

CONSTRUCTION PROJECT DELIVERY

USING COLLABORATION, COMMUNICATION,
AND DATA PRACTICES FOR IMPACTFUL
PROJECT DEVELOPMENT



QUANTITY SURVEYING
PROJECT MANAGEMENT

PROJECT MANAGEMENT TRENDS IN CONSTRUCTION PROJECT DELIVERY

Irrespective to the current contracting models in the construction sector, a successful project can only be achieved through effective project management. The process involves careful planning, monitoring of progress communication, and collaboration among all stakeholders and team members.

Communication is essential at every stage of the project from setting expectations, to building timelines, ensuring protocols are correctly aligned, monitoring budgets, and assuring proper safety measures are developed and adhered to. Yet, the construction industry is notoriously adversarial and slow to adopt innovative practices which enhance communication and collaboration. While traditional Lump Sum or re-measurable contracts are currently used in Oman, we are beginning to see the slow uptake of Design and Build (D&B), Public Private Partnerships (PPP), and, hopefully, a more futuristic procurement route, such as Integrated Project Delivery (IPD), for enhancing the project development process.

What follows is a high-level snapshot of these three Project Management Trends, breaking down the benefits, purpose, and additional considerations for each of these project delivery solutions.





DESIGN AND BUILD (D&B)

In its most simple terms, Design and Build (D&B) is a procurement route where a single contractor is awarded the design, or completion of the design, followed by supporting the construction of the works. This is in direct opposition to a traditional contract, where the client selects consultants to complete the design, and then an additional contractor is awarded the construction of the works post-design.

ADVANTAGES OF D&B

- **Timeline Streamlined:** One of the biggest advantages of D&B relates to streamlining the timeline as it allows the design and construction process to overlap, reducing the overall project delivery time.
- **Single Point:** D&B offers the client a single point of responsibility once the contract has been awarded. This allows for earlier engagement of the contractor and design team in the design process, ensuring greater organization, efficiency, and streamlined processes.
- **Cost:** This typically allows the client greater control as the contractor takes on responsibility for both the design and construction of the project at a pre-agreed price. This increases accountability for the D&B contractor as they take on more financial risk. While this may be reflected in the initial contractor price, the overall cost savings is reduced due to streamlining and transparent cost controls in place.
- **Design Team:** In an effort to maintain continuity between pre- and post-tender design works, the design team may work under the contractor to improve the quality of the project. This ensures consistency in quality while placing sole responsibility for the design and building of the project on the contractor.

CONSIDERATIONS FOR D&B

- **Potential for Compromised Quality**
As with any solution, there are always areas for potential risk that must be considered. While D&B offers opportunity for improved quality, a contractor may choose to exploit certain Specifications in favour of the financially cheapest route forward. To counter this, the project's requirements must provide clarity for integrity of Specifications, ensuring quality isn't compromised. As such, D&B does not typically suit bespoke type projects.
- **Tendering Clarity**
With a lack of design clarity when tendering the project, the client may have to pay a higher contractor fee as the contractor is taking on a higher level of risk in the tendering process. For companies in Oman to achieve more competitive pricing, they will need to join forces to offer collaborative and comprehensive D&B services.



PROJECT MANAGEMENT IN OMAN'S CONSTRUCTION INDUSTRY

New contractual solutions are actively being used in many international jurisdictions. Even though these solutions are being used today, only by changing the industry-wide low-price mindset to a value-added mindset will clients see the real value of a delivery method such as D&B, PPP, or IPD. We must understand that the current practice of shifting risk to the supply chain is not sustainable, but if risk within the project can be removed/minimized and budget is allotted for innovation, prices associated with project management trends will eventually come down.

As IPD, PPP and D&B gain traction on the market, the construction sector will learn more about the benefits and shortcomings, particularly in relation to adapting to Oman's construction opportunities. When considering your next development project, we recommend that you ask yourself the following:

- **Are you data ready?** Do you have the knowledge/skills for capturing, filtering, and using your data effectively?
- **Do you have a clear data strategy?** How are you going to capture your data and then learn from it?
- **Are your teams skilled in the soft skills of project management?** Do you have the right people on your team in terms of skills for data analysis, relationship building, and project management?

At MEC we have experienced Project and Commercial Managers who can contribute to the development and implementation of various contractual systems coupled with internationally developed soft skills to enhance the potential for project success.

To discuss your next project, visit www.majaneng.com or contact Kevin Ellis (k.ellis@majaneng.com), Michael Robertson (m.robertson@majaneng.com), or Peter White (p.white@majaneng.com).

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PUBLIC PRIVATE PARTNERSHIPS (PPP)

Public Private Partnerships (PPP) are exactly that – where the public and private sector join forces to offer public owners a robust project delivery method. PPPs are often used in transport infrastructure projects, such as highways, airports, railroads, bridges, and tunnels. Additional projects that benefit from a PPP delivery method include municipal and environmental infrastructure (e.g. water and wastewater facilities), and public service accommodations such as school buildings, sports facilities, prisons, and entertainment complexes.

Private Partner Responsibilities

The private partner typically participates with:

- Designing,
- Completing,
- Implementing, and
- Funding the project.

Public Partner Responsibilities

The public partner typically participates with:

- Defining compliance and project objectives, and
- Monitoring project to ensure compliance and objects are met.

Both partners distribute the risks between them according to the individual abilities to assess, control, and proactively manage them.

CONSIDERATIONS FOR PPP

While PPPs add immense value, there are a number of factors for consideration due to the intricacies of party involvement. In Oman, the following three considerations are crucial for integrating PPP here: financing, bonding, and access to talent.

FINANCING

As PPP projects are often among the largest public projects in terms of contract value, they carry a hefty cost. However, as they become more common, average contract values should decrease. Typically, the private sector provides financing for the projects, requiring payments from the public sector over the project's lifetime.

Due to the complexities, PPP projects benefit from access to in-house financing expertise and relationships, which often lower the cost of raising capital necessary for PPP projects. The owner and financier of the project often successfully shift all risk associated with the project's execution down the levels, so many contractors who would be able to perform the work are justifiably scared away due to lack of unquantifiable, yet increased risk, with minimal opportunities to mitigate it.



With this, PPP projects do not need be awarded to the lowest bidder. Through an RFP, where price is only one factor to consider, PPP projects are awarded on additional objective criteria and leave a great deal of discretion with the owner to make a decision. Oman will have to consider if the procurement procedures in Oman can successfully deal with the fact that the lowest bidder may not be awarded the PPP project.

BONDING

The majority of PPP projects require bonding by the contractor. With this, even global contractors are needing to form joint ventures or PPP projects to spread the bonding and indemnity obligation across several contractors. In Oman, local contractors should look for ways to get a slice of the pie with this partnership delivery method, coming together to introduce successful delivery methods further into the market.

ACCESS TO TALENT

Many PPP projects utilize the D&B delivery method, offering differing degrees of involvement by the project owner and consulting designer. The downfall is that while D&B is a natural fit for PPP, only a handful of firms in Oman can design the D&B delivery mechanism. With narrow delivery time windows - often 18 months or less - partnering with competitors for on-time and on-budget designs is the reality for many national design firms. In looking at access to talent alone, regional design firms may find themselves lacking the resources to serve as a prime designer.

As PPP deliveries continue to increase in Oman, there is opportunity for Omani design companies to lead a series of consolidations aimed at creating new entities capable of competing for major PPP projects. Will state and local governments take more aggressive action to mandate the use of local contractors in the execution of major projects, increasing the involvement of Omani design companies?



INTEGRATED PROJECT DELIVERY (IPD)

Integrated Project Delivery (IPD) is focused on optimizing efficiency by having all project members consider implications of the overall project, not just their individual portion. Formed by a single, multi-party agreement, IPD uses a risk/reward model while guaranteeing costs and improving liability across the team. This proactive approach requires collaboration between all parties and participants, sharing knowledge and expertise to achieve improved costs, optimal scheduling, and enhanced overall project quality. The use of technology and data collection, such as Building Information Modelling (BIM) and Computer-Aided Design (CAD) software, allow for better accuracy in initial scope development, improve waste reduction in the construction process, and create greater productivity due to the transparency and collaborative abilities. In fact, a study completed by McGraw Hill Construction noted that 35-50% of Architects/Contractors indicated that IPD is the best system to improve communication, process efficiency, and productivity.

IPD removes the silos seen in more traditional construction delivery approaches, with four main areas of focus for collaboration:

- **Conceptualization:** Collaboration between all key project participants is essential here as this is where all parties assemble to analyse all potential issues, relying on each other expertise to guide the project conceptualization process.
- **Design:** All evaluations are integrated into the main project's goals, along with considerations for optimizing costs while reducing waste. To ensure alignment in design deliver targets, co-location is often a necessary element for success. This may look like a collaborative project-specific site office for key participants to increase transparency in the hopes of reducing design iterations. The goal is to achieve both cost and constructability targets.
- **Implementation:** Using computer-modelling software, all data gathered and input during the design phase is used to predict the project's performance and outcome.
- **Construction and Warranty:** When all other phases are performed properly, the construction and warranty become a breeze, resulting in minimal delays, wastes, and scheduling issues. However, this can only happen if careful planning and collaboration are followed at every step.

Advantages for IPD

- Optimizes value while incentivising cost-reduction,
- Reduces waste while maximizing efficiency,
- Promotes creative solutions through collaboration,
- Fosters team spirit and a more enjoyable work environment, and
- Discourages escalation of disputes through greater communication and transparency.

Considerations for IPD

- Owner surrenders portion of design input and measure of control,
- Finding the right mix of team members is crucial for project success,
- Project team must set realistic targets and budgets from outset of project,
- Potential to deviate from the owner's initial vision without a compliance consultant, and
- Longer front-end process to arrive at agreed 'expected' and 'target' parameters.



GROWING TRENDS FOR PROJECT MANAGEMENT

As these new contractual relationships continue to develop and expand, we see a number of growing trends within the Project Management field that will help, particularly in relation to software, automation, AI, and data use.

PROJECT MANAGEMENT SOFTWARE

Project Management (PM) software is continually improving, particularly with specialized programs to suit different jobs from designing a building to running a construction site. This software focuses on improving transparency, accountability, and efficiency. With the ability to store all documents in one location, all parties – owners, contractors, and subcontractors – benefit through timely access to items, including timelines to ensure ease of payment upon project completion.

AUTOMATION AND ARTIFICIAL INTELLIGENCE

Artificial Intelligence (AI) is propelling our global society into a digital revolution. With digital products and services, AI algorithms allow companies to tailor products and services in real-time to suit current marketplace conditions. Using AI, companies are better able to automate tasks, such as scheduling and data visualization.

With the ability to capture facts, analyse data, and automate a number of items, Project Managers are able to foster better relationships and be more effective with negotiating. In other words, as AI grows, Project Managers can focus on the crucial soft skills required, such as empathy, listening, and tact. Ironically, by implementing automation projects will have improved interpersonal skills and effective human-to-human relationships.

GREATER FOCUS ON DATA

Collected data has the ability to create smarter projects, improving estimates, planning, and project forecasting. However, this will require Project Managers to step into a data analysis role from time to time in order to make sound project decisions. As data capture is quickly becoming the core for future success in the construction industry, businesses can shift their decisions from reactive to predictive, giving them a strategic edge to outpace their competition.

Data related to engineering and construction projects currently exists across a multitude of sources, such as enterprise resource planning (ERP) systems. Companies must create a framework for collecting and analysing this data to provide insights for more impactful business decisions. This will see a shift in the labour force towards mathematicians, statisticians, and data analysts, over and above traditional construction roles.

In addition, a data and analytics strategy has the ability to improve delivery of smart buildings and cities by identifying and addressing diminishing margins, provide insights into errors and solutions for future projects, and effectively manage an increase in project size and/or complexity. This data-driven approach allows companies to make smarter business decisions, source quality materials, identify optimal project locations, and work through questions related to differing work scenarios.

As with other industries, data is a gold-mine of value-added knowledge for clients. The construction industry must invest in data and analytics to keep up with the digital era and use this information to their advantage.