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Switching Salad Business Overnight:
The Digital Hand Disrupts Farming

We need a platform. A platform that can predict the market trends, answer customers' demand, control product qualities, optimize HR structures, handle the financing, monitor logistics, or even just help internal communications. A platform that should serve the complete needs of a factory.

Modern indoor salad farming is coming

"What to eat?" After a horribly busy day, when we stand in a grocery store and try to grab something into our basket, a bowl of well-mixed fresh salad could be tempting. Our taste has been changing significantly during the recent ten years, due to the fast-developing urban lifestyle, the concern for our health, the care about natural environment or even just the living style. Eating fresh, local and tasty becomes a motto for urban living. Eating healthy for sure is the trend. Farm-to-table may sound like some buzzword, fancy tiny plates in fine dining. As a matter of fact, this diet trend has been dramatically changing our life and therefore the farming industry.

When we look around in the department of vegetable and fruit, it is noticeable that local Finnish produce only occupies a very small portion. We are after all a country that has snow in May, so no wonder we mostly rely on imports. However, transportation has been a big problem for food industry. The food waste and loss is not just a short-time concern worldwide. In the US, Food and Agriculture Organization ([FAO](#)) has been building field cases and pursuing the reasons. [A report](#) by BBC in 2016 was also shocking, estimating that India loses 40% of fresh food before it gets to customers, usually due to the lack of proper storage and transportation. Also, most produce loses 30% of its nutrients three days after harvest, much more of course after packaging and transportation to the local stores. How to eat healthy? Or fresh? Or tasty? It seems all lead to the question of how to eat local? Eat veggies when they are fresh. However, traditional farming methods limit our production capacity and most likely are

not going to satisfy the rapidly-increasing market demand for vegetables. Eating local sounds logical but needs an introduction of other types of farming.

So, now, this question goes to a farming solution for local vegetable production. Greenhouses have been the go-to solution for some decades. However, it too has many problems. The budget for the infrastructure and maintenance of greenhouses is high. Cucumber farming, reported by Yle, results in fairly big footprints of carbon dioxide that is generated from burning natural gas. Also, it still uses traditional artificial light that wastes one third of energy into heat instead of light. The entry of LEDs turns out to be the game changer and becomes the industry norm for lighting. Its high efficiency is most appreciated. Its price also keeps dropping. Moreover, it has an unlimited flexibility in spectra, which is considered a significant factor affecting the growth, flowering and fruiting in plant biology research. With this lighting application and some setups for climate control, growing vegetable can now happen anywhere, provided there is an indoor space. This is the general picture in a modern indoor farm. This new kind of farm can be run all through the year and has great advantages by being more versatile, flexible and environmentally friendly. It is clear that an era of indoor farming has arrived, and this business has been developing quietly yet evolving incredibly fast.

The war of indoor salad farming is coming

Generally speaking, growing plants requires these essential elements: lighting (energy for plants), growing media (root growing and nutrient uptaking) and, last but not least, air circulation (gas exchange for plants). Corresponding with these growth elements, a current popular module for growing plants indoor is composed of LED luminaire, hydroponics and fan. By assembling the modules together in a vertical direction, a fairly small space such as a shipping container can start to produce a good amount of salads. Container farming like Modular Farms is popular for its flexibility at any location and economic cost of infrastructure. If the number of modules is scaled up, a salad factory can be built upwards. This is called vertical farming. It is magnificent to look at a farm like Aerofarms, one of the biggest vertical farms in the world. It also looks rather easy to set up, run a farm and turn a profit. However, Johnny

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Bowman, CFO of Edenworks which is a young company running indoor farms, said "The indoor farming salad wars are coming and yet the whole indoor farming industry is preparing for endless price premiums". Bowman's opinion just indicates that this salad war, after all, is a price war.

To control the product price, it is natural to think out two alternative paths: increasing the sale and decreasing the cost. On the one hand, better sales indicate better preference by the end consumers. This needs good understanding and intensive follow-up in a changing market. It requires a large amount of data to be collected and analysed, called marketing data analysis. If the demand from the consumers shows an increasing trend, a farmer operator needs to maximise the growth and add-on value to the products. This strategy relies on the technologies that apply to vertical farm. For instance, Aerofarms has an individual research team to improve the yield, taste and quality of their productions. Services specifically for data analyses are also rising like Agrilist, analysing the effects of growing conditions for plant growth and predicting the optimised conditions.

On the other hand, a lower cost for running the farm can be fulfilled by lower HR cost and higher efficiency in production. Artificial intelligence (AI) is an unavoidable hot topic in this area, and believed to be the future. "HR leaders need to experiment with all facets of AI to deliver value to their organization", writes Forbes.

This farming business it seems, after all, is a data-driven business. This war then is also a war of digitalisation.

Digitalised platform is required

It is surprising that albeit we were talking about food in the beginning, we now have to consider digitalisation within this context. Social mediae, big data, e-wallet, or every aspect of our digitalised life is counted for in this switch of thinking. Then, how to win this war? If digitalisation is the trend, we shall find a solution for it. A digitalised platform, maybe? A platform that can predict the market trends, answer customers' demand, control product qualities, optimize HR structures, handle the financing, monitor logistics, or even just help internal communications. A platform that should serve the complete needs of a factory. Actually, the concept of such a platform does exist. It was firstly coined "*service factory*" by

Chase and Garvin (1989): "Today's flexible factories will become tomorrow's service factories." The time we live in enables these flexibilities. Light-speed developments of super computers, cloud repositories, big data analyses, artificial intelligence and different financial technologies, all give possibilities. The future of a factory may be a simple mouse click. A loan, a signature, a transport or a specific change, by a click in Helsinki, Shanghai or Dubai.

Sources:

Chase, R. B., & Garvin, D. A. (1989). **The Service Factory**. *Harvard Business Review*.

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