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Article

How digital construction changes the supply chain

Digitalisation can lead to huge advantages for contractors, and can also change the supply chain. It can lead to increased transparency in the long run, more market power for IT service providers, and fewer independent architects



Construction is lagging behind other sectors when it comes to digitalisation

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The advantages of digital construction

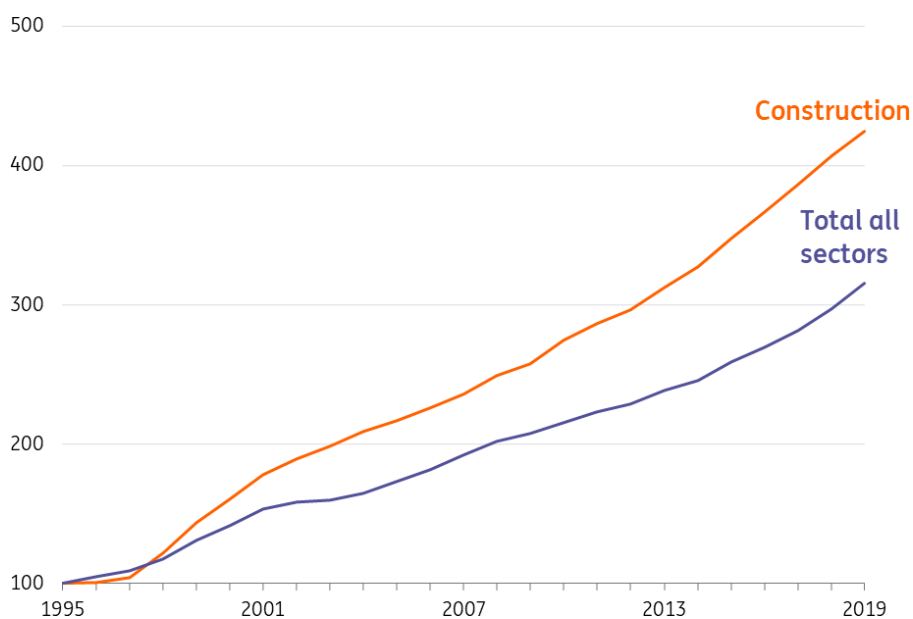
In our previous article on [digital construction](#) we concluded that digitalisation has several advantages for contractors: it increases efficiency, it is a prelude to [industrialisation](#), and it makes better business decisions possible based on more sophisticated data. However, digitalisation is still not a top priority for every building company.

Digital construction is catching up

Despite digitalisation in the construction sector still lagging behind other sectors, the growth rate has been higher in the last 25 years. The value of software has more than quadrupled during this period. In all sectors, the digitalisation pace was lower and “only” tripled over the same timeframe. Construction firms are therefore catching up with digitalisation. This increase in digitalisation doesn't only have advantages for building firms, it also changes the supply chain. In this article, we focus on these changes and what strategic choices contractors have to make when they decide to digitalise their building process.

High increase software value in construction sector

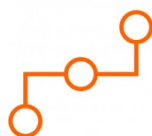
Development software per employee in several EU countries (index 1995=100)



Source: Eurostat, ING Research

Digital construction changes the supply chain

When contractors and other supply chain partners digitalise their processes it leads to three main changes in the supply chain:



- Increasing transparency
- More dominant ICT-companies
- More inhouse architects

1

The supply chain becomes more transparent in the long term

Digitalisation leads to construction companies more easily exchanging data. This means that transparency increases. For instance, digital marketplaces (e.g. 12Build, HomeAdvisor and Instapro) ensure that construction companies, subcontractors, and suppliers find each other more easily and can quickly exchange information. However, at the moment many firms in the supply chain use different software which is often difficult to link. This means that data can't be properly distributed in the supply chain. The next step is therefore to link these IT systems and unlock the data. Yet, the current lack of digital standards still hinders this. So, in the short term, digitalisation can actually lead to the opposite which means it can make it more difficult to exchange data, and therefore companies stick to their main supply chain partners as they have set up a protocol with them to exchange building process data.

2

More dominant ICT companies

With digitalisation, market power will change. Construction companies become more dependent on information and communications technology (ICT) service providers from which they purchase software and other IT services. This is especially the case if construction companies choose to purchase software externally instead of developing it themselves. In addition, price increases of software packages (or SaaS) can occur as contractors have become dependent on one particular supplier. That makes it expensive to switch suppliers as the software is embedded throughout the company. This shift to more powerful IT companies has already occurred in other sectors that have digitalised.

3

More in-house architects

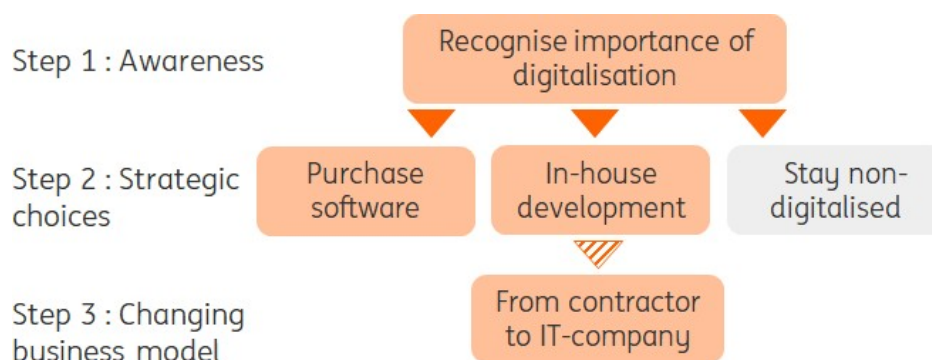
Digitalisation is often the first step towards industrial construction. The position of the architect and constructor will likewise change when [industrialisation increases](#). A designer has to know exactly what the industrialised construction company can and cannot process. Design will therefore more often be done in-house at the construction firm instead of at an independent architecture firm, as that is where the knowledge of the standardised industrial building options are known. In doing so, the architect becomes more of an industrial designer.

Success requires strategic choices

Digitalisation requires sharp strategic choices. If construction companies want to go digital, we see different options. In practice, intermediate forms of these strategies are of course possible.

From awareness to a different business model

Process and strategic choices by digitalisation of construction company



Step 1: Awareness and mindset are key to further digitalisation

To digitalise, awareness, the right mindset, and full commitment from the entire staff and management are essential. Everyone in the company must realise that digitalisation makes processes more efficient. Digitalisation therefore often requires a culture change that everyone has to commit to.

Step 2: Purchase software or in-house development

Construction companies can buy or self-develop digital tools. The advantage of purchasing is that the costs are often relatively limited. The disadvantage is that it makes contractors (very) hooked on one specific IT service provider. Furthermore, purchased software is often a standard package which most of the time can be difficult to adjust to specific needs.

The advantage of self-software development is that it makes customisation possible. However, the drawback is that the costs are often much higher. Furthermore, well-qualified IT staff are necessary for the development and, in many countries, this is hard to find.

Continued non-digital building is not a real option

Construction companies can of course choose not to go digital. These companies can focus on niches where personal contact, customisation for their clients, and less standardisation is required. This may perhaps work in the short run. Yet, these companies must take into account that the construction sector (and the world around them) will continue to digitalise. Sooner or later they will be confronted with digitalisation, for instance, with digital designs from architects and/or suppliers or subcontractors that want to exchange digital data. Therefore, in the long term, we think this strategy is not an option.

Step 3: Towards a different business model

Construction companies that have built their own successful digital platform can ultimately choose to sell it to other contractors. In that case, they transform their business model from construction to IT service provider. Nevertheless, this absolutely doesn't have to be the ultimate goal for every construction firm that wants to digitalise. In practice, only a few will make this final step and it is not necessary to be successful with digitalisation.

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