The fourth agricultural revolution is coming. Are you coming along?

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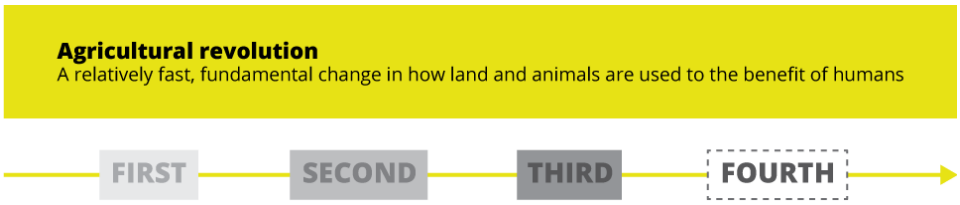
Momentous changes are happening in our lives and our industry. A lot of them are caused by globalization – COVID-19 or the effects of supply chain disruptions, among the more recent ones. Many more, though, that impact our personal and professional lives, are caused by digital advances omnipresent in contemporary society. And, although some view agribusinesses as a conservative industry, that has long not been the case. Mature companies have their eyes on the fourth agricultural revolution – and digitalization is a large part of it.

What is an agricultural revolution, anyway?

Agriculture has long been a motor of progress in human lives. Each agricultural revolution has brought about enormous improvements in living standards and consequently in life expectancy.



The first agricultural revolution took place about 10,000 ago, when hunter/gatherer communities began to settle and grow crops for sustenance. The revolution largely consisted of the domestication of plants and animals, as well as with agricultural processes. This revolution, it is widely believed, altered the course of human history and even biology: humans were able to form settlements and have predictable and nourishing food sources. Through that we also developed caries, body fat, and deficiencies in fiber and micronutrients.

The second agricultural revolution happened much later, from the mid-17th to the late 19th century, starting in the British Isles. The revolution consisted largely of enormous production improvements, not just from increased human labor but also from innovations such as advanced ploughing techniques, crop rotation, plus selective animal breeding, improved transportation, and land drainage. These developments helped the empire sustain a demographic, as well and geographic expansion.

The third agricultural revolution, in the 1950s and '60s, was prompted by enormous strides made in chemical fertilizers, irrigation, mechanization, and the development of new, high-yielding crops. These advances made possible a yield increase of over 40% in the course of less than 50 years. The changes were even more dramatic in developing nations, where the standard of life saw huge improvements with the advent of high-yield rice, wheat, and corn.

Naturally, poverty is still a major concern. However, if poverty has declined by 85% between the 1860s and 2020, we largely have agriculture to thank for.

The fourth revolution is already happening (somewhat)

The fourth agricultural revolution has been touted for years now. Part of the wider 4IR (Fourth Industrial Revolution), it is widely seen as the next dramatic improvement in the quality and quantity of agricultural and livestock output. The fourth agricultural revolution (alternatively, Agriculture 4.0) has been prompted, just like 4IR, first and foremost by digital advances. It relies, among many other innovations, on automation, gene editing, nutrigenics, traceability, and precision livestock farming.

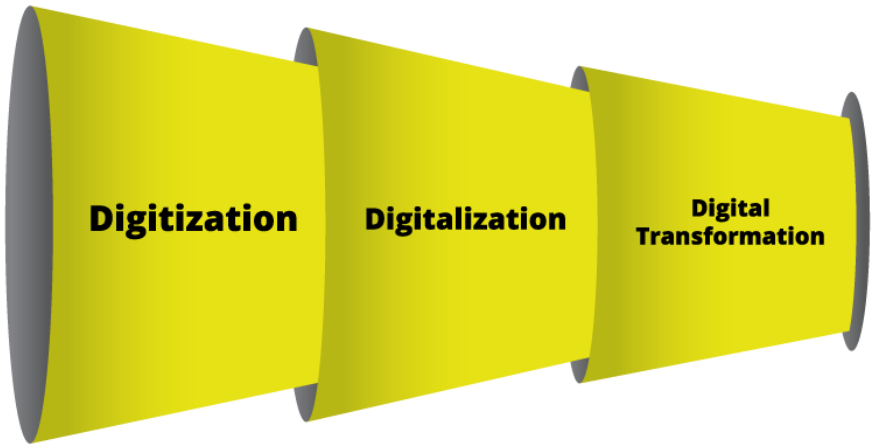
In many cases, these advances are not yet fully developed, not fully embraced, or not yet fully integrated into one standardized system. However, the trend is unmistakable and unstoppable: the fourth agricultural revolution has started.

EW Nutrition is starting a series of articles on the challenges of digitalization and digital transformation in the livestock production industry and in industry in general. These advances in the way crops and livestock are being developed, grown, processed, and delivered from the farm to the end consumer's home are indeed radical.

More important, however, is to prepare the ground for what's coming. If organizations are not digitally savvy and technologically advanced, how will they deal with the abundance of data that Agriculture 4.0 relies on?

Digitization –> Digitalization –> Digital Transformation

There is a lot of confusion about the three terms, especially because digitization and digitalization are often used interchangeably. However, in terms of business strategy there are clear differences which could be clarified if we visualize the three terms as a funnel.



Digitization is the top level which most companies can easily reach. It refers to transferring a physical object to a digital representation. Think of it in terms of converting a 19th century novel to an e-book or turning a company ledger into an Excel spreadsheet.

Digitalization is the middle level of the funnel; fewer companies easily accede here, although it is nowadays an essential part of most businesses. Digitalization means using digital technologies to improve business processes and work more efficiently. Examples would be cloud storage for company files, virtual platforms for team conversations and project tracking, etc.

Digital transformation is transforming a business by using digital technologies, platforms, and processes to enable change, optimize the business model, and deliver better results for the organization. Examples would be an e-commerce company that leverages information from machine learning and combines it with big data across its vertical to collect prospect information, pool data into a SSoT (single source of truth), and conduct analytics that inform predictive algorithms.

Sure, not all companies can – or should – move completely into the bottom layer of the funnel. Digital transformation can be partial and should only be leveraged in companies and industries where it makes sense.

Where exactly is your company along the funnel? Assessing your current status is essential to developing a strategy to meet Agriculture 4.0 head on. And meeting it head on we must; it is no longer an option, but a necessity for organizations and businesses to remain relevant in tomorrow's world.

Why are digitally mature companies better?

Flexible, secure infrastructure	Implementing technology infrastructure that balances security and privacy needs with the ability to flex capacity according to business demand.
Data mastery	Aggregating, activating, and monetizing siloed, underutilized data by embedding it into products, services, and operations to increase efficiency, revenue growth, and customer engagement.
Digitally savvy, open talent networks	Retooling training programs to focus on digital competencies, and staffing teams through flexible, contingent talent models to rapidly access in-demand skill sets and flex the organization's workforce based on business need.
Ecosystem engagement	Working with external business partners including R&D organizations, technology incubators, and startup companies to gain access to resources such as technology, intellectual property, or people to increase the organization's ability to improve, innovate, and grow.
Intelligent workflows	Implementing and continuously recalibrating processes that make the most of both human and technological capabilities to consistently produce positive outcomes and free up resources for higher-value actions.
Unified customer experience	Delivering a seamless customer experience built around a 360-degree view of the customer that is shared companywide so that customers experience coordinated digital and human interactions that are useful, enjoyable, and efficient in immersive, engaging environments.
Business model	Expanding the organization's array of business models and revenue streams by optimizing each offering to adapt to changing market conditions and

Regardless of the vertical in which you are operating, in 2022 your organization should be able to check most of the boxes suggested by Deloitte in the table above.

At the most superficial level, digital maturity is a good predictor of improved financial performance. The more digitally savvy companies are cashing in on their maturity.

Behind this predictive factor, however, is the reason why. Digitally mature companies

can better leverage the richness of data in their industry and ancillary verticals

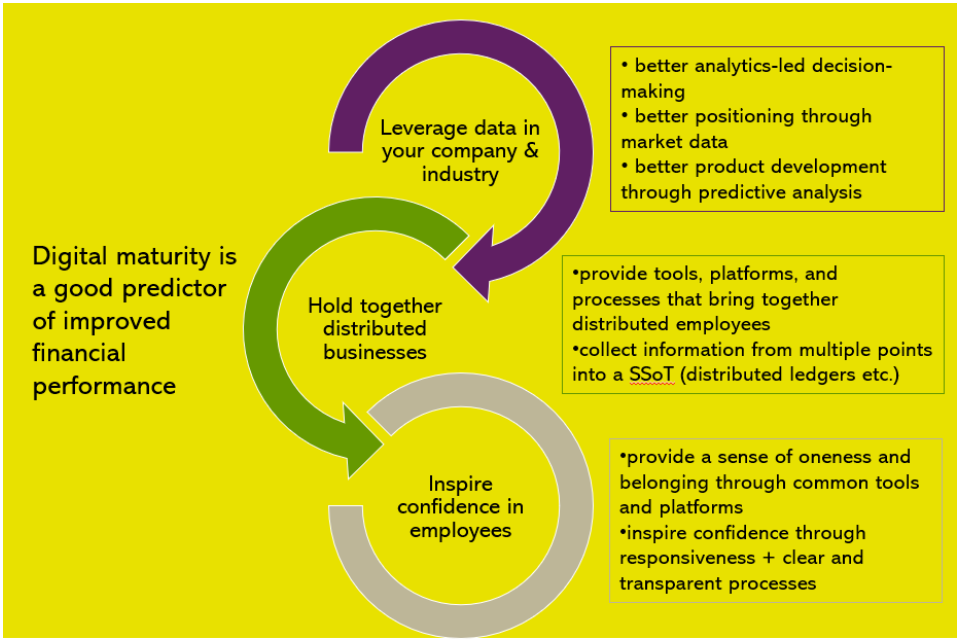
- better analytics-led decision-making
- better positioning through market data
- better product development through predictive analysis

can better hold together distributed businesses

- provide tools, platforms, and processes that bring together distributed employees
- collect information from multiple points into a SSoT (for instance, distributed ledgers or even less advanced, real-time tools)

can inspire more confidence in current and future employees

- provide a sense of oneness and belonging through common tools and platforms inspire confidence through responsiveness and clear and transparent processes



How do companies begin on the road to digitalization?

The road to digitalization begins, first and foremost, with the will to change. Digitalization is change – and change is not easy, especially in more conservative industries or companies. Once the management understands the benefits of undertaking this process (which benefits are confirmed in multiple studies), there are several roads to choose from. However, to enable the process of digitalization in general, McKinsey identifies five key factors:

having the right, digital-savvy leaders in place
building capabilities for the workforce of the future
empowering people to work in new ways
giving day-to-day tools a digital upgrade
communicating frequently via traditional and digital methods

Once the organization has undergone the basics of change, the company can then strategize on how to take advantage of the trends in its specific market. In the animal production industry, these trends – briefly mentioned at the beginning – amount to a revolution.

The revolution is already underway. For the moment, however, it is developing on so many disparate fronts that there is no formal coherence and very little oversight. Because of that, but most especially because of digital immaturity, very few companies or institutions are prepared to deal with what is coming. Now is the time to get in shape and get the process started.

A peek at what’s coming

As we grew over the past few years, both organically and through M&As, we faced a few challenges that many will be familiar with:

a global team of 30+ nationalities that had to rally around one mission
over 400 diverse, vocal, highly individual employees
divergent value chains depending on country, region, and offered solution
a large work-from-home or distributed team in various locations, closely working with on-site colleagues
10+ time zones
a sometimes dizzyingly fast pace of change

We were fortunately prepared to deal with most of the challenges. Even so, we were not 100% prepared. We have learned enormously in the course of these years and are now a few steps ahead.

Over the next couple of months, EW Nutrition is going to look at some of the most important topics around digitalization in general, digitalization in livestock and feed production, and obstacles to building a digitally mature company:

Digitalization-enabled change in distributed companies
The digitalization of animal farming
Digitalization in the workspace: Hurdles and benefits
…and more.

The process is never complete, of course. We just hope that, by learning in public and sharing our discoveries, we make our journey clearer – and perhaps other companies' journey easier.

References

FAO. The role of digital technologies in livestock traceability and trade, 2020

Gartner. Manufacturing Industry Scenarios in 2023: Leading Through Innovation, published September 2018, updated February 2020.

Gartner, Top Strategic Technology Trends for 2021, 2020

Gurumurthy, Ragu and David Schatsky, Pivoting to digital maturity: Seven capabilities central to digital transformation, Deloitte Insights, March 13, 2019

Gurumurthy, Ragu et al., Uncovering the connection between digital maturity and financial performance, Deloitte Insights, May 2020, 2020

Kane, Gerald C., "Accelerating digital innovation inside and out: Agile teams, ecosystems, and ethics," *MIT Sloan Management Review* and Deloitte Digital, June 4, 2019

McKinsey. Unlocking success in digital transformations, October 2018

Moatsos, Michail. Global extreme poverty: Present and past since 1820. In *How Was Life? Volume II : New Perspectives on Well-being and Global Inequality since 1820*, OECD 2021

Sharma, Deepak et al., Customer-centric digital transformation: Making customer success integral to the new organization, Deloitte Insights, September 5, 2019

Schwab, Klaus, The Fourth Industrial Revolution: what it means, how to respond, World Economic Forum, 14 Jan 2016

World Economic Forum, Innovation with a Purpose: The role of technology innovation in accelerating food systems transformation, January 2018

World Economic Forum, Technology Futures: Projecting the Possible, Navigating What's Next. Insight Report, April 2021