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2023 construction technology report

Demystifying the technology landscape and putting data to better use

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Introduction

As the last two years demonstrated, construction is an essential industry. That should come as little surprise; after all, the construction industry literally builds the infrastructure on which nearly all other industries operate.

Global construction output grew in 2020 to US$10.7 trillion (in 2017 prices and exchange rates) and is expected to hit US$15.2 trillion by the end of the decade, according to Oxford Economics[1]. In fact, **globally, construction accounts for 13 percent of GDP**[2], and despite the expected headwinds that portion is only expected to grow.

Still, notwithstanding its huge importance and significant contribution to the economy, the construction sector continues to have a reputation as slow in technology adoption. This is even as technology has been widely recognized as the next stage of evolution. The industry needs to keep up with rapid change, improve performance, and gain a competitive advantage.

In this white paper, we'll investigate technology's growing role in the industry, particularly how data is playing an increasing part in helping construction leaders make the timely, business-changing decisions that may be especially crucial in the year ahead.

1 Future of Construction (oxfordeconomics.com)
2 Future of Construction (oxfordeconomics.com)

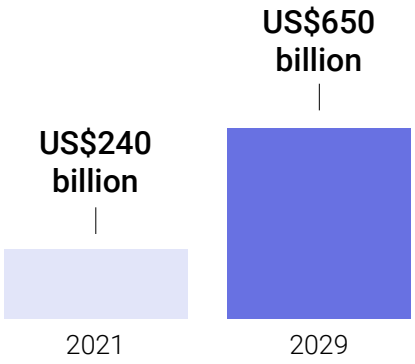
Technology's role in the construction sector growth

Increasingly the reputation that the construction industry has of eschewing technology adoption is becoming just that: an unfair reputation. For years contractors have been steadily moving away from paper, digitizing everything from accounting to project management to estimating. During the height of the Covid-19 pandemic, the need to achieve business continuity and new efficiencies sped technology adoption for many in the sector and beyond. The evidence of this became apparent even after a few short months.

McKinsey found that businesses, in general, accelerated digitization of customer systems and supply chains by three to four years due to the pandemic, and their product portfolio by "a shocking seven years."[3] Meanwhile, an even more focused look on the construction sector by global commercial real estate company JLL found that three years of construction growth was compressed into a mere nine months in 2020[4].

Generally, big data analytics activity is poised to explode, with organizations around the world seeing the benefits of taking advantage of the actionable insights and vast information hidden in the massive stores of data to which they now have access. This ability to access and manipulate historical and current business information is game-changing as you get an accurate breakdown of where your business has been, where it is now, and can be used to predict where it's going.

The market for big data analytics is expected to more than double from just over US$240 billion to more than US$650 billion between 2021 and 2029[5].



Importantly, the firm suggested the surge in technology adoption, while fueled by the pandemic, was here to stay.

3 COVID-19 digital transformation & technology | McKinsey
4 The State of Construction Tech: 2020 (jll.com)
5 Big Data Analytics Market Size, Trends | Growth Statistics, 2029 (fortunebusinessinsights.com)

New construction technology runs the gamut

While digitization has been one of the key areas of technology that those in the construction sector have been adopting, it's far from alone. Adoption of cloud-based solutions and mobile apps to improve collaboration are top of mind, especially with growing hybrid work environments; Building Information Modeling (BIM) to support engineering continues to see impressive growth; as are cutting-edge tools such as the use of augmented reality and virtual reality (AR/VR), artificial intelligence (AI), drones, 3D printing and more.

Trending construction technologies

BIM – Building Information Modeling is a holistic software system to share, store and manage a building across its entire lifecycle, from planning to construction, operation, and ultimately deconstruction. It collects multidimensional information about a construction site, usually in proprietary data formats.

AI/ML – Artificial intelligence and machine learning mimic a human brain's cognitive processes. They are being used in construction for everything from developing smart processes to avoid cost overruns to improving safety by analyzing safety data and tags.

VR/AR – Virtual and augmented reality tools continue to be investigated to improve safety and productivity, as well as back office tasks such as training and planning. Virtual reality displays a computer-generated image and information for the user, while augmented reality superimposes visual information over the user's real-world view.

IoT – The Internet of Things is the web of interconnected smart devices and sensors that collect and provide data that can be used for analysis, aiding construction companies in project reporting, asset tracking, safety, maintenance, and more.

3D printing – Replacing some of the manual work, construction 3D printing (C3DP) or 3D construction printing (3DCP) uses a machine to fabricate some of the core building components.

Big data – A term for the extremely large amount of complex data sets available to organizations, primarily when used for data analysis. Big data is defined by what the technology community calls "the 3 Vs": volume, velocity, and variety.

Data analytics – The science of using raw data to discover important patterns and trends, draw conclusions, and inform decision-making. Data analytics typically has four stages of maturity from descriptive analysis through diagnostic, predictive, and prescriptive analysis.

The 4 stages of data analytics

As construction companies mature in their use of data analytics there are different four ways the technology is being used:

Descriptive – The most common type of data analytics, basically using the data collected, cleaned, and analyzed to better inform organizations on past events.

Diagnostic – Using data analytics to understand not only what has happened but why it occurred by digging deeper into descriptive analytics to identify anomalies and causes.

Predictive – Using historical and current data to identify what has happened in the past, and may happen again based on previous trends, similar projects, geographies, etc.

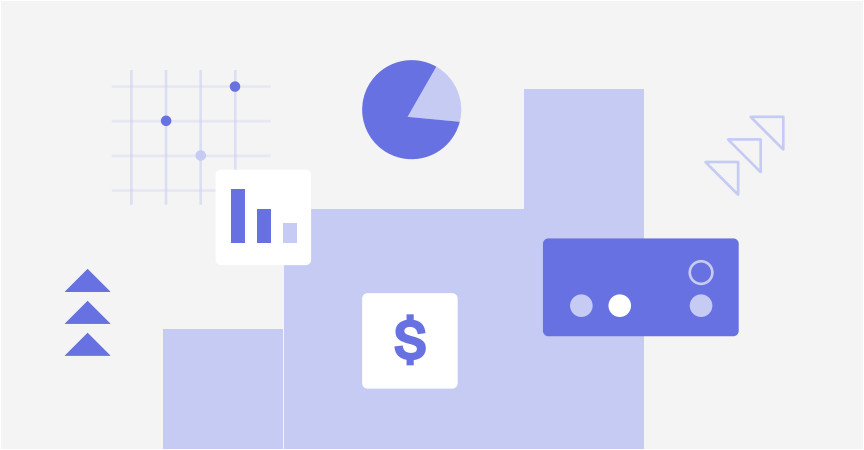
Prescriptive – Use of data analytics to advise on steps to take to achieve the best results, based on predictive analytics, organization, goals and specific data sets.

While for many construction companies, digitization efforts have continued in full force over the past several years, and software solutions to input data are widespread across disparate business units, the ability to leverage that data remains a challenge for most. Put simply: once you have all that data collected, what are you going to do with it?

The logical answer is to perform data analytics on it to provide actionable insights that lead to better decision-making. Unfortunately, the reality is that it is often easier said than done. While larger contractors may have the resources to invest in in-house solutions and data science teams to deal with the volume of data they collect, these resources aren't available to all. They must contend with massive amounts of different types of poorly integrated data that are designed only to support different teams and business units.

That's why the future of data resides in the ability to connect and integrate it.

Digital transformation doesn't merely come from digitizing information, but from using it to transform business.



Structured and unstructured data

As construction organizations embrace digitization and greater use of data, the incredible volume of data isn't the only challenge they must contend with. Variety, or different types of data, also prove a challenge. Data is categorized in two ways:

Structured – Defined, highly searchable information such as numbers, dates, and text. Typically, this type of data is stored in relational databases.

Unstructured – Data such as videos, images, audio files, emails, and social media posts. Generally, unstructured data requires artificial intelligence to process it for use.

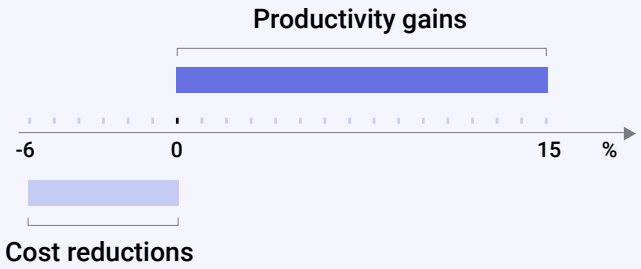
CHAPTER TWO:

The benefits and challenges to “going digital”

"Digital transformation isn’t just about revenue growth, but one that impacts company culture for the better."

Construction companies that take advantage of tools to move from just collecting data to using it to transform business operations can expect to see numerous advantages, perhaps the top of which is greater and more sustainable revenue growth.

As early as 2019, McKinsey was pointing out how digital transformation could help construction companies see productivity gains of between 14 and 15 percent, and cost reductions of 4 to 6 percent.



But digital transformation isn’t just about revenue growth, but one that impacts company culture for the better. For an industry plagued with uncertainty — with an abundance of family-owned businesses with a high focus on employees — digital transformation helps to create the security and sustainability many owners and CEOs seek for their teams and companies.

4 key benefits of digital transformation in construction in 2023

As suggested, one of the key benefits of digital transformation is its ability to turn data into information on which to act. It does this by providing four key capabilities:

Greater clarity – As jobs in construction become increasingly complex, the clarity gained by having better access to the right data is essential. Data currently hidden in silos across the organization can shed light on challenges and opportunities, and give a more holistic, bigger-picture view of the organization.

Resource efficiency – Whether it’s using IoT tools to track equipment deployments, or historical job and worker data to prepare for the next worker shortage, digitizing, collecting, and sharing data

provides construction organizations with efficiencies around managing employees, fleets, and other resources. During economic challenges like those expected in 2023, that efficiency will be vital.

Improved accuracy – An accurate understanding of the actual financial health of each project and the greater company is crucial to construction companies maintaining positive cash flow, proper forecasting, and controlling expenditures — all of which will are having greater importance amidst the financial uncertainty ahead.

Better decision-making – The ultimate value of all the data that construction organizations collect is in its ability to be used to improve decision making. Here the breadth, depth, and timeliness of the data collected and analyzed are important considerations. Looking at only a few sources or dated information severely lessons the value that data can play in the decision-making process.

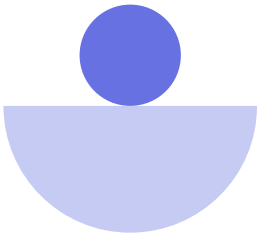
Challenges in construction technology adoption

While construction companies have been adopting digitalization and digital technologies, it has been at a relatively slower pace than industries such as retail, finance, or marketing.

The reason lies in the uniqueness of the construction industry, one literally built on an abundance of ongoing projects with lifecycles that can take years, often singular payment and financial structures, and countless uncontrollable variables from inclement weather to whether skilled labor is available.

Given the uncertainty and unknowns common to construction, leadership buy-in to analytics may be low since decision-makers know that, regardless of how complete the data set is, it can't account for everything. This all-or-nothing approach can lead to inaction, while those construction leaders that adopt digital tools and take advantage of their data gain a competitive edge.

Today, for many construction companies much of their information is trapped in departmental tools such as accounting, ERP, CRM, project management, vendor management systems, and stored across Excel spreadsheets. This limits the ability of companies to act on that information.



CHAPTER THREE:

How financial automation helps

"A new generation of prospective employees increasingly expects digital tools that make their jobs easier and often may not be satisfied with hours of simple data entry."

For construction organizations looking to take their digitalization to the next level, and take advantage of their data, a financial automation platform is an important piece of the puzzle.

Since finance touches every aspect of construction, accurate, complete visibility into the company's finances is key to truly understanding what's going on in the business. A financial automation platform helps provide this by providing greater visibility, reducing waste, improving accuracy, and helping make faster decisions.

Complete visibility – As suggested, many applications exist to capture data such as ERP systems, project management systems, and accounting tools. If that information is trapped in silos, visibility is limited only to the business unit using the tool. A good financial automation system can collect data from across these systems, giving more complete visibility into the company's financial health, cash flow, project performance, etc.

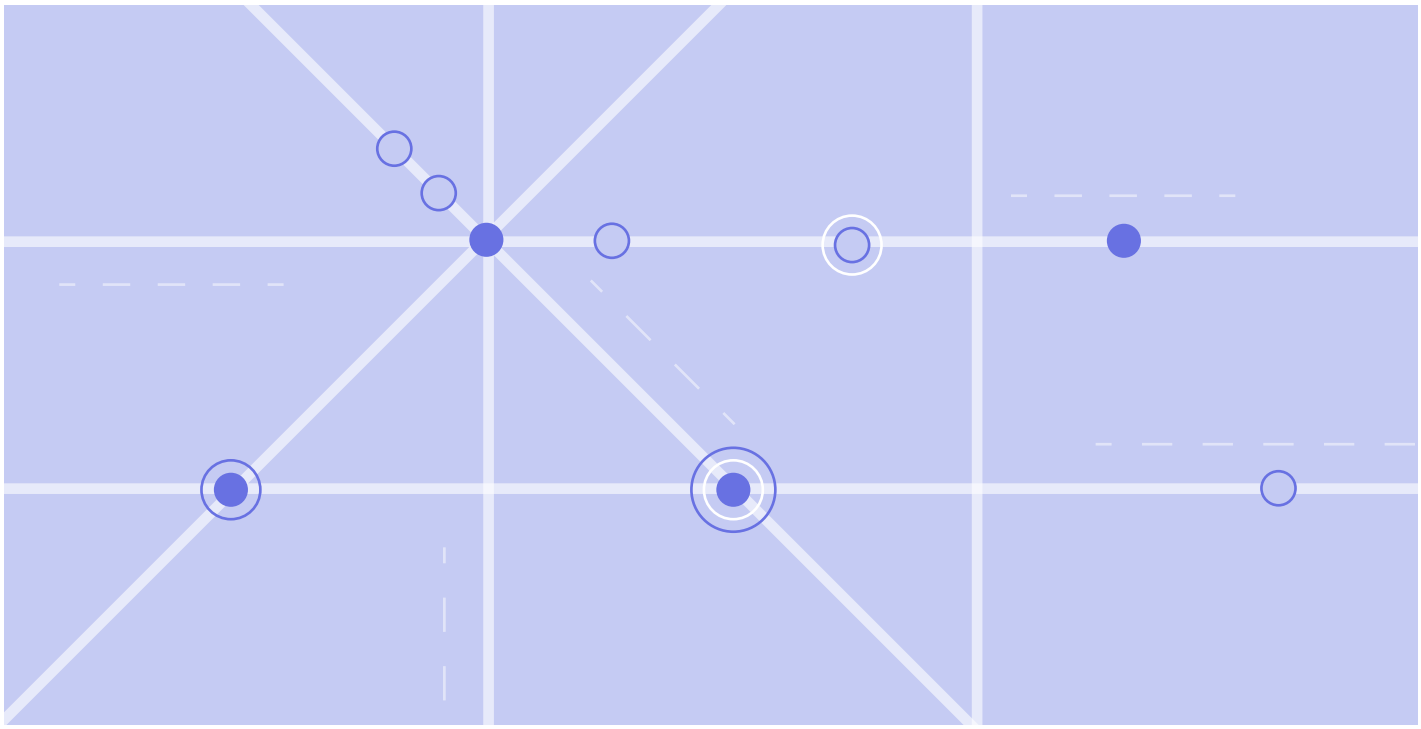
Reducing waste – By automating previously mundane, repetitive functions such as AP invoicing, a financial automation platform reduces the amount of time that teams spend on them. In addition, time lost due to poor workflow, as employees face chokepoints in productivity, is eliminated through workflow management and the automation of real-time financial workflows.

Better accuracy – One of the primary goals of digitizing is improving accuracy, and automation enhances accuracy in several ways: through timely information, by eliminating human error, and through unifying data. Because data is collected and can be shared in real time, and from across business units, it provides a more accurate snapshot of what's really occurring, improving forecasting, and helping organizations move to emerging reporting models.

Speeding decision-making – By providing a more complete and real-time view of company financials — and ultimately company health — decision making can be sped up, allowing construction companies to make the real-time pivots that may be necessary to respond to market shifts or changes. Not only does such speedier decision making lead to better business outcomes, but it also results in improved employee, vendor, and client relationships by increasing transparency and trust.

From a company culture perspective, because automation helps eliminate the manual work of data entry and collection, it improves employee satisfaction and can act as a recruitment tool in an increasingly lean employment market. A new generation of prospective employees increasingly expects digital tools that make their jobs easier and often may not be satisfied with hours of simple data entry.

As well, if 2023 heightens ongoing concerns about the state of work, and of the company in general, readily available data can help assuage concerns. And the ability to plan effectively is fundamental to establishing trust in the business, smartly expanding into markets that make sense, retreating from underperforming areas, and ensuring company stability and sustainable profits.



CHAPTER FOUR:

Briq's role in the construction industry's digital transformation

"Data means nothing if it's not acted on, and those that do are quickly gaining a competitive advantage."

While a financial automation platform can be an important step in making greater use of the organization's data, it's fair to say that not all financial automation systems are equal for construction companies.

Briq is a financial automation platform designed exclusively for the construction industry. As such, its focus is on the many singular nuances that construction businesses have around financial systems and operations.

As part of that, Briq recognizes how unique each construction company is, and how that uniqueness is part of how the company wins and retains business. While many software systems force organizations to adopt new processes and approaches, Briq is customized to the workflow and processes that organizations already know work for them. Of course, as efficiencies are gained and companies adopt new processes, Briq evolves alongside them.

Briq uses bots, AI-based algorithms, to collect data across all an organization's disparate software systems, capturing and drawing together information from across the organization and creating a single source of truth for its users. Importantly, it does this in real-time, so the information decision-makers have at their fingertips is timely and complete.

Briq gives the different business units at the organization the ability to collaborate in real-time, in the same language. The result is that teams are more agile and ready to react to change, but also are more engaged and satisfied with their jobs and recognize their role as part of the company's ongoing success.

Construction organizations have made great strides in digitization and technology use. The next step in many of their evolutions is to take greater advantage of the growing wealth of data they now have access to, ensuring that it is connected, accurate, and able to be acted on fast. Data means nothing if it's not acted on, and those that do are quickly gaining a competitive advantage.

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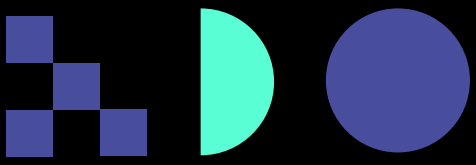

Briq is a financial automation platform that enables construction companies to grow their business. Briq automates financial workflows by connecting the people, processes, and systems that contractors use to run their business. By empowering contractors to make better business decisions, hundreds of companies rely on Briq to manage their budget, forecast, and spend.

Founded in 2018, Briq operates as a distributed workforce with Briqsters working from various locations around the world. Learn more at **briq.com**