

TRANSFORMATION OF THE GLOBAL PRODUCTION SYSTEM AND FOUR INDUSTRIAL REVOLUTIONS

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SUMMARY

The digital opportunities in products are often not translated into just higher prices or lower costs but also into fundamental change of the business model. This is driven by end-to-end approach, from service acquisition to delivery. These combination-based business models illustrate the extent of the distribution that occurs when digital assets and interesting combinations of existing digital platforms are used to reorganize relationships with physical assets. The focus is to built on a superior experience combined with reduced transaction and friction costs. These companies match demand and supply in a rapid and convenient manner which side steps the business models of incumbents. Fast moving competitors provoke a disaggregation of the more traditional industry silos and value chains and also disintermediate the existing relationship between businesses and their customers. In almost all industries, digital technologies have created new, disruptive ways of combining products and services and in the process have dissolved the traditional boundaries between industries.

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Technologies are amplifying each other in a fusion of technologies across the physical digital and biological worlds. We are witnessing profound shifts across all industries market by the emergence of new business models, the disruption of incumbents and the reshaping of production, consumption, transportation and delivery systems. On the social front a paradigm shift is underway in how we work and communicate, as well as how we express, inform, and entertain our self. Decision makers are too often caught in traditional linear (non-disruptive) thinking or too absorbed by immediate concerns to think strategically about the forces of disruption and innovation shaping our future.

The digitization of products, big data and cloud computing make it easier to understand and meet individual customer needs more accurately.

We are at an inflection point: The rules from the industrial era of mass production are giving way to a digital era of individualization and optimization. Could we see the end of economies of scale?

Technology-driven transformation is giving rise to new questions and challenges that neither the public nor the private sector can tackle in isolation. For example, Will technology-driven automation ultimately eliminate jobs and slow economic growth, or will the labor force evolve and ultimately catch up with technological change?

What should be done to bridge the growing skill gap in the global workforce? What is the meaning of privacy and security in a world of greater transparency? How will we collaborate to build the regulatory frameworks and standards rapidly enough to fuel the growth and adoption of new technologies?

88% of automotive strategy officers agree that by 2030 at least one major automaker will earn more revenue from selling data and mobility services than from selling cars and auto parts.

70% of professional services strategy officers agree that by 2025, digital solutions will generate more revenue for professional services firms than services delivered by people

Typical characteristics of this industrial revolution:

Velocity: This revolution is evolving at an exponential rather than a linear pace. It leads to unprecedented paradigm shifts in economy, business, society and individually. It is changing the “what”, the “how” of doing things but also “who” we are.

System impact: It involves the transformation of entire systems across (and within) countries, companies and society as a whole.

Impact on power . By enabling smart factories, the fourth industrial revolution creates a world in which virtual and physical systems of manufacturing globally cooperate with each other in a flexible way. This enables the absolute customization of products and the creation of new operating models. Digital businesses have marginal costs that tends towards zero.

Additionally, the reality of the digital age is that many new businesses provide “informational goods” with storage, transportation and replication costs that are virtual nil. Our devices will become an increasing part of our personal ecosystem, listening to us, anticipating our needs and helping us when required, even if not asked.

The challenges created by the fourth industrial revolution appear to be mostly on the supply side, in the world of work and production. As a result, the great beneficiaries are the providers of intellectual or physical capital, the innovators of intellectual or physical capital, the innovators, the investors and the shareholders which explains the rising gap in wealth between those who depends on their labour and those who own capital. The concentration of benefits and value in just a small percentage of people is also exacerbated by the so-called platform effect, in which digitally-driven organisations create networks that match buyers and sellers of a wide variety of products and services and thereby enjoy increasing returns to scale.

The consequence of the platform effect is a concentration of few but powerful platforms which dominate their markets Drivers/impact. The digital revolution is creating radically new approaches that revolutionize the way in which individuals and institutions engage and collaborate. Blockchain is an example of “ distributive ledger”. **Technology based platforms** make possible what is now called the on-demand economy. These platforms, which are easy to use on a smart phone, convene people, assets and data, creating entirely new ways of consuming goods and services.

Uber shows the disruptive power of these technology platforms. All platforms have one thing in common: matching supply and demand in a very accessible (low cost) way, by providing consumers with diverse goods, and buy allowing both parties to interact and give feedback, these platforms therefore seed trust. In addition, when using digital platforms, the marginal cost of producing each additional product, good or service tends towards zero.

We are still at the beginning of the fourth industrial revolution, and it will require entirely new economic and organizational structures to grasp its full value. The competitive rules will be different. To remain competitive, companies must be at the frontier of innovation in all its forms, which means the strategies which primarily focus on reducing costs will be less effective than those which are based on offering products and services in more innovative ways.

Established companies are being put under extreme pressure by emerging disruptors and innovators from other industries and countries. The reason why the new technology revolution will provoke more upheaval are: speed, breath and depth and the complete transformation of entire systems. Organisations has to operate and organize with speed and agility.

Multiple sources of disruption trigger different forms of business impact. In the supply chain new technologies create entirely new ways of serving existing needs and significantly disrupt existing value chains, e.g. 3-D printing will make distributed manufacturing and spare-part maintenance easier and cheaper.

Real time information and intelligence will provide unique insights on customers and asset performance that will amplify other technological trends. Digitization also enables large incumbents to cross industries boundaries by leveraging their customer base, infrastructure or technology.

Major shifts on the demand side are also disrupting business. Increasing transparency, customer engagement and new patterns of consumer behaviour (build on mobile access) force companies to adapt the way they design, market and deliver existing and new product and services. This is forcing all companies to re-examine the way they do business and takes different forms. Disruption will affect both the demand and supply sides of the business.

Major impacts. -customer expectations are shifting -products are being enhanced by data, which improves

asset productivity -new partnerships are being formed as companies learn the importance of new forms of collaboration and -operating models are being transformed into new digital models.

Customers (BtoB and BtoC) are increasingly at the centre of the digital economy, which is all about how they are served. Customer expectations are being redefined into experiences. Customers can be identified based on their willingness to share data and interact. The world is moving much more to peer-to-peer sharing and user-generated content.

This is a nowworld, which requires companies to respond in real time wherever they are or their customers or clients may be. Products and services are enhanced with digital capabilities that increase their value (like tesla). Data and analytics are also transforming the role of maintenance. No longer look for specific faults but it is more about performance benchmarks (supplied by sensors) New business models can be based on services like asset performance or actual performance. The combination of sensors and analytics enables tire companies to monitor driver performance, fuel consumption and tire wear to offer a complete end-to-end service.

Collaboration is more important than ever, companies need to go well beyond marketing and sales agreements to understand how to adopt comprehensive collaborative approaches.

Rethink operating models means that platforms enabled by the network effects of digitalization are important. In a global world these platforms intimately connect to the physical world. Platform strategies combined with the need to be more customer-centric and to enhance products with data, are shifting many industries from a focus on selling products to delivering services.

Frugal business models use the opportunities afforded by the interaction of digital, physical and human realms to open up new forms of optimization such as efforts by Michelin to provide high-quality services at low cost. To be competitive in the future the nature of organizational structures will have to be rethought. Flexible hierarchies, new ways of measuring (process based accountability instead of outcome based accountability) and new rewarding systems to attract skilled talent. Organizations will shift from hierarchical structures to more networked and collaborative models. Organisations will become increasingly organized around distributed teams.

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nies match demand and supply in a rapid and convenient manner which side steps the business models of incumbents. Fast moving competitors provoke a disaggregation of the more traditional industry silos and value chains and also disintermediate the existing relationship between businesses and their customers. In almost all industries, digital technologies have created new, disruptive ways of combining products and services and in the process have dissolved the traditional boundaries between industries.

The level of disruption is different in the various industries, but in a world characterized by uncertainty the ability to adapt is critical. If a company is unable to move up the curve it may be pushed off it.

The companies that survive or thrive will need to maintain and continually sharpen their innovative edge. Small and medium sized enterprises will have the advantages of speed and agility needed to deal with disruption and innovation. Large organizations by contrast will survive by leveraging their scale advantages and investing in their ecosystem of start-ups and SMEs by acquiring and partnering with smaller and more innovative businesses.

In all moments of major technological change, people, companies and institutions feel the depth of the change, but they are often overwhelmed by it, out of sheer ignorance of its effects.

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