



Construction Technology: How It Helps Save Time and Money



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Introduction

The world is revolving around technology. However, being traditionally slow in adoption, the construction industry is still lagging behind others around the globe. Despite knowing that construction technology can increase efficiency, improve the health and safety of workers, and reduce the overall cost of construction projects, construction businesses show resistance when it comes to technology adoption.

According to a KPMG survey conducted in 2018, more than 50% of construction industry respondents said their organization isn't having any digital transformation mission or strategy. 36% of respondents even said their company does not have a chief digital officer or someone who can lead the technology adoption for the organization.

Having seen these statistics, there is no doubt why productivity within the construction sector has remained flat for years. This gap in productivity costs the global economy \$1.6 Trillion annually. The number is huge and lack of productivity not just harms the economy but also the profit margins of individual businesses.

On the other hand, during 2018, the US private industries registered around 4780 on-job fatalities out of which 21% were from the construction industry alone leading to skills and labor shortage in the market.

These problems often result in cost and time overruns in construction projects and the only solution is technology. Businesses in the construction field can use a wide range of technologies to find areas where they lack, to focus on reducing delays and increasing productivity.

For example, they may adopt better processes to communicate and collaborate on job sites, reassess their design processes and solve labor shortages that often slow projects down. The right use of several technological solutions can affect many aspects of a construction project in different ways.





Health and Safety Issues

Construction workers are just 6% of the total U.S. labor force. However, 20% of workers' deaths in the USA are in the construction industry. Still, in many cases, construction businesses think of health and safety as just a legal requirement that requires spending money without any returns.

However, this mindset can result in many complications for a business, leading to a loss of time and money. A quick look at the cost of health and safety rule violations shows that a healthy and safe workplace can be a profit-making machine too.

The OSHA and U.S. Department of Labor have been saying it for quite a long time — attention to the health and safety of construction employees can affect your business in terms of revenue and growth. But, if you overlook these issues, they will seriously affect your bottom line.

As per OSHA, organizations around the U.S. spend around \$170 Billion every year on business-related diseases and injuries.

Isn't it a huge number? Now think about the immediate expenses related to work-related diseases and injuries. In addition to the fact that companies pay workers' clinical costs, they also pay to hire temporary workers while injured ones are absent from work. If they never return to work, the organizations need to go through a hiring process from scratch - a time-consuming and costly alternative.

Also, a business with poor safety records may build a poor public persona and miss out on many projects to more safety-conscious organizations. Subcontractors with high EMR ratings are usually not allowed to bid for certain projects. So, poor safety measures often means wasting money and time in the construction industry.

The investment in health and safety surely costs money in the short run but helps you save lives and increase revenue in the long run.

How Construction Technology Helps Improve Safety?

Workplace safety in the construction industry has changed a lot from wearing hard hats and safety glasses to construction technology being used in different ways.

It is making workers safe while on the job. From providing them with wearables for reducing the chances of accidents to using drones for monitoring work sites for safety, construction technology is acting as a boon for businesses.

This in turn leads to fewer injuries and expenditures. No doubt why VC investment in construction technology startups outpaced the overall VC industry in 2019, with clear indications for continued momentum.

Let's have a look at technologies that can help ensure safety in a construction business.

Drones

Monitoring safety on construction sites was never easy before devices like CCTV cameras and drones. These devices can take millions of photographs in random views to monitor and keep a check on safety protocols implemented by the site manager. The collected data from these images can then be analyzed using technologies like artificial intelligence to find risks and warn workers about any potential danger. Also, these images can be used to identify unsafe working conditions and find individuals who need specialized training to ensure safety best practices.

Virtual Reality

VR simulators are used widely to train surgeons, pilots, and soldiers. Similarly, they can be used by construction businesses to train workers for many tasks like operating cranes, doing welding, and managing excavators. Construction equipment operator and safety training are two main areas where VR could make its impact in the near future and construction firms or contractors should adopt this technology to ensure safety and save millions of dollars spent every year in paying for injured worker's insurance.

Site Sensors

Site sensors can be used across a construction site to keep track of things like dust particulates, temperature, noise levels, and volatile organic compounds to help restrict exposure to workers. The sensors should be placed all through the construction site to notify workers instantly when they are in a danger zone from passable exposure levels. Information from the sensors is gathered and can be monitored to lessen the exposure levels to ensure safety compliance with OSHA guidelines.



Wearable Devices

Wearables are another successful technology that can help prevent mishaps in the construction industry. A wearable is any security clothing or device that helps protect workers and keep them safe by monitoring their health conditions. A wearable can either be a smartwatch that keeps a track of a worker's heartbeat, blood, and sugar levels or a smart vest.

Wearables can also be hats that trap solar energy to control the safety features implanted within a worker's clothing. Using sensors and GPS gadgets, wearables make it simpler to find workers in case of a mishap and to send essential information in real-time.

Measure Actual Job Costs

Before you jump on to the bidding process, make sure you are well aware of the costs that a project could involve. Since it is not just about calculating material price and total job hours, make sure you have a well-defined list of cost metrics such as burden rates, fringe costs, insurance, training, vacation, overtime, profit sharing, and more.

Having access to these numbers and statistics will help you understand the estimates and bids with more precision. Also, you must have a clear idea of equipment costs involves including the purchase price, maintenance, insurance, interest, and gas. This will help you learn what amount should be charged on an hourly basis when you are using equipment on the job.



The Productivity Gap

Time is money. And this saying proves true regardless of the industry you are talking about. The construction industry is known for its poor productivity which is why 90% of construction projects never complete on time, resulting in fewer profit margins and revenue.

Less Productivity = More Time Spent on Projects = Fewer Profits

Almost every sector in the market has managed to increase its production rate by a considerable percentage in the last two decades. But, surprisingly, construction isn't one of those and still lacks when it comes to efficiency. It is sad to mention, but construction productivity decreased over this period of time.

According to a report by McKinsey, improving construction productivity could save around \$1 trillion per year. Therefore, it is time for the construction industry to adopt technology and overcome this lag in productivity which can save time as well as money spent on a construction project otherwise.

OSHA predicts that construction firms save \$4 to \$6 for every \$1 invested in safety programs.

How Construction Technology Helps Solve Productivity Issues?

AI & Machine Learning

Artificial Intelligence is an emerging technology having its applications in almost all industries. It can help improve worker's productivity in construction by reducing the amount of time wasted on the site to find materials, retrieve tools, and the types of equipment to perform specific tasks.

Businesses can install sensors on equipment and material to track how everything is moving to perform tasks.



Once these sensors collect enough information, AI can monitor how workers interact with the construction site to suggest solutions for better organization and placement of tools to make them more accessible and reduce the time spent.

AI can also be used to monitor the progress of a job site with actionable data collected in real-time to improve productivity. Rovers and autonomous drones have HD cameras to click pictures and scan the job site with precision and accuracy.

It can then utilize those scans to compare your construction schedules, 3D drawings, BIM models to find the quality and progress of the work being done each day. This progress can then be compared against your construction schedule to find out if your work is falling behind.

Building Information Modeling (BIM)

BIM is a digital representation of the physical and functional characteristics of a built asset. A BIM model has information about almost everything from design, logistics, maintenance, schedules, construction, budgets, and much more.

When construction businesses embark on their journey to digitalization, an increase in productivity is the first metric they consider when measuring their ROI and BIM helps them achieve this goal. Basically, it helps improve productivity through its ability to:

- Find errors in the early stages
- Reduce rework
- Minimize project management
- Improve quality
- Reduce costs

BIM's ability to boost productivity has made it a popular technology and it is widely used all around the world for delivering mega-building projects. The construction industry of the UK is one of the most digitized industries in the world and in April 2016, the UK government mandated BIM for all public projects.

The construction industry of the UK is one of the most digitized industries in the world and in April 2016, the UK government mandated BIM for all public projects. After this initiative, reports show that 20% of the industry has adopted it successfully and got a 12% increase since 2017. In the USA, BIM isn't mandated in all states, but it likely to grow significantly.

Save Time with Software and Mobile Technology

To improve the productivity of your construction business, there are many software and mobile apps that can help you streamline your operations. From preconstruction to field reporting and delivery, there is a software solution for everything to help you improve productivity. Most of them are cloud-based to help you access all the data and communicate in real-time.

Robust software solutions designed specifically for the construction industry like ProjectPro help businesses streamline their processes by providing better insights into resource requirements, allocation, and overall project cost. Such software provides a better and smarter way to increase the productivity of construction businesses.

Using these solutions, businesses can also automatically organize important documents and save many hours per year that goes into data entry. With centralized data, intelligent transaction processing, and robust reporting & analytical capabilities, you can reduce the time it takes to access meaningful data crucial to make informed business decisions.

Skill and Labor Shortages

The shortage of skilled workers is one of the biggest problems for the construction sector all around the globe. If we believe numbers, 80% of construction firms in the USA faced difficulty hiring craft workers in 2018.

Due to the great recession of 2008, the construction industry lost around 2 Million workers and many of them never returned to work. Also, due to less awareness in Millennials about the benefits of working in the construction industry, businesses find it hard to attract booming talent.



This shortage has resulted in significant delays, cost overruns, and longer project lifecycles. Also, with experienced people retiring, companies are now forced to hire less qualified people, leading to more safety issues and accidents.

However, with the usage of technology construction firms can solve this problem and save time as well as money, while at the same time, making a career in construction look more appealing to the younger generation.

How Construction Technology Can Help?

Autonomous Construction Vehicles

Businesses can now use self-driving trucks and other vehicles that can replace humans for performing certain tasks. These vehicles use technologies like 3D construction site models and GPS to find their way and complete the given task.

Technology has also replaced humans with drones to help in tasks like surveying large construction sites and capturing images that site managers can analyze to monitor the progress of the work. In a 2020 survey by AGC of America, it was found that around 32% of surveyed firms depend on autonomous equipment like drones and robots to fulfill the shortage of labor.

Attract New Talent

Millennials perceive construction jobs as dull and dangerous. The utilization of digital technologies like VR, AI, and IoT will make this sector attractive to the younger generation. Also, the industry will benefit from the youth's knowledge about these cutting-edge technologies.

Why Technology Adoption Lags in Construction?

Even when technology can solve almost all problems of the construction industry, its adoption is very slow. In a McKinsey report, when respondents were asked why their construction company's digital adoption is too slow, more than half of respondents said tech enhancements are never a top business priority.

This means the construction industry is still distracted by other priorities. In many cases, the tech adoption challenges remain limited resources - budget, time, and people.

Low-Profit Margins: Construction technology implementation requires up-front investment. But, due to the low-profit margins of the construction businesses, contractors hesitate to invest and end up taking the traditional route. They don't often see the long-term impact of this investment in saving their time as well as money.

Tech is Overwhelming: Several construction businesses find it hard to decide where they should invest. Due to the number of options available, they find the situation confusing and end up never adding value to their operations. Moreover, they find it hard to overcome organizational challenges. The construction industry is resistant to changes and they doubt whether their workers would adopt the tech or not.

No Tech Expertise: Finding the right tech and implementing it on work sites requires time and resources. Many businesses don't have tech specialists and find it hard to hire someone from outside who can analyze the operations and find technologies that can meet their needs.

Compatibility: The construction industry contends with traditional tools and processes that they have come to depend on for decades. With the addition of new tech tools, compatibility with these traditional tools becomes a problem.

The Crux

Technology can help construction businesses tackle their major challenges. It can help them create a safer work environment, increase productivity, and accountability, which can result in millions of dollars saved per year.

With the utilization of software in construction, businesses can automate several project management tasks saving a lot of time and money. However, it is crucial for businesses to overcome the challenges that come with technology adoption. The successfully implemented technology and software can make all the difference.



About ProjectPro

Based on Microsoft Dynamics 365 Business Central, ProjectPro is accounting software for construction companies, contractors, and sub-contractors. It can help construction firms manage resources for labor, streamline business processes, control costs, and save time, resulting in improved profit margins and increased productivity. It also provides intelligent transaction processing, integrated data, and robust capabilities in developing analytical reports. Doesn't matter you plan to grow your revenue, deliver quality projects, capture business opportunities, or want to do it all, ProjectPro can be your one-stop solution to design and achieve your business goals.

Sources of eBook


Mckinsey, AGC of America, OSHA, IJMT, KPMG

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