



Research & Knowledge

Taking the best out of the digital revolution

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What is digitization?



The digital focus of academic researchers and business people has, for decades, been on information systems, such as ERP, CRM and SCM, with their emphasis on standardizing, automating and monitoring business processes. With the rise of the Internet, distribution channels entered the digital scope as well in the form of e-commerce and e-supply-chains, before things got wild. Web 2.0 and social media massively disrupted the marketing profession and businesses discovered the notion of virality. Yet network effects proved even more dangerous when they were built and internalised by digital

platforms such as Uber and Airbnb. On the manufacturing side, additive manufacturing, smart and agile robotics, and the Internet of Things open avenues for an entirely new wave of automation, productivity gains, and job displacement. In the background, analytics and big data drew even more attention and now promise to change the way every single business is run. All of these are examples of how digital technology unfolds in the business and disrupts industries. But as the threats stack up, so does the confusion. "What the heck is digital?", asked Thomas Davenport from Harvard in a famous WSJ column.¹ He doesn't seem to be the only one to wonder.

Things get clearer if one abstracts away enough from the technology to look at its high-level capabilities. Five of them is all one needs to describe the entire digital toolbox: (1) dematerialization (the conversion of physical objects (or products) and processes into digital information and software), (2) observation (big data renders resources, customers and usage much more visible and measurable), (3) optimization (the field of analytics aims at predicting optimal solutions to a wide range of business issues), (4) connectivity (the Internet of people, things

and business enables friction-free transactions and communications worldwide), and (5) materialization (the conversion of digital information back into physical products and of software into actions in the physical world, typically through robots and driverless vehicles).

How does digitization change the laws of business?



These capabilities form the source and engine of the digital transformation. What it does, essentially, is to break fundamental business paradigms and offer a new set of business possibilities:

Dematerialization shifts the productivity frontier through digital automation (i.e. the automation of physical or intellectual tasks

¹ <http://blogs.wsj.com/cio/2014/11/12/what-the-heck-is-digitization-anyway/>

powered by software and data). A recent OECD survey² showed that the productivity of the top performing firms has very sharply increased since 2000, whereas the average productivity of firms has remained fairly stable worldwide. As a result, the gap between firms operating at the productivity frontier and others is dramatically widening, especially in the services sector.

Dematerialization and connectivity together drop the marginal costs of production, enabling the exponential growth models that are so typical of digital startups. Freed from the need of investing in large-scale physical assets to grow, digital startups can enjoy economies of scale without the corresponding physical capital. An economic law that is very hard to match for physical businesses, hence the famous “software is eating the world” line of Marc Andreessen.³

Connectivity dramatically cuts transaction costs along value chains, with two major consequences: the rise of global (fragmented) value chains, and the rise of platforms, which enable C2C exchanges and coordination on a massive scale, as exemplified by Airbnb and Wikipedia. This means the end of the vertically integrated firm creating value on its own, and the rise of co-creation by prosumers and horizontal coordination.

Observation, by making individual preferences and actual usage quantifiable in real time, enable mass-customization as well as pay-per-use types of business models, leading entire industries to switch from standard products and ownership-based models to tailor-made servicing in context.

How do startups leverage these digital opportunities?

This creates a new matrix on which entire new businesses can be built. e-Founders, the start-up studio co-founded by **Quentin Nickmans**, has made a business out of it. The company has already founded and developed 9 software startups since 2011 and aims to launch 3 to 4 ventures each year. Among these, Textmaster is the “Uber” of professional translation, a marketplace

matching thousands of translators with clients in need for translation. The platform integrates smoothly with content management systems and other editing tools. Aircall is another one, which offers a worldwide phone system for support teams, by leveraging the principles of virtualization applied to the telecommunications industry. Such digital startups can enjoy very fast growth, which is a must to recoup their heavy fixed (mostly R&D) costs, and mostly operate on a pay-per-use model. One of the major risks, for incumbent firms, is to end up in the unenviable position of commodity providers in platform ecosystems.



Should governments worry about it, and how should they react?



What should governments do about this evolution? **Laurent Hublet**, in charge of the Digital Belgium agenda of Deputy Prime Minister de Croo, stresses two points of concern. The first involves the impact of digitization on jobs. Although some worrying views have been published in recent years, one should not confound substitution and complementarity. In many instances, digital technology will not replace human jobs, but complement them. This will lead to some job

displacements, but will more importantly affect the nature of tasks and the skills needed in the workplace. The massive point of concern is therefore on education and lifelong learning, with a great attention to the flexibility of the job market given the much higher volatility of the business and the much more complex and open contractual arrangements that digital technology will enable in the future.

The second point of major concern for the government is the need for funding. Digital businesses often require heavy upfront investments (typically R&D) and massive marketing efforts (since reaching a global scale as fast as possible is a key condition for success). Europe, unfortunately, is dramatically lacking the financial resources to fund such exponential growth models. The integration and harmonization of the European market (i.e. the digital single market) is of vital importance for Europe to catch up with China and the US. At the moment, there is no European firm among the top 20 digital companies worldwide, and only 1 European venture (Spotify) among the top 20 unicorns.

Digitization is changing the world, at an unprecedented pace. The transformation, however, is not limited to the business. Technology, as always, has a potential of shaping institutions, whether economic or social. Digital technology is no exception, as it changes the need for physical capital and vertical integration, enabling asset-light models and demand-side economies of scale (aka network effects). This can only lead to new forms of value creation (ever more fragmented) and distribution (ever more concentrated). The impact is therefore also social, as the rise of inequalities and globalization that digital technology has unleashed could trigger democratic backlash. Now, is a good time for companies to act, and for governments to adapt market structures, regulation, and lifelong educational programmes.

Read Nicolas van Zeebroeck's paper "[The Right Response to Digital Disruption](#)" in the MIT Sloan Management Review.

² <https://www.google.be/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKewjKz7e8ytjSAhWiLMAKHRWcA9gQFgghMAA&url=https%3A%2F%2Fwww.oecd.org%2Feco%2FOECD-2015-The-future-of-productivity-book.pdf&usq=AFQjCNGDgLo8eraWIZa18pcxSmE-hiMWcw>

³ <https://www.wsj.com/articles/SB10001424053111903480904576512250915629460>



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