‘Connected everything’ demands flexible business models

Outlook 2015
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The world is continually changing, and economic and social trends play a crucial role in this process. These are often long-term, fundamental trends such as the ageing population, globalisation, growing individualism, the new economic reality (lower underlying economic growth\(^1\)), urbanisation (global cities) and pressure on natural resources. These are frequently termed the megatrends.

Then there are the technological developments. The technological developments with the biggest impact in the past few decades and (we expect) in the decades to come are all IT related. Communication methods and the extent of communication in particular have changed dramatically. A dominant factor here has been the rise of the Internet and mobile devices. The Internet of Things (IoT) is the following important development, in which people, companies, machines, vehicles and household equipment, for instance, can all be connected up. This will result in the exponential growth of data storage and data processing, while also offering entrepreneurs huge opportunities. Big data will become ‘the new gold’, assuming it is handled in a smart fashion (‘smart data, smart products, smart factories’\(^3\)).

For companies, the expected developments mean not just that they have to continually adapt their products and services but often also that they need to adopt completely new business models and organisational structures. We described the expected macroeconomic developments in our report Outlook 2015: Europe: future leader or eternal laggard?\(^2\). Following on from that report, in this document we present our views on the changes that are required in business models – for we see organisational flexibility as becoming an increasingly important factor in determining a company’s success.

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1 See for example Rabobank, Outlook 2015: Europe: future leader or eternal laggard? 2014.
2 See for example Rabobank, Smart data: het nieuwe goud?, [smart data: the new gold?] in Retailtrends, October 2014.
3 See FME et al., Smart Industry, 2014.
2 > Evolving towards a new reality: connected everything

If we look back at the situation a mere twenty years ago, we can see that the world has undergone enormous changes since then (see Figure 1). Following on from the widely spread of the transistor in the 1960s (which led to digitisation), a decisive role was played by the rise of the Internet from the mid 1990s. Computers, companies and individuals all over the world started to communicate with one another, for example via email (‘connected hardware’). Companies such as Google, Facebook, Amazon and Ebay became the players setting the trends. Furthermore, the process of digitisation that had started before this has resulted in commoditisation: the different models of TVs, PCs, phones and cars increasingly resemble one another and consumers can easily compare them with regard to price and quality. This has led to fierce competition. As a result, cost leadership and service (including online) are becoming the key factors by which companies can stand out from the competition in sectors such as the retail industry, financial services, the media and consumer electronics.

Figure 1: Phases in technological development and the focus for standing out from the competition

Source: Rabobank, based in part on Sogeti (The fourth industrial revolution, 2014)
The next phase came in the mid 2000s (‘connected people’). With the rapid increase in computing power and bandwidth, large parts of the world gained access to the Internet and cheap, fast, mass data transfer became possible. This enabled people to communicate with one another through communities and platforms. The introduction of mobile technologies accelerated this process. Greater transparency also led to a shift in market power to consumers. For companies, this meant that distinguishing features enabling them to stand out from the competition became more important than ever. Therefore innovation is playing an increasingly important role in addition to cost leadership. Take the automotive industry for example, where consumers have often already chosen the make and model via the Internet before they even enter the showroom. Or retailers, who are increasingly facing competition from e-commerce players and are consequently being forced to adopt an omni-channel approach in their efforts to stand out from the competition⁴.

In our view we are now on the brink of the next technological phase, termed ‘connected everything’: a phase in which IT connects up everything and everyone. This is possible through the application of new technologies, such as the intelligent use of big data (smart data), IoT⁵, sensor technology, robotisation (far-reaching automation) and 3D printing⁶. These existing technologies can now be put to use more cheaply⁷ and in symbiosis with one another. There is constant, direct interaction between the development, production, sale and utilisation of products and services and between all the actors involved. This gives companies the opportunity to improve their productivity. At the same time, their position in the supply chain is changing. While companies currently often operate within a hierarchical supply chain, in the future they will be part of a digital value network. The virtual and real worlds are converging. For many companies, this will necessitate a change in their organisation; flexibility will be critical if they are to survive in this new reality and seize the chances it offers⁸. We will explain this below.

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⁴ See also Rabobank, Inspelen op VOC trends, [exploiting VOC trends] in Retail Trends, June 2013.

⁵ There will be 26 billion connected devices by 2020 (900 million in 2010). Source: Gartner.

⁶ See for example Deloitte, Singularity: tien technologieën die leiden tot radicale innovatie voor iedereen, [singularity: ten technologies that will lead to radical innovation for everyone] 2013.

⁷ For example, MEMS (Micro-Electromechanical Systems) such as gyroscopes, pressure sensors and accelerometers have fallen in price by 80 to 90 per cent in the past five years. IoT enabling components are expected to cost only one US dollar each in 2020. Source: Gartner.

3 > Emphasis on flexibility in business models

It is often difficult to pin down the impact of technological developments and therefore difficult for established companies to respond appropriately. We are increasingly seeing a situation in which the market leaders are often (i) new companies that are in a position to unreservedly embrace the new technologies, or (ii) established companies but from a different sector. Or as Marc Giget put it: “No candlemaker has become a bulb manufacturer, no carriage maker has become a car producer, and the post office did not invent the email.”

We expect this development to become even more pronounced in the new world of ‘connected everything’. Increasingly, we are seeing that the speed and variety of technological developments exceed organisations’ ability to adapt (see Figure 2). The relatively large market leaders with a long history find it particularly difficult to adapt to the new situation. Perhaps the best Dutch example is Philips, which recently announced that it was splitting into two (HealthTech and Lighting). This is the final step in a process that essentially started back in 1990 with Operation

Box 1. Studentenwerk, a new entrant from outside the industry

An example of a newcomer from outside the industry is Studentenwerk/Young Capital in the professional services sector. This company operates as a staffing agency for university-educated young people looking for internships (including abroad) and graduate jobs. Unlike the big agencies such as Randstad, Adecco and Manpower, it hardly has any branch offices and the business processes are completely digitalised. Studentenwerk sees itself as an Internet company with a traditional business model (temporary staffing). Incidentally, this also means that they employ more software architects than agents.
Centurion, the aim of which was to focus more on the core activities and create a more flexible organisation that would be able to respond more quickly to changes in the market.

![Figure 2: Technological development versus organisational change](image)

Source: Rabobank, based on Scott Brinker

Not only is the market environment evolving more quickly, it is also becoming more complex and less predictable. This is changing lots of things. For instance, scale is no guarantee of an assured future. In fact, scale can be an obstacle preventing companies from making optimum use of new technologies. The key thing usually is not to increase or reduce the scale but to optimise the scale.
The companies in the best position are those that have a business model\textsuperscript{10} that can quickly be adapted to suit future developments. It should be noted that, we see sustainability here as a given rather than a trend. The following elements are important in our opinion when introducing flexibility into the organisation.

1. **Invest in new skills for employees**

Companies invest a great deal in staff development and the skills of their employees so that they can respond to the rapidly changing market conditions. Research\textsuperscript{11} shows that there is a trend towards ‘upgrading’ in the European labour market, with steady growth in the number of (analytical) graduate jobs, in contrast to the jobs for unskilled and semi-skilled workers. This trend will continue in the digital economy. Take the rising demand for software and app developers, data analysts, programmers, visual designers and testers.

Robotisation and digitisation are leading to a shift in the skills an organisation’s employees need and this requires a certain degree of flexibility on the part of the organisation\textsuperscript{12}. Retraining will therefore become increasingly important, all the more so because employees will be working longer.

\textsuperscript{10} A business model consists of the following components:
- a value proposition (What customer problems are we resolving?),
- key partners (Who are our suppliers?),
- cost structure (What are the overall costs, which part is flexible?),
- resources (What products, services and infrastructure do we use?),
- activities (What do we do with our resources?),
- customer relationships (How do we interact with our customers?),
- channels (How do customers find, buy and use our products?),
- customer segments (Who are our users and who are our paying customers?),
- revenue model (Where does our income come from?).

\textsuperscript{11} See also EU, Drivers of recent job polarisation and upgrading in Europe, July 2014.

\textsuperscript{12} See also Deloitte, The future of employment, 2013.
2. From big data to smart data
Companies are using big data and are performing more and more analyses on this data so that they can quickly identify new developments and trends (via smart data). The intelligent use of social-media data is often a determining factor here. New (IT) techniques even enable predictions to be made so that the company can eventually offer customers the best products and services.

BOX 2. Doesburg Components invests in robotising
Doesburg Components is a metalworking company that mainly produces cast-iron components (through milling) for the truck industry. In spring 2014, the company automated part of the production process with the use of robots. Nine employees are needed to enable the ten robots to operate around the clock, compared with forty employees in the old situation. The company was forced to make the substantial investment in the robots and associated software in order to remain competitive. Robotisation not only means lower production costs, it also reduces wastage and makes the process more reliable. Furthermore, the growth in Doesburg Components meant that thirty employees could be redeployed elsewhere in the company.

3. Decentralised, modular production
Modular, decentralised and local production gives companies a shorter time to market, greater flexibility and more opportunities to tailor products to local and personal requirements (mass customisation). In a world where the product life cycle is becoming ever shorter this is turning out to be an increasingly important distinguishing feature in industry.
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4. Towards a digital value network

Supply chains change into networks – digital value networks – when the physical and virtual worlds merge. New techniques are used to link supply chains so that they become more flexible and can respond more rapidly to changes in demand. But this also enables greater product differentiation and makes the time to market much shorter.

BOX 5. Flexible production in a digital value network at VDL Nedcar

To make its supply chain more flexible and improve its performance, VDL Nedcar has developed the ‘warehouse-on-wheels’ concept for its new factory where BMW’s Minis are made. The idea is that the assembled submodules should be kept in a trailer rather than storing them in a central location, as is done traditionally, thereby removing the need to maintain stocks. To implement this, special software was developed that functions as ‘pearls-in-a-chain’. This is a metaphor for the production of orders and the way in which these orders are interlinked. By linking this flow of orders to the entire supply chain, it becomes a simple matter for all the suppliers to align their stocks and processes to fit the requirements of VDL Nedcar. As soon as the suppliers get a message via electronic data interfacing, the components are dispatched via just-in-time or just-in-sequence systems. The consequence is that the end client – the consumer – essentially controls the digital value network, resulting in maximum flexibility.

This requires flexibility from companies, as well as cooperation with their partners in the network, for example by initiating joint innovation projects (risk sharing). In addition, original equipment manufacturers (OEMs) such as Philips, ASML and FEI are increasingly outsourcing R&D to the tier-1 suppliers in the supply chain. As a consequence, these suppliers are not only gaining more control over the supply chain, they are also becoming important players in innovation.

Open innovation is the key to more flexible collaboration between the business community, science institutes and the government (‘the Golden Triangle’ and accordingly underlies the Dutch government’s top sectors policy. This changes the supply chain into a value network.
Emphasis on flexibility in business models

Conclusion

A new economic reality and multifaceted technological developments in ICT are forcing companies to consider or review their current business model and to adapt if necessary. In our view, incorporating greater flexibility is an important precondition. This also means that entrepreneurs – now more than ever – need to be capable of continually, critically examining their company.

BOX 6. **PhenomWorld is global market leader in desktop microscopes**

PhenomWorld offers an example of how innovations can successfully be developed and introduced to the market in a network arrangement. Phenom-World develops and sells desktop electron microscopes and is a spin-off of FEI, the global market leader in high-end electron microscopes for professional use. For FEI the lower end of the market (desktop microscopes) is non-core, so the suppliers NTS and Sioux in cooperation with FEI joined forces and developed a desktop microscope. The first concept was presented at the High Tech Campus in Eindhoven in 2005, and today PhenomWorld is the global market leader with sales in more than forty countries.
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