

Ask: NUS Economists

Productivity is not just a numbers game

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For The Straits Times

Q Does automation increase labour productivity in Singapore?

A Automation has transformed the life of Singaporeans, from the use of self-serve kiosks in fast-food restaurants to self-checkouts in supermarkets, for example.

The 2016 Singapore Budget revealed the Automation Support Package for firms to grow. By transforming industries through automation, the objective is to drive productivity and scale up, leading to higher economic growth.

Indeed, Singapore's productivity growth has been lacklustre for the past few years despite being halfway through the productivity road-map. The ambitious target of a productivity growth of 2-3 per cent set by the Government has seemed

more and more untenable.

In determining whether an increase in automation can solve the productivity conundrum, we would first need to define labour productivity. It is often measured as value added per worker or per work hour. Changes in labour productivity therefore measure the efficacy and efficiency of workers in producing more output through the organisation's production process.

Intuitively, automation would lead to higher labour productivity. For instance, with labour-assisting technology such as autonomous drone waiters by local firms, we would expect a fall in the number of waiters serving the same number of customers.

A 2015 study by Graetz and Michaels further provides empirical evidence from 14 industries in 17 developed countries that industrial robots do increase labour productivity. Using data from the International Federation of Robotics, it is shown

that using robots within manufacturing accounted for 16 per cent of its labour productivity growth between 1993 and 2007.

However, this is more than a simple mathematical exercise. With automation, there are changes in experiences and business processes. The real output provided by the worker is no longer the same as before. This is not reflected in the standard measurement tools.

Firstly, jobs can be transformed with automation. For example, robot waiters now help to serve food, while human waiters become more of customer-service champions who build bonds and create a sense of familiarity with customers. Automation makes these jobs more human by taking away laborious and boring tasks. Inevitably, this would increase the quality of experience for both workers and consumers.

Other immediate gains brought

about by automation are not able to be tangibly measured. Private bankers who leverage on automated software are now able to chart asset allocation plans in a more efficient manner.

Accountants can move away from bookkeeping to becoming business consultants, providing more strategic directions.

Tour guides providing automated audio guides to clients can now be more attentive, enticing them to visit more places and, subsequently, spending more tourist dollars in Singapore.

It is now evident that automation can help to deepen and broaden labour skills, and develop a better quality of goods and services that might not be reflected by the standard labour productivity formula.

In its extreme, real output measured in dollars could actually be lower despite achieving a higher standard of living with automation. For instance, automated vehicles

could get more powerful and cheaper, leading to a fall in the value of goods and services produced in the economy, even though commuters are better off.

Current labour productivity measurements are useful, but inadequate. Instead, we should use a Labour Productivity-Quality Index that takes into account the quality of goods and services being consumed. This could be a weighted sum of indices such as Customer's Satisfaction.

Alternatively, we could construct a new indicator to show how the quality and type of goods and services have evolved.

From banking to online shopping, the new digital economy has changed how things work. It is timely to measure this appropriately.

Indeed, automation has a huge potential to be Singapore's next growth driver. To improve efficiency, both hardware

(technical know-how) and software (an open and receptive mindset) are equally important. Firms must be adaptive and innovative in business practices. Workers must be willing to embrace changes and upgrade their knowledge and skills accordingly.

From a measurement standpoint, it is necessary to accurately capture this change both qualitatively and quantitatively. The benefits from automation are not simply in the standard productivity formula that we are all used to.

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- The writer is an instructor in the Department of Economics, National University of Singapore (NUS).
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