey of Research and Experimental Development (R&D), Businesses show that expenditure on R&D in the field of Information and Computing Sciences accounted for 40% of total business expenditure on R&D in 2015-16, up $561 million (9%) from 2013-14. By socio-economic objective, 18% of total business expenditure on R&D was directed to Information and Communication Services, up $166 million (6%) from 2013-14.

4. Measurement of digital infrastructure

The latest ABS Internet Activity Survey results show that there were 13.7 million internet subscribers in Australia at the end of June 2017. This is an increase of 2.1% from the end of December 2016. Fibre connections grew by 49.8% in the six months between December 2016 and June 2017 (reaching 2.1 million fibre connections in June 2017) consistent with the continued rollout of the National Broadband Network.

5. Statistics on opportunities and challenges for SMEs and digital innovation

The ABS's Business Use of Information Technology surveys provide statistics on information technology use by small to medium enterprises (SMEs). They provide insights into SMEs use of technology in the areas of social media presence and use, financial activities, use of cloud services, and in the most recent survey, digital management practices such as providing data on the extent of importance of various digital technologies to SMEs.

The factor which most significantly affected businesses employing 0-4 persons in 2015-16 was a lack of access to digital infrastructure (7%), and for businesses employing from 5-9 employees it was Spam (8.5%).

6. Cyber-security – measures of cyber security

The extent to which businesses experience internet security incidents or breaches, and the impact of those breaches is measured in the Business Use of Information Technology Survey.

The 2015-16 BUIT survey showed that 16% businesses experienced a security incident or breach. Of these breaches or incidents 53.8% resulted in downtime of service, 47.5% in corruption of hardware or software, 36.5% in loss of data, 33.5% in loss of staff productivity and 13.1% in loss of income.

7. Household and personal IT use measurement

The ABS collects range of household and personal statistics. Statistics are collected across a range of household surveys including the General Social Survey, the Survey of Disability, Ageing and Carers, the National Aboriginal and Torres Strait Islander Social Surveys.

The ABS social surveys and the Census, cover data of relevance to at risk groups, in particular those with a disability, migrant groups, Aboriginal and Torres Strait Islanders and people living in regional and remote areas of Australia for which data from the Census is often the only source of detailed geographic breakdowns. These sources can help measure relative disadvantage and social inclusion in relation to the digital divide.

8. Digital literacy measurement

Statistics relating to digital literacy encompass both business and households. ABS collects business-related data on digital skills through the Business use of Information Technology survey.

Enhanced digital skills or capabilities was reported in the BUIT as the most common factor that significantly changed the way businesses with 200 or more persons employed used ICT (14%) in 2015-16. The supply of staff with strong digital skills for Australian businesses is an ongoing issue and digital literacy skills among employees are of key importance to industry.

APPENDIX B – MULTI-AGENCY DATA INTEGRATION PROJECT

The MADIP is a partnership between Australian Government agencies. It demonstrates how to maximise the value of existing public sector data for policy analysis, research, and statistical purposes, in a safe and secure way.

The project has brought important national datasets together to look at patterns and trends to help agencies and analysts address complex policy and service delivery questions facing Australia.

In the case of MADIP, personal information is supplied and stored separately from other data and is only used to bring the data together. Analysis is performed on a file that does not contain personal information. The data does not identify individuals, but looks at patterns and trends among groups of people in the community. Linkage is performed in a secure facility, and within that facility no person can access both personal information (e.g. name, address, date of birth) and analytical information (e.g. occupation, income, health services use).

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