

#### Why use economic statistics to measure the digital transformation?

Digital technology in its broadest sense has had a significant impact on the economy in recent years, transforming and disrupting numerous production processes and activities, while generating significant benefits to society at large. Consumers increasingly purchase goods and services online (e-commerce) and have access to a range of (typically) free services, such as search engines, social networks, media and so on. Businesses are able to capitalise on digital tools and data to boost productivity and penetrate new markets.

The pace of change has been unprecedented and in its wake many have questioned the ability of statistical information systems and concepts to keep up. However, from a conceptual standpoint this challenge has been met, at least with respect to the current GDP accounting framework – the 2008 System of National Accounts (see Ahmad and Schreyer, 2016). It is also clear that some aspects of the present statistical information system, notably those concerning the classification of firms, products and transactions, have lagged behind the digital transformation. In addition, questions are being raised about the scope of the GDP production boundary to capture, for example, new digitally enabled services produced by households for themselves – such as online content or transport and accommodation services facilitated through online platforms

Notwithstanding the evidence that digitisation has exacerbated longstanding measurement challenges, particularly with regard to price and quality changes in rapidly changing industries and products, these effects are mitigated when looking at broader measures of economic activity and inflation, and cannot explain the current productivity slowdown (Ahmad, Ribarsky and Reinsdorf, 2017; Reinsdorf and Schreyer, 2017). However, the inability to articulate the actual size of the digital economy – through references to actors, products, transactions and so on – in core accounts continues to create questions about what aspects are and are not captured in macro-economic statistics. This in turn fuels a broader mis-measurement hypothesis. These challenges can be met through the use of a digital satellite account that delineates key digital actors and transactions within the National Accounts Framework.

#### What are the challenges in developing a digital satellite account?

In response to this challenge, in 2017 the OECD created an Informal Advisory Group on Measuring GDP in a Digitalised Economy in order to develop new classifications and accounting tools better equipped to describing this digital reality and to provide metrics that highlight the scale of the digital transformation.

From the outset the framework was designed to provide a broadly holistic view of the digital economy that could respond to the multitude of questions posed by analysts and policy makers, notably those that current mainstream statistical information systems are unable to answer.

The multi-dimensional nature of these questions meant that the framework could not be built exclusively around mono-dimensional aspects such as industries (producers), consumers (households and industries), products (digital and non-digital) or transactions (digitised and non-digitised), as each approach provides only a partial view. That being said, a central unifying theme broad enough to reflect multi-dimensional policy needs is elusive, but revolves around the concept of digital transactions. A consensus has emerged around the idea that any framework needs to be able to separately identify transactions based on their “digital nature” (i.e. digitally ordered, digitally delivered and/or digital intermediary platform enabled), partly because of their different economic impact, but also because of the different ways in which transactions are recorded in the accounts. The following figure presents an overview of the conceptual unifying framework.

Importantly, the framework has been designed to capitalise on blocks that can, at least in theory, be readily derived from current information sets, and are in line with current international accounting standards. But, as depicted in the first column of the framework diagram, it also goes further through its inclusion of many non-monetary digital transactions not typically included in GDP, but which may have important economic implications (e.g. in relation to measures of welfare). Special mention should be made in this respect of the explicit reference to data (see the third column of the framework diagram). Under current international accounting standards, the acquisition of data without a monetary transaction is treated as “free”. As such, much of these data appear neither as a good nor a service in the accounts. There is, however, considerable interest in monetising these flows, and indeed their value in the underlying databases (where they are included under the category of enablers) that support their business models, in order to better understand how they contribute to production (see Ahmad and Ribarsky, 2018; Ahmad and Van de Ven, 2018).

The operationalisation of these principles to develop a digital satellite account builds on national supply and use tables (a core part of current national statistical information systems). These provide detailed information on the production process, the origin of various goods and services (supply), and the destination of these goods and services (use) (see Mitchell, 2018). The digital satellite account goes further by requesting more detailed breakdowns of goods and services based on the modes of ordering and delivery, providing more information on one of the most visible manifestations of digitalisation - electronic ordering (e-commerce), electronic delivery and platform enabled transactions. It also

