Help, our productivity growth is going down! Another four tips to boost your productivity (part 16)

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Pascal Pollet

Belgium is the fourth most productive country in the world, but our productivity growth has been sputtering. In this series, we present some practical tips that can easily boost productivity in the office and on the shop floor.

In the first part of this series, we discussed the productivity of Belgian companies. Productivity growth in our country has been substandard in recent years. A recent study by Agoria once again shows how lousy the situation really is. Productivity growth in the period 2016-2019 was only 0.07%. At this rate, it will take another thousand years before our prosperity doubles again! This is worse than our three main trading partners (Germany, France and the Netherlands), who achieved a productivity growth of 0.4%. In comparison: in the period 2000-2010, Belgium achieved a productivity growth of 0.82%, doing better than its neighbours.

In order to support productivity improvements in Belgian companies, we collect a number of tips that we publish at regular intervals. During our visits to companies, we see that there is still a lot of low-hanging fruit to be picked. These tips are deliberately not aimed at implementing advanced technologies, but on improvements that can be achieved with little effort.

Tip 67: Optimise machine cycle times

In order to increase the output of machines, efficiency (= reducing unwanted standstills) and the cycle time of the machine itself can be improved. When it comes to machines, reducing the cycle time is sometimes easier than increasing the efficiency.

Most machines are designed to run at a pre-defined cycle time. However, this does not mean it is the best they can do. Here are some options to reduce cycle times:

- In some cases, the speed can be increased simply by adjusting the compressed air supply to the pneumatic cylinders, or the speed of servomotors can be further increased.
- The sequence of many PLC programmes is typically highly sequential. Sometimes you can also run steps in parallel, which means they overlap and time is saved. A practical example of this is idle grippers. Often, the follow up to a robot movement is the opening of a gripper to drop off a product at a location. These movements are typically programmed sequentially. The ‘landing phase’ of a robot is typically relatively slow. If centring pins or similar are used to ‘receive’ a product, the grippers may already open during the landing and the robot can still safely drop off the product. In this way the gripper movement and the robot movement partially overlap.

- Also check whether all conditions imposed to start a step are actually necessary. Sometimes the original programming was too strict, and you can also save time by relaxing the start conditions.
- Another possibility is to upgrade some of the machine's components with a higher-performance component.
- Another method is to limit the length of the back and forth movements to the strict minimum (see also tip 27).

Tip 68: Organise office cells



Most companies are organised into departments, where individuals with the same job are grouped together and report to the same manager. Each department manager then tries to organise their own department as well as possible to achieve their own goals. This quickly leads to local optimisations and pigeonholing, which makes cooperation between the departments difficult. The sales department, for example, tends to give positive answers to customer question, while the engineering department often concludes that impossible promises were made. This almost always leads to unnecessary loss of time, slow and clumsy communication and mountains of frustration.

These problems are not process problems, which you can solve with a new computer system, for example. These problems stem from the chosen organisational structure and should be tackled by rethinking the organisational structure itself. An alternative to the traditional department structure is an organisation made up of cells, each of which is focused on a specific product or market segment. In such an organisation, you bring together the various specialists needed to serve a segment. The team members of such a cell are physically brought together in the same location and all report to the same manager. Typically, these team members also participate in cross-training (see tip 7), so that they understand each other's work and can take over if necessary.

Office cells have a major impact on productivity. A large part of the slow email communication between the departments disappears, the number of misunderstandings and thus of rework decreases, the employees have a much better understanding of what they have to do to help each other, unnecessary checks disappear... As a result, not only the productivity rises sharply, also the throughput time can be significantly reduced and thus increase customer satisfaction. (See also tip 12 about measuring the lead times at the office).

Tip 69: Use a water spider

In each operating theatre, a nurse assists the surgeon by providing instruments. This offers numerous advantages: the nurse relieves the surgeon, allowing him to concentrate better on his actual work, the operation time is shorter, which reduces complications, and the surgeon's productivity increases. It is noteworthy that this method was invented by Frank Gilbreth, a time study pioneer from the construction industry, where the use of helpers has been an established practice for centuries. Initially, the surgeons did not like the idea and it took a long time before it was accepted.

The same principle can be applied in production by deploying an employee to relieve the production staff by carrying out a number of logistical tasks. In Japanese, this function is called

'mizusumashi', translated into English as 'water spider'. The water spiders are no warehouse operators, they are only responsible for the 'last mile' delivery to the workstations themselves. In addition, water spiders can also help with the changeover, the administration, and the support of the newcomers.

By separating the logistical tasks from the production tasks, it becomes easier to better organise both the production work and the logistical work, thus increasing productivity. The impact of a water spider should not be underestimated. We recently came across a company where a team of seven welders was the bottleneck. By adding a water spider to the team, the welders' output increased by about 30 per cent. This is significantly more than if the company had hired an eighth welder.

The video below provides a good overview of the principles that should be followed when deploying a water spider.

Tip 70: Improve air quality

Do you sometimes feel drowsy after a day at the office? Perhaps you suffer from poor air quality. A person breathes in around 11,000 litres of air every day and that air can contain thousands of different organic substances, many of which originate from the building. Research shows that the air quality has a significant impact on the productivity and health of employees.

Air quality depends on the composition of the air and the contaminants (gases, aerosols, dust particles, micro-organisms). The many possible contaminants make it difficult to define a good measure of air quality. Therefore, air quality is typically measured by the ventilation volume.

Several studies show that productivity increases as air quality improves. The exact magnitude of the impact depends somewhat on the circumstances of the study. One study found up to 9 per cent improvement in productivity in call centres. The typical impact of improving air quality is probably more like 3 per cent.



Relationship between productivity and ventilation volume
(Source: Seppänen)

Air quality can be improved in various ways:

- Remove the sources of poor air quality (e.g. old carpets, mould, etc.)
- Clean the filters of the ventilation system regularly
- Ensure adequate air circulation (approx. 25 litres/per second/per person)
- Open the windows regularly
- Use plants (see also tip 38)

A simple way to check air quality is to measure CO2 content, for which inexpensive sensors are available. The natural level of CO2 in outdoor air is around 400 ppm. Try to limit indoor CO2 to 800 ppm. The strongest effects on productivity can be seen when CO2 remains below 500 ppm.

Besides its impact on productivity, better ventilation also reduces illness. For example, one study estimates that sick leave can be reduced by a quarter if ventilation is doubled from 12 to 24 litres/second/person.

Finally

Do you have any tips to share? Let us know so that we can share them and become more productive together! The best tipster gets a nice gift!

We would like to thank Bas Rottier for providing the inspiration for tip 67.

You can find an overview of the other parts of this series with tips here.

Authors



Pascal Pollet