sana

GUIDE

Beyond the Digital Transformation

Construction Industry Trend Report - 2019

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Introduction

Glimpses of a data-driven future are forcing the construction industry out of its comfort zone and into a more digitized way of working.

There are already plenty of disrupting factors, like e-commerce, the Internet of Things and 3D printing.Combine that with shifting priorities and continuous growth in equipment sales, and it becomes clear that these are extraordinary times for the industry.

This report will highlight the current trends that will determine the future of the sector and explain how pushing forward with your firm's digital transformation can help you remain relevant, dodge disruption and see your finances flourish.

1. The State of the Construction Industry Worldwide

Global Data projects that the global construction market will exceed $12.9 trillion by 2022.[1]

A Positive Outlook

Despite some industry highs and lows in recent history, the revenue growth trajectory for construction businesses looks promising.

Global Construction Perspectives and Oxford Economics predict that industry will be one of the most dynamic sectors through 2030.

Global construction output is expected to grow

85% by then, making for a $15.5 trillion market.

Moreover, construction growth is projected to reach **3.9%** on a yearly basis by 2030, exceeding global GDP growth by more than 1%.

North America

New construction projects across the continent is on the rise. In 2019, we will see **$808 billion** in new construction starts, indicating continued (though slow)[2] growth over 2018. Nonetheless, increasing interest rates and material costs pose a challenge to businesses hoping to accelerate growth further.

Even in areas where the industry will not accelerate, revenue will hold steady.

Commercial building

starts will **drop only 3%**, while manufacturing,

public works and institutional building will all pick up by **2-4%**.

According to 2018 data from Moody's Investor's Service, today's healthy industry conditions suggest sustained revenue growth during 2019 and beyond.[3]

Europe

The European construction sector is set to grow by 2.9% in 2019, mirroring the growth rate seen in 2018. This steady, continued growth can be largely attributed to the digitization of the industry as a whole.

European businesses in the industry are adopting Building Information Modeling (BIM) faster than many other global regions, which means better integration of processes and reduced costs of failed construction initiatives.

Despite a bright future when it comes to technological advancement, Europe faces a hurdle when it comes to current shortages in the workforce.

By 2020

45% of all architects in Europe predict a quantitative labor shortage. While we hope to see this gap bridged, it also does leave room for technology and automated processes to drive efficiency in the market.[4]

45%

Luckily it's not all uncertainty. While the industry is not likely to become a technologically-driven innovation leader, it will certainly continue to see a slow and steady rise toward change that will impact processes for years to come.

In the 2019 edition of CECE's Annual Economic report, we're seeing historically high growth rates specifically in the construction equipment sector. Growth rates for sales in 2018 were the highest they have been in ten years, and are continuing to rise.

Global equipment manufacturing industry growth

40 BN €*
Revenues

30,000
Overall employment

12,000
Companies

Source: CECE Annual Economic Report, 2019

As the 2016 Brexit vote demonstrated, however, Europe is anything but a homogenous whole. Let's take a closer look at two markets that are particularly relevant to Sana and our clients: the UK and Germany.

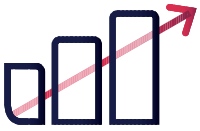
Spotlight: UK

Market Outlook

By 2020, according to Ernst and Young, the construction industry will see significant consolidation in order to address unsolved challenges in the sector thus far.[6]

The same report indicates that there are significant opportunities in areas such as infrastructure and house building, but the industry's success in the UK overall will be dampened by looming challenges, such as inefficient supply chains, legacy IT systems, and disjointed internal management processes.

UK Construction leaders so far



in excess of
£5b revenue each
from the 5 leading players

Source: Ernst & Young, 2015

Brexit

It's impossible to speak about the UK construction market withoutconsidering the results of 2016's Brexit vote, and the lasting effects it's had on the industry.

> **According to the 2019 CECE report, uncertainty over Brexit** "continues to weigh on [industry] business and consumer confidence in the UK."

The industry is still waiting on the outcome and relevant implications of Brexit negotiations. But so far, despite tighter financial conditions, there seems to be no indication of a shortage of demand for new construction.

Lower Housing Demand

As a result of the Brexit vote, lower demand has led to a reduction (by half) in house prices in 2019.

This means that despite the rising costs of materials (again, more on this in the disruption chapter), there is still plenty of impetus for UK homeowners to commission renovations to their current property (thus continuing to drive up property values) rather than make the move to a new home.

Spotlight: Germany

Construction Projects

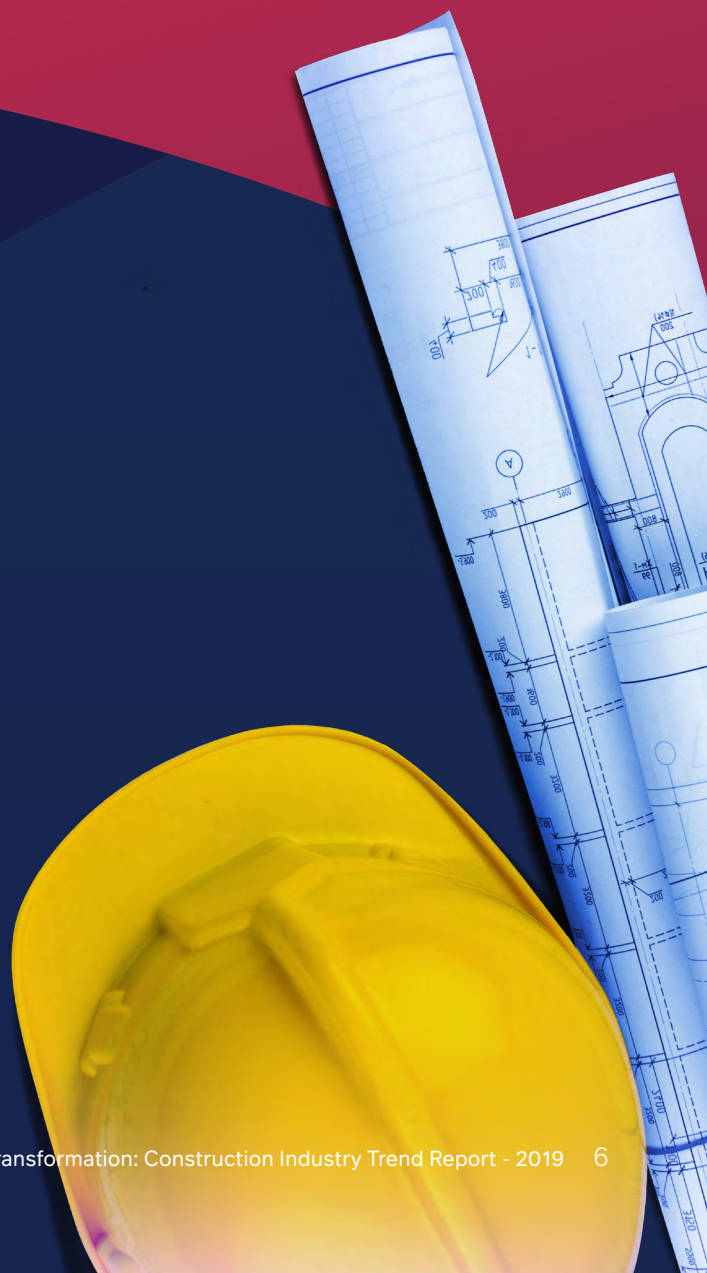
According to the European Construction Sector Observatory, "Overall, the outlook for the construction sector [in Germany] is strong, driven by a booming housing market and positive developments for all market segments. [7]

Residential

Civil engineering

Non-residential

The same report indicates that the industry in Germany saw a growth rate of 4% in 2018, and the outlook beyond 2019 looks generally positive. Despite a slowdown in construction, demand remains high, leaving room for future development.



2. Market Disruptions

While the prognosis is positive, it isn't all plain sailing for the construction industry. There are excellent opportunities, but also potential pitfalls to be circumvented. Here are the main disruptors to keep in mind.

Unitized Building

In today's construction industry, trying to complete projects quickly and within budget is critical. This means having the skillset and equipment needed to execute the approach at hand. To maximize the success of builds, the industry is moving toward unitized systems and unitized building — which can have a sizable impact on a project's completion timeline.

According to The Construction Specifier, "unitized construction is not a new development, but is a growing one given the importance of quality, time, and ongoing labor challenges today.[8]

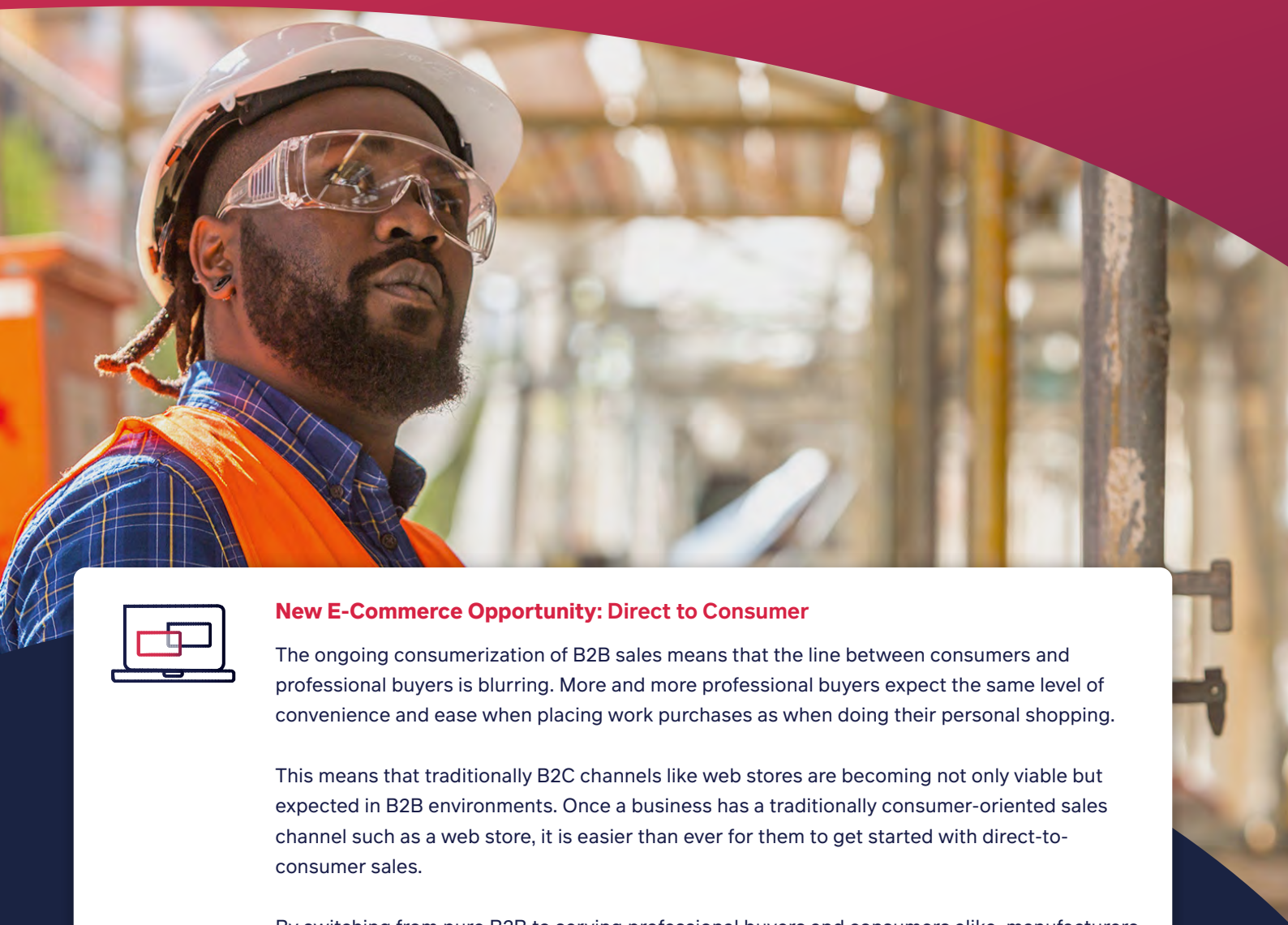
While traditional approaches to construction that are not unitized may offer some cost savings, they also often require more onsite labor and more time spent overall.

Unitized systems are "fabricated, assembled, and glazed in a factory environment, then shipped to the jobsite for installation," which means they don't need to be installed, piece-by-piece onsite. Despite the challenges of adapting a new way of working, the key benefits of this approach include reduced costs and better quality control, which ultimately result in a better end-product.

DIY

Doing it yourself is nothing new. However, a renewed focus on creating or building things yourself, along with greater visibility of and access to both entertaining and educational DIY content, means that we're seeing a do-it-yourself renaissance.

While small-scale DIY projects won't pose a threat to typical construction or building businesses, the renewed interest in DIY does provide several interesting opportunities. Equipment manufacturers could consider creating products or kits specifically targeting individuals who want to work on their own home improvements or creating educational content to increase brand awareness. Alternatively, manufacturers could partner with established content creators and arrange for their products to be featured in videos.



New E-Commerce Opportunity: Direct to Consumer

The ongoing consumerization of B2B sales means that the line between consumers and professional buyers is blurring. More and more professional buyers expect the same level of convenience and ease when placing work purchases as when doing their personal shopping.

This means that traditionally B2C channels like web stores are becoming not only viable but expected in B2B environments. Once a business has a traditionally consumer-oriented sales channel such as a web store, it is easier than ever for them to get started with direct-to-consumer sales.

By switching from pure B2B to serving professional buyers and consumers alike, manufacturers can capitalize on the DIY trend while cutting out the middleman.

Not convinced that this is a viable option? There are plenty of companies that do — including Amazon.

3D Printing

3D printing speaks to the imagination, conjuring images that seem more at home in 20th century science fiction than in business plans.

But as machine costs shrink and more engineers use the technology to push boundaries, additive manufacturing has already started changing manufacturing as we know it.

The Rise of 3D Printing

Use of 3D printing is already established in the world of prototyping.
Advancements in technology are making it more feasible to print spare parts on demand, for instance. This offers numerous benefits, such as not having to use inventory space for such items, and not having to worry about parts going out of stock.

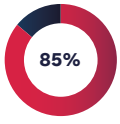
PwC's Strategy& conducted research into the impact of additive manufacturing on the spare parts market.[9]

Among the key takeaways are:

Spare parts suppliers aren't meeting client needs: **50%** of clients have looked into 3D printing parts themselves.

In the future, companies will sell copyrights instead of parts. Moving away from physical deliveries will make it even easier to move to fully **digital sales channels**.

More than half of companies fear losing market share to third-party spare parts suppliers.



Within 2 years, more than **85%** of spare parts suppliers will include 3D printing in their business.

In just over 5 years, German spare parts suppliers will save $3.4 billion annually with **3D printing**.

Additive Manufacturing Challenges

Equipment manufacturers not currently investigating the possibilities additive manufacturing offers are putting themselves at a disadvantage: the same study indicates that a lack of 3D printing expertise is one of the main challenges associated with additive manufacturing.

There are also some obstacles directly relating to the current limitations of the technology itself. Large-scale printers often have resolution problems which cause rough final results, for instance. Not to mention that large-scale printing is currently still quite slow and expensive.

3D Printing Benefits

3D printing technology makes it possible to produce purpose-built shapes that simply cannot be produced in any other way. It can also reduce the costs of producing customized components.

3D printing

also offers up to **80%** increases in productivity for certain applications. In fact, additive manufacturing has the potential to drastically reduce construction time. Some buildings could be realized not in a matter of weeks, but days — or even hours.

Finally, using 3D printing lets manufacturers realize a considerable reduction in waste, which ties in with one of the major industry trends: going greener.[10]

Pushing the Boundaries of Additive Manufacturing

It's not just equipment manufacturers who are at risk of disruption: 3D printing could also change the way we think about construction. 3D printing entire buildings and structures has already been successfully prototyped.

The Chinese Yingchuang New Materials has used 3D printing to create 10 demo homes in a single day, and MX3D is planning to create a steel bridge in Amsterdam using 3D printing. It seems to be only a matter of time before this technology overcomes the issues we discussed previously and is ready to be deployed at a larger scale.

3. Construction's Digital Transformation

It is clear that building industry is no stranger to technological advancements. But even so, it will be difficult to keep up with the number of changes on the horizon.

The Move Toward Digital

The Boston Consultancy Group's research into building materials companies shows that the industry has three stages of digital transformation maturity.[11]

01 **Early stage**

Heavy-side producers of aggregates, cement, ready-mix concrete, asphalt paving have just embarked on their digital transformation.

02 **Middle stage**

Light-side producers of wallboard,concrete products, pipes, bricks, tiles, insulation and glass are often farther along in their digital journey.

03 **Advanced stage.**

Only distributors have mastered their digital transformation. However, as CBG notes, even digitally advanced companies in the construction sector are far from keeping up with organizations in other sectors, such as media and retail.

Why is it that distributors are outpacing the rest of the construction industry?

CBG analysts say that aggressive pursuit of digital transformation can be traced back to seeing what a strong e-commerce offering can do, namely growing revenues and maintaining customer loyalty. With so much on the line, a rapid digital transformation is inevitable.

Digital Sales

New sales channels are also changing the industry landscape. Unsurprisingly, Amazon plays a role here.

Internet of Things

If the competition between Amazon, Apple and Google in the smart speaker market is any indicator, we are at the cusp of the next phase in the smart device revolution — unless these smart speakers go the way of wearables, or take as long to reach their full potential as self-driving cars.

Of course, the fact that we can discuss these almost science-fictional technologies without batting an eye already says a lot.

The examples mentioned above probably won't be relevant for the building and construction industry any time soon. However, there are plenty of ways that devices with an internet connection are helping businesses boost efficiency and cut costs when it comes to site operations.

Employee and Equipment Tracking

The wearables we mentioned above? They might not have become as ubiquitous in our everyday lives as we might have expected leading up to the launch of Google Glass, but they are making a difference in the building and construction industry. Wearable smart devices can track workers on site and use the location data to ensure individuals are aware of potential hazards.

It's not just employees who can be monitored with new tech: equipment sensors can monitor the status of machinery and indicate when it's in need of repair.

Benefits of IOT for Construction

This opens opportunities to optimize operations, improve safety and of course save money. "The amount of waste in labor mistakes or labor fraud is enormous in the construction industry," says Willy Schlacks, President at EquipmentShare. "The adoption [of labor-tracking technology] is going to pretty quick because there's such a strong correlation to the bottom line."

But the potential of the IoT for the construction industry goes further. Garrett Harley, Director of Engineering and Construction Strategy at Oracle, has the following to say about the combination of IoT and business intelligence: "It's the aggregation and collection going into a central repository where you can make intelligent decisions based on what you're collecting. All those decisions are just a way of moving something from a manual process to seeing that information in real time." However, this does require a high level of interoperability. Finding a solution that can take data from various sources and turn it into valuable information remains a challenge.[12]

BIM

Another technology helping the industry boost efficiency is Building Information Modeling (BIM) software. BIM platforms let companies move away from traditional 2D designs to information-rich 3D plans by integrating modeling with visualization tools and project management.

3D isn't the limit for BIM: it's also possible to add two additional dimensions to a BIM setup. This allows users to also keep track of changes over time, as well as the financial aspects of the project. As BCG explains in their report, the latter addition allows firms to calculate a project's total value of ownership.[13]

Levels of BIM Adoption

As with the overarching digital transformation, not all companies have made the same strides when it comes to adopting BIM. BCG describes this as follows:

01 **Level one**

Firms design using 3D, BIM-based CAD software and clash detection tools. However, traditional methods are used to generate blueprints and all companies involved in the project work independently using their own data and a manual interface with the BIM platform.

02 **Level two**

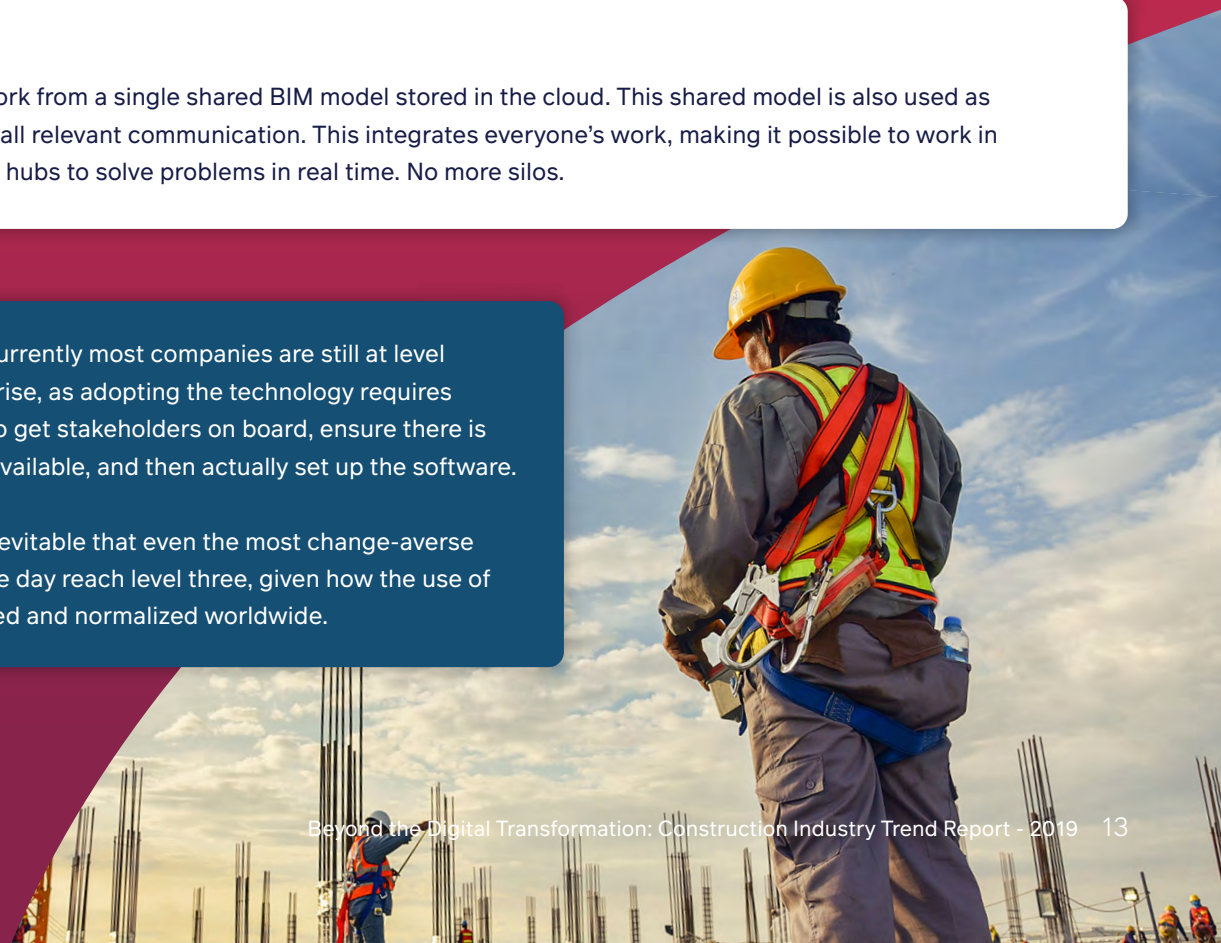
Companies exchange some information in a common BIM file format. Designs and blueprints are created in 3D CAT. While there is sufficient collaboration to allow for 4D BIM (i.e. including time sequencing), most work is still performed in silos.

03 **Level three**

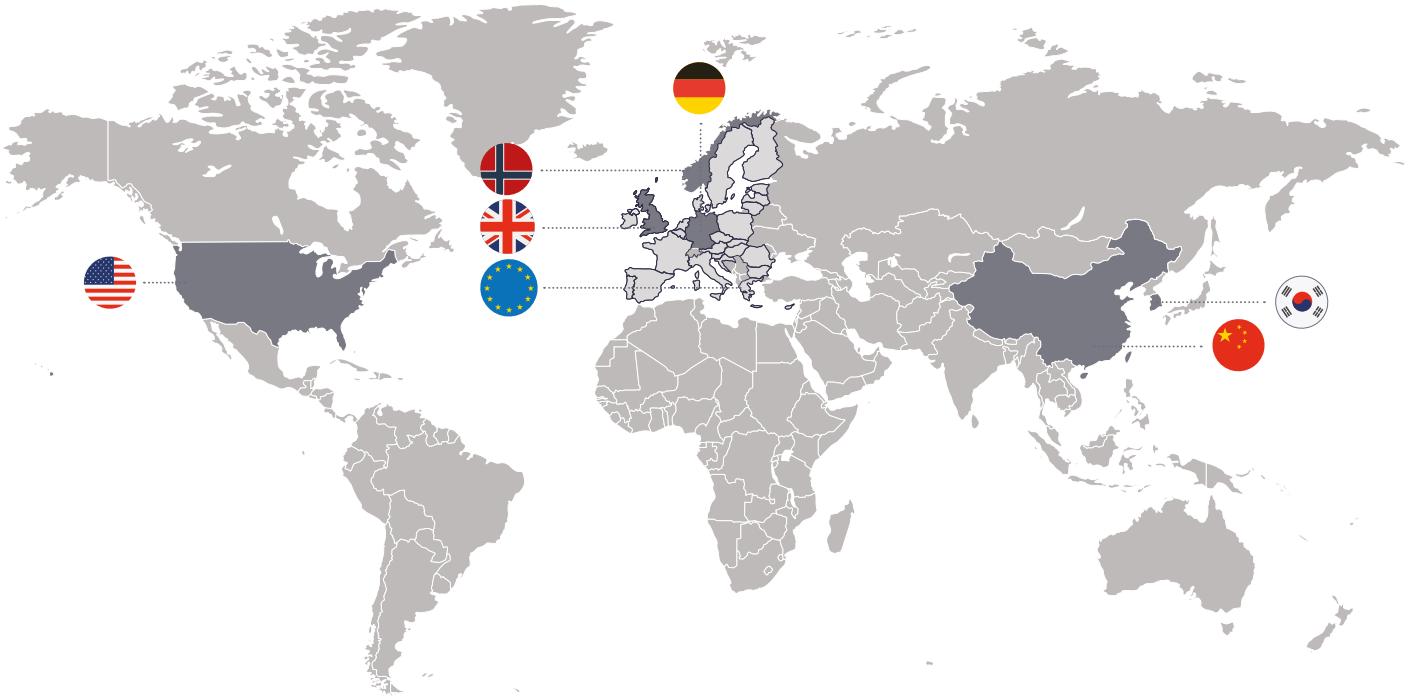
All parties work from a single shared BIM model stored in the cloud. This shared model is also used as the basis for all relevant communication. This integrates everyone's work, making it possible to work in collaborative hubs to solve problems in real time. No more silos.

BCG indicates that currently most companies are still at level one. This isn't a surprise, as adopting the technology requires considerable effort to get stakeholders on board, ensure there is sufficient expertise available, and then actually set up the software.

However, it seems inevitable that even the most change-averse organizations will one day reach level three, given how the use of BIM is being promoted and normalized worldwide.



BIM Across the Globe



USA
BIM mandatory for public projects

UK
Fully collaborative BIM required for public sector projects

EU
BIM recommended for EU-funded projects

Germany
BIM will be mandatory for public projects from 2020 onward

Norway
BIM mandatory for newpublicly funded buildings

South Korea
BIM mandatory for public sector projects and all projects exceeding $50 million

China
BIM non-mandatory, butalready used extensively in infrastructure projects

Source: Boston Consultancy Group, “The BIM Revolution Comes to Building Materials”

The Benefits of BIM

By facilitating real-time collaboration and problem solving, BIM offers ample process optimization opportunities. BCG analysts predict that by 2025,

BIM will be sufficiently advanced

to generate a productivity gain between **15%** and **25%.**

However, use of BIM offers also offers benefits beyond the bottom line.

Many construction firms have less than ideal relationships with clients, for instance because of low initial fees which are later compensated through change orders. BIM can remedy this by providing better transparency and communication — not only with clients, but also with other parties involved in projects. **There are also a number of enticing benefits for another group: materials companies.**

BIM for Materials Companies

BCG lists three key areas where materials companies can use BIM to their advantage.

- Increasing demand for existing products
- Developing new products
- Moving into BIM-based facilities management

Demand for existing products can be boosted by using the BIM object library. The library is where product data is stored, and it's typically the first BIM investment for materials companies due to its modest required investment, as well as the fact that it is becoming mandatory in more and more countries.

This digital catalog also offers materials companies an interesting opportunity to position their products in a new way, rather than just using the exact same information available from other sources. They can also help clients sort through listings by developing special add-ons that help determine the right materials.

BIM and 3D Printing: a Powerful Combination

We already discussed additive manufacturing's potential to disrupt the building and construction industry in Chapter 2, but it's worth taking a closer look at how well 3D printing works in combination with BIM.

In their report on BIM, the Boston Consultancy Group highlights WinSun Decoration Design Engineering Company from China. This organization has used printer-ready BIM files to build inexpensive houses and apartment buildings. Despite the potential pitfalls when printing large objects we previously explored, WinSun has managed to print buildings up to six stories tall.

WinSun uses additive manufacturing to create individual sections layer by layer, using a paste made of glass, cement steel, and hardening agents.

4. E-Commerce for the Construction Industry

BIM systems aren't the only kind of online product catalog changing the construction playing field. B2B e-commerce has been on the rise for a long time, and is fast becoming an undeniably important part of the industry landscape.

E-Commerce Is Everywhere

If it seems hard to imagine a world without the convenience of purchasing books or reserving a hotel in a matter of clicks, that's because it is.

According to Digital Commerce 360

46% of B2B buyers make online purchases once or several times every week.

Another **45%** do so monthly, bi-monthlyor quarterly. [14]

Meanwhile, we see a burgeoning global building and construction industry, including a thriving DIY marketplace.

With buyers used to placing orders online and a healthy industry, it's little wonder that e-commerce for construction is taking off for both consumers and professional buyers.

Firms focused on professional buyers are no stranger to e-commerce. W.W. Grainger is a perfect example of a business that grew its customer base with an online inventory management solution and e-commerce app.[15]

However, it's not just established names in the industry that are generating serious online revenue with building and construction products.

The Amazon Effect

It's no secret that Amazon has disrupted the retail industry, but that's not where the Amazon effect ends. Even the building and construction industry should be wary of the e-commerce giant luring buyers away — at least when it comes to home improvement products.

In the U.S., Amazon's tools and home improvement sales are worth a fraction of the industry's value, but consider this: Amazon's growth is seriously outpacing the industry in terms of year-over-year sales growth.

E-Commerce for Your Industry: 2018-19 Market Research

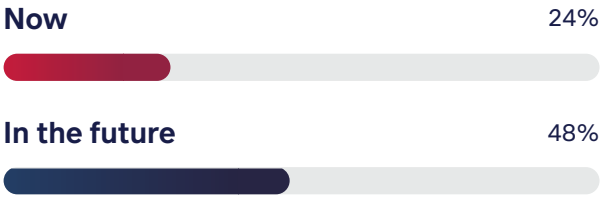
The success of both Amazon and individual vendors demonstrates that the industry is ready for online sales, both in the B2B and the B2C space.

This is reflected clearly in our own market research.

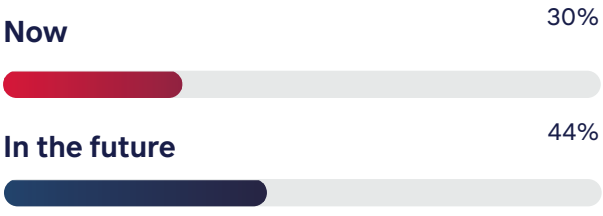
Recently, we commissioned Sapio Research to research the digital transformation and adoption of e-commerce among B2B companies in the U.S., UK, DACH, Benelux and ANZ markets. Among these respondents were businesses in the construction industry.

Here are a few highlights that underscore the trends we've laid out in the 2019 report: the current and future benefits of implementing e-commerce.

Selling direct-to consumer online



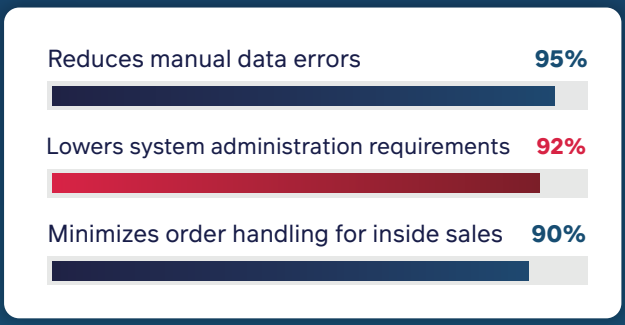
Create additional revenue streams



Expand your business model

E-Commerce System Requirements for the Building and Construction Industry

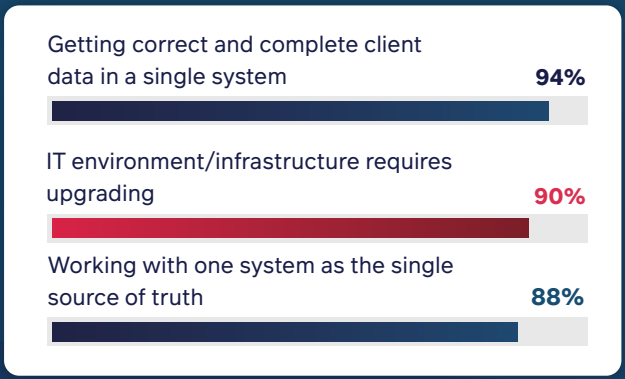
Respondents from the industry in our 2018 report rated theseamong the top benefits they were looking for in a web store.



The last two points are considered to be notably more important than in the other industries we surveyed. However, considering the strong uptick in sales described earlier in this report, it makes sense that streamlining commercial processes takes precedent over, say, improving inventory management — something that is considered vital in the food and beverage industry, for instance.

Construction Industry E-Commerce Challenges

Our construction industry respondents indicated that these were their main challenges when implementing an e-commerce project.



Setting up a single source of truth is seen as less of a challenge in other industries. It is a vital part of securing the success of your online sales channel, however, as we explain below.

Does Your Firm Need a Web Store?

Just because something can be done, doesn't mean it should be.
So is a web store the right choice for your specific business?
And what kind of technology is necessary to ensure you meet client expectations?

If you find yourself running into the following challenges, you will benefit from launching a web store — particularly if it is properly integrated with your existing IT infrastructure.

Do you want to provide extended service hours for your clients?

A web store is available 24/7, regardless of your business hours. This lets your clients place orders whenever is most convenient for them, as well as consult your product catalog and any other information you publish through your web store.

Are you looking for ways to make order processing more efficient?

Depending on the kind of e-commerce solution you select, a web store could automate much of the tedious manual rekeying that your sales administration is tasked with. Direct integration between your web store and ERP software ensures that orders placed online are immediately available in your administration system.

Are mistakes on orders, payments etc. an ongoing issue for your company?

E-commerce could provide the solution, depending on the technology you select. Integration with your ERP system would automate much of the more error-prone parts of the fulfillment process by using data stored in your ERP's database.

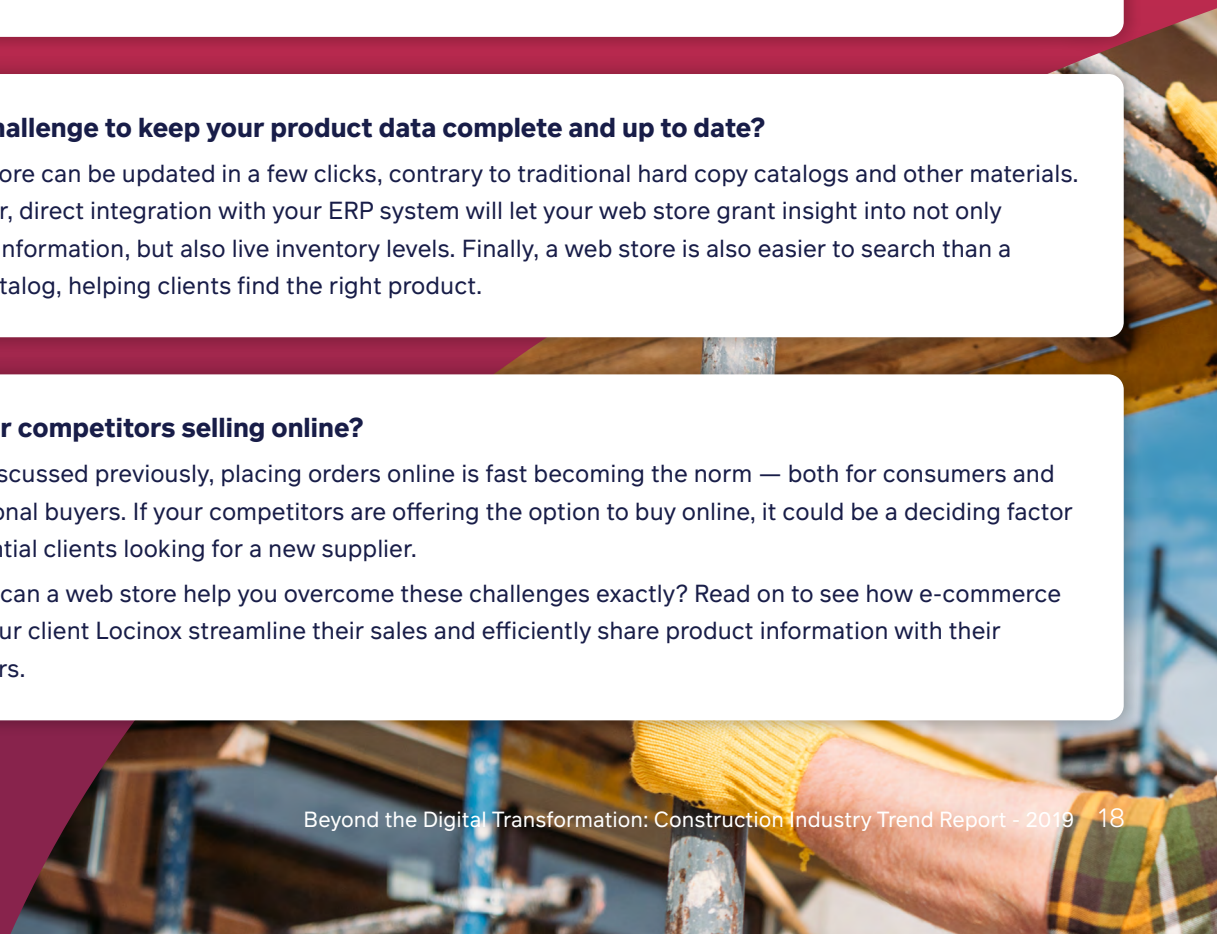
Is it a challenge to keep your product data complete and up to date?

A web store can be updated in a few clicks, contrary to traditional hard copy catalogs and other materials. Moreover, direct integration with your ERP system will let your web store grant insight into not only product information, but also live inventory levels. Finally, a web store is also easier to search than a paper catalog, helping clients find the right product.

Are your competitors selling online?

As we discussed previously, placing orders online is fast becoming the norm — both for consumers and professional buyers. If your competitors are offering the option to buy online, it could be a deciding factor for potential clients looking for a new supplier.

But how can a web store help you overcome these challenges exactly? Read on to see how e-commerce helped our client Locinox streamline their sales and efficiently share product information with their customers.



Construction E-Commerce Success Story: Locinox

Locinox develops and manufactures fittings for fencing and gates.
The company's vision is for every high-quality fence to have a gate with at least one Locinox component.

Challenges

Product Management

Locinox' range of product combinations and finishes makes product information management extremely complex. Their products are highly configurable, and they offer product information in six languages. Not only that, but the product range differs per region.

So it's no surprise that compiling a product catalog, keeping it up to date and publishing information on the website were becoming highly laborintensive tasks.

Locinox started looking for a new system that would let them manage their information more efficiently. In addition, they wanted to set up a businessto- business e-commerce platform to make it as easy as possible for the clients to place orders.

Solution

Fully Integrated Online Product Catalog

Locinox was looking for a way to take extensive product information to the web for their customers, so partnering with Sana provided the perfect solution. Together with their ERP partner, Ad Ultima, Locinox chose to work with the Product Information Management (PIM) Perfion.

Perfion provides a single source of truth for product information, granting control over all product data and helping you manage continuous changes in requirements. Thanks to the collaboration between Perfion and Sana, the PIM system could easily be used on top of the e-commerce platform.

In short, business (master) data is managed in Locinox' ERP system, Microsoft Dynamics AX. While Perfion adds product information, Sana takes care of the online publication and ordering.

The Result

Time Saved and Errors Avoided.

Locinox' new B2B web store provides clients with a clear overview of all products and product availability. Furthermore, using PIM with the Sana Commerce e-commerce platform guarantees 24/7 online support for product sheets and brochures. By taking product catalogs online, Locinox is able to help clients find the right product.

Locinox' product configuration grants them a competitive advantage. However, the real trick was realizing this without complicating the order process, which they did using a graphical product configurator. This increases order accuracy, thus reducing the number of errors, saving costs and making things easier for their clients.

> **"Thanks to the PIM system and e-commerce platform we can manage all our product information in a structured manner, without having to deploy more personnel."**
>
> Mik Emmerechts, General Manager at Locinox

Learn More About E-Commerce for Construction

These are just a handful of the challenges an effective online sales channel can help you overcome. If you would like to learn more about modern e-commerce, and specifically how it can help the construction and building industry, visit our web page on sales portals for construction and industrial materials.

Join Sana →

Resources:

1. https://www.globaldata.com/store/report/gdcn0010go--global-construction-outlook-to-2022-q3-2018-update/
2. https://www.construction.com/news/new-construction-starts-2019-steady-with-2018-dodge-data-analyticsoct-2018
3. https://cdn.forconstructionpros.com/files/base/acbm/fcp/document/2018/10/Moody_s___Global_Construction_Industry_Outlook__October_2018.5bcdf72db00d4.pdf
4. https://www.bimcommunity.com/news/load/631/the-future-of-construction-an-european-overview
5. https://issuu.com/cece_europe/docs/cece_annual_economic_report_2019
6. https://www.ey.com/Publication/vwLUAssets/ey-uk-construction-consolidation-ahead/$FILE/ey-ukconstructionconsolidation-ahead.pdf
7. https://ec.europa.eu/docsroom/documents/23744/attachments/1/translations/en/renditions/pdf
8. https://www.constructionspecifier.com/growing-unitized-movement/
9. https://www.strategyand.pwc.com/reports/future-spare-parts-3d
10. http://www3.weforum.org/docs/WEF_Shaping_the_Future_of_Construction_full_report__.pdf
11. https://www.bcgperspectives.com/content/articles/process-industries-go-to-market-strategy-bringingdigitaldisruption-building-materials-reinventing-customer-journey/?chapter=2
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