

# Has the digitalization promise been exhausted?

## In Short

Belief in the beneficial effects of digitalization has been widespread for some time. Such visions of the future are necessary to bridge the inevitable uncertainty in decisions about innovations. This mobilizes public support and funding, financial investment and enables favorable regulation to enforce digital innovations. Capital markets unilaterally reinforce these influences in favor of challengers from the technology sector and to the disadvantage of incumbent companies. This also happens when the often exaggerated expectations for the future are not fulfilled. Now there are signs that the promise of digitalization is being exhausted. How does this manifest itself and what are the consequences?

## Signs of a reassessment of the digitization promise

"The best days of big tech are over" is the headline of the Handelsblatt in November 2022. The weekly newspaper "Die Zeit" asks: "What happened to the promise that things would only ever go up?" In early 2023 the FAZ announces "The great tech-disillusionment". The signs are increasing and becoming more diverse. The digitization promises that were previously made with great conviction are no longer proclaimed so wholeheartedly and are losing credibility, as can be seen from various digitization projects.

For instance, it has become quitter around "Industry 4.0". Ambitious projects are making slow progress, and projects in this field are increasingly being designed in smaller steps and presented in a less grandiose manner. "Industry 4.0" is visibly losing its character as an innovation that gives companies a competitive advantage. This sounded quite different when the German Academy of Science and Engineering (Acatech) presented the light-house project in 2011 with which German industry sought to fend off the ambitions of newcomers from the tech sector, who were perceived as threatening to the established companies.

## Self-driving on the test bench

Autonomous driving has also met this fate. Not long ago, Daimler CEO Källenius explained that autonomous driving could become a "game changer" in the automotive industry. There is a danger that traditional car manufacturers could be displaced by challengers from the tech sector. Accordingly, Daimler intends to step up its efforts in this area, he said. He presented his "target photo" to the Handelsblatt journalist in which the Mercedes driver, tired from a long day at work, has his autonomous car drive him downtown in the evening to visit the opera, for example, while the vehicle makes its rounds to pick him up later. And indeed, the disruption of the industry, a promise to some, a threat to others, was anticipated by many and drove valuations in pre-IPO financings and at the IPO of challengers like Uber Technologies. As recently as 2017, for example, investment legend Cathie Woods, who specializes in "disruptive" technologies, announced that Uber would offer fully autonomous cabs without drivers in 2019. As a result, Uber, which had already mutated from a cab service (Uber-cab) to a technology provider by rebranding itself, would become the industry's leading company, while traditional manufacturers would be demoted to subaltern subcontractors. These expectations enabled Uber to raise around \$8 billion in its IPO. The dreams of soon being able to offer autonomous vehicles were finally dashed in 2020, when Uber, under the

impression of a lack of success at exorbitant expenses, discontinued its own efforts to develop autonomous vehicles. Uber was able to use the money raised on the stock market on the basis of the digitization promise to expand its traditional cab business instead, so that the company thereby still benefited from the digitization promise as a challenger.

The major German automakers are now also re-evaluating the situation. Their fears that their business model could be replaced by mobility as a service provided by robot cabs have subsided. Autonomous driving is no longer considered a "game changer" for them. VW is abandoning its alliance with Ford and, like its American competitor, withdraws its engagement in the specialized start-up Argo AI. BMW CEO Zipse publicly doubts that buyers of premium cars will be willing to pay such high sums for advanced driver assistance systems as they are likely to incur. He clearly distances himself from the idea that automobiles will be "cell phones on wheels" in the future - an image that was used a few years ago to express the radical shift in power in the industry.

In the U.S., which along with China is considered the pioneering nation on the road to autonomous driving, the wind is changing. Not only Tesla is irritating with a large number of malfunctions during their experiments; the specialists Waymo (Alphabet) and Cruise (General Motors), which are considered to be particularly advanced, are also causing increasing problems in their limited test area of San Francisco and could lose their approval. The ambitions now announced have become far more modest. Autonomous driving is again being reduced to the gradual improvements in driver assistance systems that the German premium manufacturers have been pushing for a long time. However, these did not reach the status of a technology that might be able to change the "rules of the game" in the industry. Automated driving is still considered possible under favorable conditions, for selected areas or applications with the support of special infrastructure investments up to a maximum of level 4. However, whether it can then be technically realized and financed, whether it will be profitable for the operators and whether it can be considered relevant for a "green" traffic turnaround is a different matter. More and more experts doubt that stage 5, fully automated driving, which carries the expectation of disruption will ever be achieved in all everyday situations.

## Disillusionment with e-commerce

Back in the late 1990s, e-commerce was a key driver of the Internet euphoria that collapsed in the years that followed. In the innovation phase, which since the early 2010s has again focused on the digitalization of products and processes, e-commerce is once again gaining relevance. New product groups or sectors are now being

tackled, such as dishes that can be ordered over the Internet or fresh food, used cars, furniture, glasses and clothing. It is predominantly new companies that are entering this field of business. This renews the expectation of disruption that challengers from online retailing could pressure, if not displace, established brick-and-mortar retailers. Based on an unshakable belief in the success of their business model, these companies can achieve enormous valuations on the capital market as start-ups and collect large sums of money for (international) expansion, even though they usually fall well short of the break-even point. In some cases, the hope of future success lasts for many years. For example, the unclouded belief in a profitable future propelled Delivery Hero into the Dax. Although making losses in a foreseeable future it could earn around €1 billion in capital inflows from the IPO.

Now, however, the new wave of e-commerce is waning and disappointment is spreading. Whereas the challengers were primarily perceived and valued as tech companies and growth stocks due to online ordering via an app, it is now increasingly being registered that e-commerce is primarily logistics work, which is expensive and time-consuming. Goods must be kept in stock in warehouses that cover as much area as possible and in sufficient quantities to enable fast delivery and to compensate for fluctuations in demand. The more perishable the goods, the more time-consuming and expensive this becomes. Established companies (in food retailing, for example) have an advantage here that should not be underestimated, because they already have a broad network of stores. In addition, once the goods have been ordered online, they have to be delivered, a burdensome task that is carried out by drivers who have been demanding better working conditions and pay for some time now, or are even migrating to better-paid jobs. It turns out that e-commerce is nowhere near as "airy-fairy" as the promise of digitalization suggested.

It's no wonder that valuations on the capital markets are also plummeting. The positive amplification effect that gave the challengers the favorable financing conditions is now twisting into the opposite. Delivery Hero's share price plummets from €150 to €25 and the company loses its Dax membership again after one year due to the low market valuation. Market value alone is no longer enough; profits must also be demonstrated. Investors no longer vie for start-ups, but the latter now have to look for backers - often unsuccessfully. The balance of power is once again shifting in favor of the established players. For example, XXXLutz, a furniture retailer with a large network of stores, is now buying the e-commerce challenger Home24 for a quarter of the value it was able to achieve at the time of its IPO. At the same time, this enables the established company to integrate online retailing into its business model at favorable conditions. Brand-

name manufacturers in the consumer goods sector are finding that the e-commerce startups they bought in the euphoria of digitalization to build up a new pillar of their business are not succeeding as expected. They have to write off investments and withdraw again.

### Doubts about the innovation pioneers

The major U.S. tech companies (Amazon, Microsoft, Meta, Twitter, Snapchat, Alphabet), which for a long time were considered to be the beneficiaries of the digitization trend, are experiencing unusual profit losses, are laying off staff, and instead of growth are now focusing on efficiency and cost reductions. For some, the supremacy in their previous business areas is being challenged by new competitors. The technological capabilities that could have made a difference before have now been developed by others. Increasingly, corporations are competing with each other by simultaneously entering the same technology fields, such as cloud (as Alphabet did most recently) or streaming services, eroding the margins they previously enjoyed. In other cases, the network effects that once promised permanent protection from competition are eroding. Today, for example, you no longer have to be on Facebook to meet "friends." Innovative digitization projects that have been launched with great hope do not generate the hoped-for returns, while at the same time they devour vast sums of investment funds. These can no longer be sufficiently generated from the weakening core business. Thus, the hopes of the Meta Group that it would be able to compensate for the stagnating advertising revenues from the social media business with the heavily advertised Metaversum are not being fulfilled. The new virtual worlds do not fulfill the technological promises and it is unclear whether enough people want to try them out at all.

Musk's Tesla is also doubted as an innovation pioneer. In particular, most experts no longer believe Musk's repeatedly renewed promise that the Tesla Autopilot will achieve the full potential of autonomous driving and thus unhinge the automotive world. As Musk himself explained, however, a large part of the company's exorbitant stock market value, which had already shrunk considerably by 2022, hinges on this promise. Elon Musk's announcements of new business areas such as the development of humanoid robots with all-purpose applications appear more as acts of desperation and are no longer taken seriously as a threat to established manufacturers or traditional jobs. All of this is an expression of upside-down worlds compared to the expectations of disruption that prevailed not so long ago.

### What can we expect, what can we fear, what can we hope for?

Promises of digitalization are Janus-faced. On the one hand, they enable innovation by bridging uncertainty. Only if there is widespread belief in the beneficial effects of digitalization projects in an imagined future can innovations prevail. Then, in the here and now, government funding, favorable regulations, internal company budgets and financial resources from the capital market can be mobilized and the confidence and staying power of innovators can be maintained. On the other hand, this also happens when it turns out in the future that the digitalization promises are not fulfilled, which are often exaggerated by the protagonists, not least because exuberance may mobilize all kinds of support in the present. Only much later does it become clear whether the imagined futures are technically possible and economically viable, and whether they will be accepted socially and culturally. But what happens when the promises of digitalization are exhausted, as the recent developments described above indicate?

Generally speaking, one can imagine two paths in this regard. On the one hand, companies that have aligned their strategy with a digitalization promise and benefited from it may suffer setbacks because key expectations have not been met. Digitalization projects become more expensive and take longer than expected and deliver too little "business value," as company leaders recently complained. Internal projects are cut back, orders are scaled back, financing fails to materialize, and stock market values melt away.

On the other hand, the promise of digitalization can also be exhausted by the fact that the digitalization projects pursued to date largely fulfill their expectations, but then become commonplace and taken for granted. They become the digital infrastructure. Everyone uses them, everyone needs them, many offer them. But as a result, digitalization loses its character as innovation. Digitalization no longer makes a difference or generates a competitive edge. Such developments can also be observed at present. Formerly new and inspiring digital technologies are becoming "obsolete" and are being used pragmatically: Everyone can now do e-commerce and makes selective use of it depending on the situation and business model; ERP systems such as the one from SAP are now available to every major company without being able to distinguish themselves from competitors. It is more likely that questions will arise if a company does not have it.

When the promise of digitalization is exhausted, the capital markets react in the opposite direction as before; company valuations collapse and start-ups can no longer find financiers. Currently, this is occurring in tandem with the end of the low-interest phase and the dimming of the economic outlook. As a result, higher interest rates

are hurting growth stocks in the technology sector in particular, which means that new financing rounds for startups are meager or non-existent. Moreover, the Nasdaq technology index has fallen twice as much as the market-wide S&P 500. How the changed valuations on the capital markets will affect the economy as a whole cannot be assessed today. Too many uncertainties are at play. But drastic effects are conceivable. The collapse of the capital markets could be accompanied by an overall economic downturn (as was the case when the Internet bubble burst in the early 2000s) or even shake up the banking and financial system (think of the collapse of Silicon Valley Bank). We can quite easily get over the fact that Elon Musk loses the title of the richest man in the world. But it's a different story when the expected pension payments for the middle class collapse in countries like the U.S. where retirement planning is heavily dependent on stock market values.

## No end to digitization despite exhausted promises

When the promise of digitalization is exhausted, however, this does not mean the end of digitalization. It is true that the use of digital technologies is now being viewed more critically, costs and benefits are being weighed more carefully, and alternative solutions are being considered and possibly preferred. There is no doubt, however, that there are a variety of problems that can be solved better with the support of digital technologies, and many areas in which there is a need to catch up in this respect. However, it can be seen as a plus if digitization is no longer perceived as an all-purpose remedy and thus becomes an end in itself, but is examined to see where it is useful and where other solutions to pressing problems should possibly be considered. A digital school is not yet a good school, and autonomous cars are not a successful "green" traffic turnaround. If policymakers take this into account, there is certainly no harm in doing so.

However, it is noticeable that the computer myth recurs cyclically in new variants.<sup>1</sup> The recurring invocation of the magic word generates phases of broad social and economic resonance and subsequent disappointment.

The gradual spread and use of digital technologies can nevertheless be associated with transformative changes, as Ulrich Dolata has shown.<sup>2</sup> This can already be shown for the use of "social media" and their effects on everyday communication, for example, because sufficient practical experience is available for this; for the latest wave of "artificial intelligence" applications in the form of chatbots, we will have to wait a few more years until we can better see (presumably in a sobered state) what the new applications can do and achieve. It is also not yet clear wheth-

er they will even herald a new round of effective digitalization promises.

Addressing social research: Careful social-scientific impact analyses have not become superfluous, but they need more staying power and require sufficient experience with the relevant practice. In any case, dramatization of novelty is not helpful.

<sup>1</sup> As Hartmut Hirsch-Kreinsen shows by looking at the history of AI: *Das Versprechen der Künstlichen Intelligenz. Gesellschaftliche Dynamik einer Schlüsseltechnologie*. Frankfurt/New York: Campus, 2023.

<sup>2</sup> Dolata, Ulrich (2011): *Soziotechnischer Wandel als graduelle Transformation*. *Berliner Journal für Soziologie*, 21: 265-294.

### Author

PD Dr. Michael Faust is a Research Fellow at SOFI. He has many years of research on how capital market players value companies and how they influence their strategies and what role "computer myths" play in this process. This paper is based on the book article below. Additional insights into the recent developments are based on an evaluation of a large number of publicly available documents which can be obtained from the author on request.

Faust, Michael (2021): *Finanzialisierung und Digitalisierung von Unternehmen. Konzeptionelle Überlegungen und empirische Annäherungen*. In: Buss, Klaus-Peter; Kuhlmann, Martin; Weißmann, Marliese; Wolf, Harald; Apitzsch, Birgit (Eds.): *Digitalisierung und Arbeit. Triebkräfte – Arbeitsfolgen – Regulierung*, Frankfurt/New York: Campus, pp. 67-106.

### Impressum

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