Walking the walk toward digitization

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It is not an easy task to describe something. In words, an author could spend a paragraph describing a room, and still needs to let the readers use their fantasy to fill out the details. If it was possible to take a snapshot of a hundred readers imagining the same description of a room, it would probably result in a hundred different rooms. Describing the room for a hundred computers, however, would result in one room (given that you speak the same language of ones and zeros). Describing a production line for a computer is a stepping stone toward Industry 4.0, a term which can feel insurmountable. But aiming for the stars, many benefits can be found along the way. At the Pågen bread bakery in Malmö, the benefits have been analyzed.

Describing the conversion of reality to ones and zeros is called the process of *digitizing*, and a production line has many aspects which can be digitized. Every movement of a machine, every bread, every component, and temperatures everywhere around and within the process are only a few of the aspects which affect the process of creating bread. Knowing what to digitize can be daunting, and knowing how to convert the digits to valuable information can be just as challenging.

To explore the digitization of a bakery, one approach is to start from the benefits which are sought, before investigating what information is needed to achieve them. Then, the aspects needed to be digitized and the way the digits should be transformed to information can be analyzed.

In a Master's Thesis study by Herbertsson & Mahlberg (2020) at Lund University, the digitization of a bakery was deemed to be able to achieve multiple benefits, such as improved decision-making, higher adaptability, and better reporting.

To achieve the benefits, the thesis proposed twelve projects, which could increase the digitization in varying levels of difficulty. The simplest projects utilized sensors to count the amount of bread scrapped in the various areas of the production line, while more advanced projects utilized a multitude of data sources to analyze further opportunities.

All in all, describing the production line for a computer needed a high number of data sources. Production data was proposed to be taken from sensors and programmable logic controllers, and to be able to tag the data with specific products, the manufacturing execution system needed to be integrated.

To implement the projects, the thesis proposed a roadmap, making sure to create easy wins, and establishing a foundation to build further projects from. An early foundation is to establish standardized data handling protocols, to be able to steer the digitization toward the overall goal of the transformation.

In the end, describing a production line to a computer is not about what it can see, but what it needs to see. In the future, digitalization and its related opportunities is predicted to increase, and while the end goal is far away, there are already steps to tread. And a journey of a thousand miles begins with a single step.

For further reading, we refer to Herbertsson & Mahlberg (2020).