



## MAIN COMPONENTS OF THE DIGITAL ECONOMY

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<b>Received:</b> 10 <sup>th</sup> January 2023	For the past decades, the world has been moving so fast towards a new type of economy, where the digital technologies function as the main tool for its formation. Expanding the role of information technology in the private and public sectors is the basis for the transition to a digital state. The term «digital economy» was used for the first time relatively recently, in 1995, by an American scientist from the University of Massachusetts, Nicholas Negroponte, in order to explain to his staff, the advantages of the new economy in comparison with the traditional one in connection with the strong development of information and communication technologies. The article deals with main components of the digital economy and the world experience of structural and institutional support for the development of the digital economy. Special attention is paid to the development of digital technologies in the economy. Analyzing the topic, it was concluded that the learning the main components of the digital economy can help to develop appropriate programs that ensure the effective use of digital technologies.
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The digital information has changed our lives and societies at a great speed and scale, delivering huge opportunities as well as challenges. New technologies can contribute significantly to the Sustainable Development Goals, but we cannot take positive outcomes for granted. Countries must urgently develop international cooperation if the world needs to achieve the full social and economic potential of digital technology as well as avoiding unintended consequences. Since the world is only at the early stages of digitalization, the developing digital economy lacks widely accepted definitions. There may be many interpretations of the same term in the relevant literature and analyses, as well as in different forums. Maybe it is because of the novelty and the lack of sufficient understanding or clarity regarding this phenomenon. It may also reflect the high speed of technological progress. The time required for agreeing on standard definitions often lags behind the velocity of technological change.

In this context, it is necessary to strike a balance between avoiding straitjacketing definitions, which may block progress, and reaching a common understanding of relevant concepts. In a rapidly evolving situation, it is important to have some dynamic flexibility with definitions. On the other hand, in order to properly analyse the issues and design policy responses, there is a need to arrive at some common ground on the meaning of the terminology used. This section provides some historical background on the digital economy concept, and presents a working definition of the digital economy and its components that will serve as the basis for the analysis conducted in this Report.

Since first coined in the mid-1990s, the definition of the digital economy has evolved, reflecting the rapidly changing nature of technology and its use by enterprises and consumers. In the late 1990s, analyses were mainly concerned with the adoption of the Internet and early thinking about its economic impacts. As Internet use expanded, reports from the mid- 2000s onwards focused increasingly on the conditions under which the Internet economy might emerge and grow. Definitions evolved to include analyses of different policies and digital technologies, on the one hand, and the growth of digitally oriented firms as key factors. With improved Internet connectivity in developing countries, and the expansion in the range of digital firms, products and services, studies of the digital economy have begun to include more substantial analyses of the situation in developing countries. In the past few years, the discussion has again shifted, focusing more on the way digital technologies, services, products, techniques and skills are diffusing across economies. This process is often referred to as *digitalization*, defined as the transition of businesses through the use of digital technologies, products and services. Digital products and services are facilitating more rapid change across a wider range of sectors rather than being confined to those high-technology sectors that had been the main focus previously. Reflecting this change, recent work has focused on “digitalization” and “digital transformation”, like the ways in which digital products and services are increasingly disrupting traditional sectors, to explore various cross-sectoral digitalization trends. This is especially relevant for developing countries where the digital economy has begun to affect the traditional sectors, such as agriculture, tourism and

transportation. Indeed, the most important economic changes may well occur through the digitalization of traditional sectors rather than through the emergence of new, digitally enabled sectors. An analysis of how investments in, and policies related to, technologies or infrastructure enable or limit the emergence of the digital economy is necessary for understanding its development implications. Equally important is to assess the digital economy through the lens of certain sets of technologies. For example, the evolving digital economy can be associated with an increased use of advanced robotics, Artificial Intelligence, the Internet of things, cloud computing, big data analytics and three-dimensional (3D) printing. In addition, interoperable systems and digital platforms are essential elements of the digital economy. However, there is always a risk of paying too much attention to the latest innovations that are most in vogue, rather than to those technologies that are of the greatest relevance for developing countries. One way to overcome this limitation is to explore the main components of the digital economy.

With digital technologies underpinning ever more transactions, the digital economy is becoming increasingly inseparable from the functioning of the economy as a whole. The different technologies and economic aspects of the digital economy can be broken down into three broad components:

1. **Core aspects** or foundational aspects of the digital economy, which comprise fundamental innovations (semiconductors, processors), core technologies (computers, telecommunication devices) and enabling infrastructures (Internet and telecoms networks).

2. **Digital and information technology (IT) sectors**, which produce key products or services that rely on core digital technologies, including digital platforms, mobile applications and payment services. The digital economy is to a high degree affected by innovative services in these sectors, which are making a growing contribution to economies, as well as enabling potential spillover effects to other sectors.

3. **A wider set of digitalizing sectors**, which includes those where digital products and services are being increasingly used such as for e-commerce. Even if change is incremental, many sectors of the economy are being digitalized in this way. This includes digitally enabled sectors in which new activities or business models have emerged and are being transformed as a result of digital technologies. Examples include finance, media, tourism and transportation. Moreover, although less often highlighted, digitally literate or skilled workers, consumers, buyers and users are crucial for the growth of the digitalized economy. These components are being used in various ways as a basis for measuring the extent and impact of the digital economy. At their most basic level, methodologies focus on measures of the core and digital/IT sectors, notably related to investment and policies relating to the digital economy for example digital infrastructure investments, broadband adoption, and how these are linked to the growth of that economy, particularly in terms of outputs and employment in the digital and digitally enabled sectors. Such analyses help to provide direction for policies and investments in the digital economy, and to assess potential impacts on firms, consumers and workers. Measuring the digital economy beyond digital and digitally enabled sectors is more difficult. Impacts from the use of digital technologies may result from spillover effects, and intangible outcomes such as firm flexibility, management approaches or productivity, also depend on other variables. Some researches have assessed digitalization by means of surveys and e-commerce data, by measuring the spillover effects from the ICT/digital sectors across an economy, or by exploring the changing geography of global data and knowledge. These approaches often face limitations due to methodological challenges and the lack of reliable statistics.

Proposed definitions of the digital economy tend to be closely linked to the components outlined above. One approach, which is broadly aligned with a number of other studies is the definition of the digital economy proposed by Bukht and Heeks: "That part of economic output derived solely or primarily from digital technologies with a business model based on digital goods or services". Another approach is to view the digital economy as encompassing all the ways in which digital technologies are diffusing into the economy define the foundations of the digital economy in broader terms, suggesting that it is: "The share of total economic output derived from a number of broad "digital" inputs. These digital inputs include digital skills, digital equipment like hardware, software and communications equipment, and the intermediate digital goods and services used in production. Such broad measures reflect the foundations of the digital economy". Given the focus on value creation and capture in this Report, emphasis is given to the processes and changes in the digital economy, rather than to the outcomes of activities. This has implications for the types of policies needed in relation to how the digital economy operates and less on the requisite conditions for the emergence of such an economy. While it is necessary to pay attention to specific technologies, a focus on broader trends, such as digital data and e-commerce, is also needed. This enables an analysis of changes in the digital economy while acknowledging that such changes might happen in different ways. The above definitions highlight the varying emphases: either towards cutting-edge activities in the digital sector or the broader digitalization of the economy. It should be noted that in discussions about the dynamic digital economy, reference is frequently made to "digital infrastructure", a concept that still lacks a widely accepted definition. It may be useful to consider different levels of digital infrastructure:

- ICT networks (the core digital infrastructure for connectivity);
- data infrastructure (data centres, submarine cables and cloud infrastructure);
- digital platforms;
- digital devices and applications.

Some experts also include the data themselves as part of the digital infrastructure.<sup>8</sup> In the case of digital platforms, while they are not strictly infrastructure (they can also be agents participating in the activity that takes place on them), they also perform infrastructure-like functions by connecting two or more sides of a market.

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