EBOOK

Six Simple Ways to Improve Construction Project Quality

PROCORE®

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Quality Performance and Repeat Business

Time, cost, and quality are frequently regarded as the three basic requirements of a successful construction project—with industry clients only truly satisfied if their project achieves a good balance of all three.

However, the construction industry has significant room for improvement on all three counts, with some sectors performing particularly poorly. Glenigan, BRE, the Construction Industry Training Board and Construction Excellence in the UK, suggest that around a third of projects annually fail to be delivered on time or on budget. Drawing on data for projects completed in 2017, the KPIs show that only 63% of the projects were on time or better and 66% of projects were on cost or better.

Client satisfaction with the finished product, however, was high, with 87% rating their overall satisfaction at eight out of ten or higher. When asked about the condition of their facilities with respect to defects, 82% of clients rated their projects eight out of ten or better.

PROJECT TIMELINE AND COSTS

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BETTER

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COMPLETED
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OR BETTER
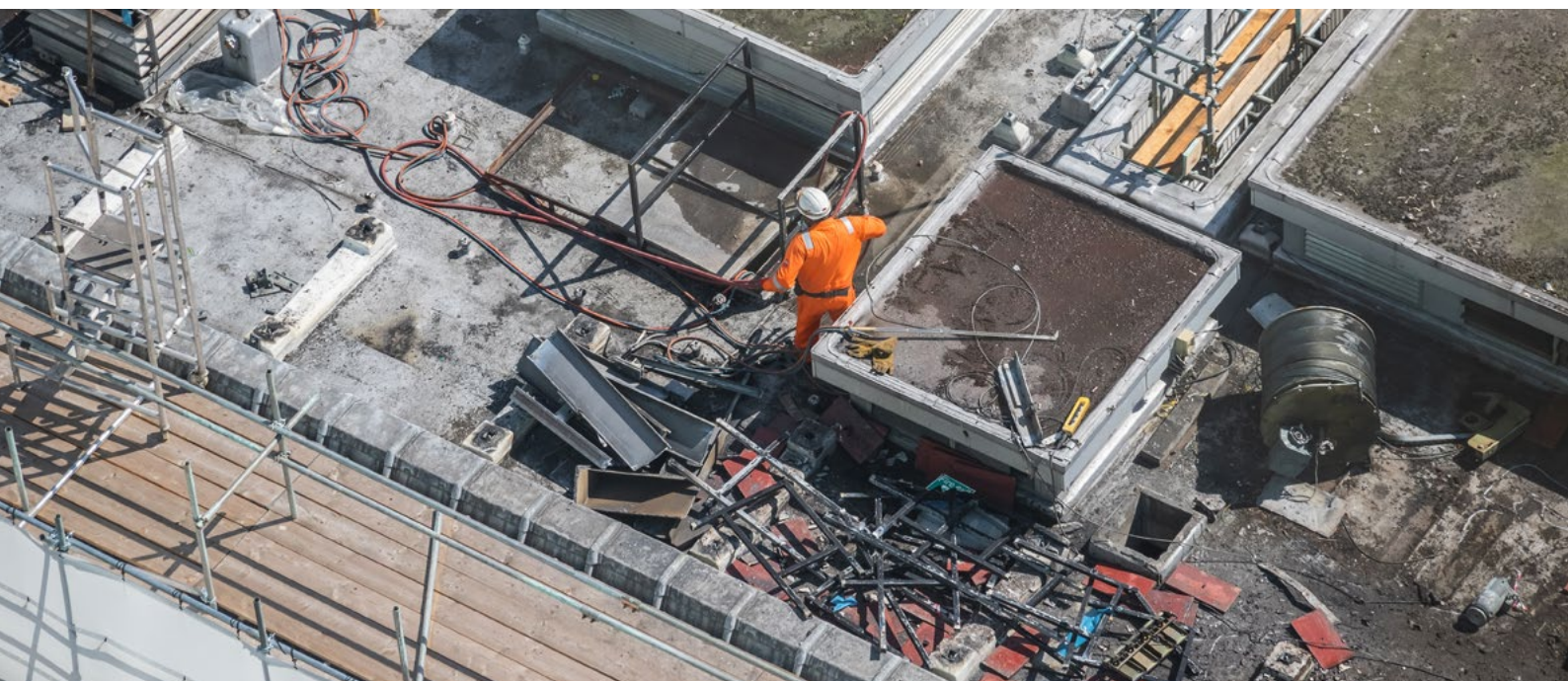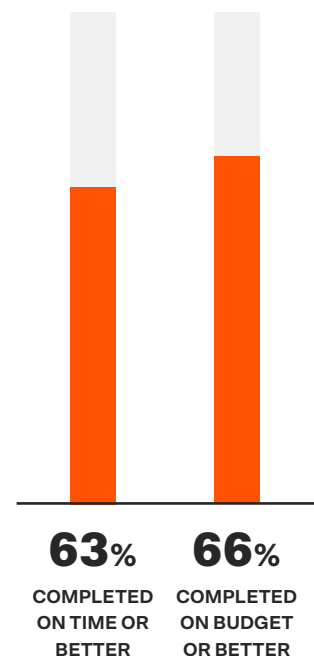
Achieving quality standards, arguably, will have the longest-standing impact on clients', owner-operators', and occupiers' perceptions. When project handover is a distant memory and budget forecasts have almost been forgotten, asset owners and operators will be reminded almost daily about the workmanship that went into their facility. A building that is pleasant to occupy, which meets all the demands set out in the original brief, and is cost-effective to operate and maintain will often be a testament to the skills, professionalism, and attention to detail of the multi-disciplinary, multi-company team involved in its conception, planning, design, construction, commissioning, and handover.

As discerning owners become more demanding about whole-life value, delivery teams' abilities to achieve constant levels of high quality will be critical to their companies' reputations and their future profitability.

This is partly a reflection of the value of winning repeat business from customers—an industry rule of thumb suggests it costs five times as much to attract a new customer as to keep an existing one.

Moreover, particularly in the social media age, and in an industry that places high importance on track record, strong recommendations from existing customers can be persuasive in new customers choosing the same suppliers to work on their projects.

— 02

The Technological Transformation of Quality Management
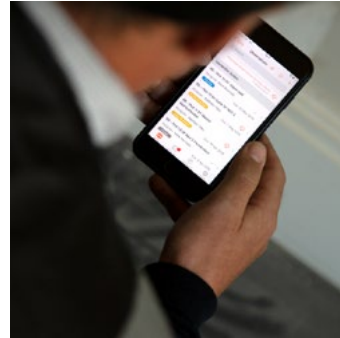
Social media and mobile devices are two of a host of developments that have changed construction project delivery over the past 20 years. While initially slow to follow other industry sectors during the Third Industrial Revolution—The Digital Age of the late 20th century—the construction sector has now embarked on what is sometimes described as a digital transformation.

Other technological developments include:

+ Cloud computing

+ GPS

+ Building Information Modelling (BIM)

+ New reality capture and visualisation tools, including laser scanning and photogrammetry – both static and drone-based

+ Virtual and Augmented Reality (VR and AR)

+ Web-connected sensors (the 'Internet of Things')

+ Data analytics, Artificial Intelligence (AI) and Machine Learning (ML) tools

Construction management technology providers are at the heart of these changes, capitalising upon the near-universal adoption of mobile devices and using cloud-technologies to dramatically improve quality management and other site-based processes. In less than a generation, the construction project site has changed from being a technological desert to a place where just about every worker has high-powered information and communication technologies at their fingertips. Some of these developments are yet to be widely deployed but will have a profound impact as they add to new quality management capture, analysis, and prediction capabilities.

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How Mobile Construction Management Software is Improving Contractors' Quality Delivery

When delivering a construction project, information and communication technology makes a critical contribution to the quality of the finished asset and client satisfaction. This is where company-wide adoption of a construction management software platform can really make a difference, nurturing a culture of quality across the business so that it isn't just focused on defects but on maximising quality from the outset. From the initial planning, design, and specification of materials and products, right through delivery and handover to the owner-operator, every member of a project team plays a part in delivering the client's desired quality outcome.

Mobile construction quality management tools have been in development almost since construction workers first had access to mobile devices. However, the advent of smartphones and tablets has been transformational. As adoption has grown and as devices have become more sophisticated—higher resolution cameras, added GPS capabilities, improved connectivity, etc.—so too, has the sophistication of the construction applications accessible via mobile devices.

One of the keys to successfully enabling better quality management with technology is not to add complexity to the process. Another is to ensure that quality management, and the technology supporting its delivery, is a central component of, and fundamentally integrated into, project delivery processes.

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Six Vital Elements of Better Quality Control

In an ideal world, every construction project would be completed right the first time. However, most projects are complex, multi-disciplinary, multi-company endeavours facing daily changes. To help teams manage this volatility, collaborative construction management platforms provide an at-a-glance view of what's changed and what responses are needed. Using such tools, individual firms—and their teams—can apply a consistent and methodical approach to quality control, regardless of the construction methods deployed. We suggest there are six elements to successful quality control (QC) regime:

1. The quality plan

On construction projects, quality control ensures materials, products, and services comply with industry standards and customer requirements. Usually, technical specifications define these deliverables and how they are to be correctly created and completed, and a project-specific quality plan defines processes covering inspection and verification of approved work, along with a notification, rectification, further inspection, and sign-off of any work that was defective. The quality plan is something to be shared across the project, from clients and designers, through contractors and subcontractors to individual workers; when all project participants understand what the goal is, they are better able to get it right the first time. The plan may also need to be periodically reviewed as a project progresses, while some lessons learned may also need to be captured so that errors are not repeated on future projects.

2. The inspection plan

A comprehensive, consistent, and methodical approach to inspection processes help ensures tasks are completed according to standards and specifications. Project-specific inspection plans detail what needs to be inspected, when, and by whom. As well as inspection by

supervisors and managers, many activities and outputs may also be subject to third-party inspection. Creating and monitoring such plans provides assurance that inspections have been undertaken and completed.

3. Inspection checklists

Checklists are vital for most inspections, ensuring all critical items are covered and verified and will need to be specific to the types of work and to the project. However, they also need to do more than simply list what needs to be inspected; they need to guide the inspector on the criteria for acceptability and approval. Again, sharing these in advance with other project participants can be a powerful aid in achieving compliance. Once teams know how their work will be evaluated, they will work towards ensuring their output successfully meets the specified objectives.

4. Defects resolution process

When inspections highlight deficiencies, a defined process needs to ensure that these are rectified and can then be re-inspected and signed-off. Using mobile technologies allows details of defects to be captured photographically with accompanying textual description and the exact location of the fault, along with the date and time of the inspection and the identity of the person reporting the issue. Formal notification of the defect to the company responsible for that work then follows; the recipient can then assign someone to fix the defect, and once that work has been undertaken, notify the inspector so that it can be re-inspected and, assuming it is now compliant, the issue can then be marked as approved and closed.

5. Quality reporting

While in some cases spreadsheets are still used to record quality control programmes, mobile and cloud-based quality management systems make it easier to manage both the day-to-day inspection processes and summary reporting of the project's quality performance. Checklist and defect reports can be aggregated into dashboard views that can be shared by project participants, while also allowing authorised users to drill down into

the details. Such business intelligence can provide actionable insights—it might identify work teams and suppliers delivering consistently high quality or indicate areas where additional information or closer supervision might be necessary to avoid future issues, for example.

6. Continuous quality improvement

A well-structured and accurately managed quality control process can be invaluable to firms regularly undertaking similar work––whether as clients, designers, contractors, subcontractors, suppliers, or inspectors. Quality plans, inspection plans, checklists, and processes may need to be modified and expanded to include new issues, while corresponding changes may also be needed to designs, specifications, and working methods to avoid issues recurring in future projects.

Creating plans, organising inspection schedules, devising checklists, and managing inspection documentation and associated correspondence is demanding business-critical work, but cloud-based QC systems have made the process simpler, more efficient, and more powerful. Giving individuals and project teams access to real-time data on both single issues and on quality trends across the project highlights how they can contribute to delivering their client's desired outcomes. The same cloud-based platforms may also be key to delivering projects on time and on budget, but the quality outcome will be the one with the longest impact for those occupying and using the finished built asset.

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