

Employment and productivity in the digital age

Expansión (Spain)

Luis Díez / Alejandro Neut

Since the invention of the steam engine at the end of the eighteenth century, technological innovation has been the main source of growth in developed economies. In particular, it is the key reason why today's average Spanish worker earns eight times as much as at the beginning of the twentieth century, for one third fewer hours. Given this technological source of economic growth, it is no surprise to see it accompanied by the continual reconfiguration of the labour market, in terms both of the occupations carried out (in 1900, 60% of jobs were in the agricultural sector, compared with 5% now) and of the higher degree of training required to be able to work. (Being illiterate, as 64% of the population were at the beginning of the twentieth century, was no barrier to good performance in the majority of occupations then.)

In the past two centuries, modern societies have learnt to adapt to constant, gradual technological progress. However, there have been waves of highly disruptive innovations which, despite opening up a wide range of new opportunities, brought with them collateral effects that were difficult to understand and administer. We are talking about phenomena ranging from rural unemployment and migration to the big cities to the closure of the coal mines. Today, we are seeing the build-up of another such wave, dubbed the Fourth Industrial Revolution.

With a view to understanding and managing the coming changes, in a [recent BBVA Research study](#) we measured and contrasted two major channels through which the new technologies are reconfiguring Spain's occupational/labour map. On the one hand, the retraining channel, measured as the need to be trained in the use of new technologies; on the other, the obsolescence channel, approximated by the risk of automation of an occupation. These channels are independent of one another. For example, teaching and care services to the elderly are both occupations at low risk of automation. However, whereas many teachers can significantly boost their productivity through appropriate use of the new technologies, this is not so immediate in the case of people caring for dependent persons.

Which occupations are at greatest risk of automation and which ones require more retraining? According to the recent literature, the occupations most at risk of automation are those performing repetitive tasks. This result is nothing new in itself, since automation has always been directed at replacing these kinds of tasks. What is new is that the risk of mechanisation of an occupation is now starting to be independent of the knowledge and cognitive skills needed to perform it (for example, certain routine legal services). This is a potentially significant development, given that the middle classes in developed countries have tended to be concentrated in relatively routine occupations where the level of education has traditionally been the key to increasing productivity and wages.

In terms of retraining, our analysis centres on occupations requiring extensive use of computer technologies, such as certain management, engineering and teaching jobs. These new digital technologies follow historical patterns and largely favour highly paid occupations. However, it is not enough to receive training in the use of specific IT tools. The growing automation of routine cognitive processes involves changing the "first knowledge accumulation, then work" paradigm, and lays bare the growing importance of ongoing education as key to occupational development.

There is little doubt that, in the long term, the Fourth Industrial Revolution will lead to greater productivity and aggregate economic growth (very few people would now be content with their great-grandfathers' work and wages). But to make the transition to that point and come out strong, we need to know how to manage change. What this and many other studies clearly show is the need to adopt continuous training strategies that go beyond those associated with the use of IT tools and actively support workers in occupations most at risk of automation. Understanding and measuring the various channels in play is key to both governments and businesses effectively leading change.

Creating Opportunities

DISCLAIMER

This document has been prepared by BBVA Research Department. It is provided for information purposes only and expresses data, opinions and estimates at the date of issue of the report, prepared by BBVA or obtained from or based on sources we consider to be reliable, but not independently verified by BBVA. Therefore, BBVA offers no warranty, either express or implicit, regarding their accuracy, completeness or correctness.

Estimates this document may contain have been made in accordance with generally accepted methodologies and should be considered as forecasts or projections. Results obtained in the past, whether positive or negative, are no guarantee of future performance.

This document and its contents are subject to changes without prior notice depending on variables such as the economic context or market fluctuations. BBVA is not responsible for updating these contents or for giving notice of such changes.

BBVA accepts no liability for any loss, direct or indirect, that may result from the use of this document or its contents.

This document and its contents do not constitute an offer, invitation or solicitation to purchase, divest or enter into any interest in financial assets or instruments. Nor shall this document or its contents form the basis of any contract, commitment or decision of any kind.

With regard to investment in financial assets related to economic variables this document may cover, readers should be aware that in no circumstances should they base their investment decisions on the information contained in this document. Persons or entities offering investment products to these potential investors are legally required to provide the information needed for them to take an appropriate investment decision.

The content of this document is protected by intellectual property laws. Its reproduction, transformation, distribution, public communication, provision, extraction, reuse, forwarding or use of any nature by any means or process is forbidden, except in cases where it is legally permitted or expressly authorised by BBVA.

CONTACT DETAILS:

BBVA Research: Azul Street, 4. La Vela Building – 4th and 5th floor. 28050 Madrid (Spain)
Tel.: +34 91 374 60 00 and +34 91 537 70 00 / Fax: +34 91 374 30 25
bbvaresearch@bbva.com www.bbvaresearch.com

