

LEARNING THROUGH FAILURE: THE CHALLENGE OF LEAN PROJECT DELIVERY FROM THE CONTRACTOR'S PERSPECTIVE IN PERU

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ABSTRACT

Collaborative agreements are fairly recent and started as a customer need to find a new form of contractual agreement that foster collaboration between parties. The basic requirements are a trustworthy and knowledgeable client, an experienced team, and a contract that promotes collaboration. The construction industry in Peru has used traditional project delivery systems such as Design-Bid-Build, Design-Build, and occasionally Construction Management at Risk – always pursuing the lowest cost for an average design. In the pursuit of offering the optimal cost for a better design, the proposal to implement an Integrated Project Delivery (IPD) was put forward by the general contractor rather than by the customer – in contrast to the Sutter Health experience. The challenge of applying IPD as a contractor's initiative increases due to a resistance to change, fear, the unawareness of middle managers, flawed bonus schemes, and late involvement in the design phase, among others. Many efforts have been made to use IPD, however we have not yet considered whether the Peruvian construction industry is ready for such a disruptive delivery system or if IPD has to be adapted to our reality. This paper aims to explain the successes and failures in the pursuit of an IPD in Peru and concludes with lessons learned and guidelines for further investigations to explore IPD applications in Peru.

KEYWORDS

Integrated Project Delivery, IPD, Collaborative Agreement, Target Cost, Project Delivery System

INTRODUCTION

Collaborative agreements are relatively new and started in earnest in 2004 in California. These agreements seek to align the objectives of the parties under a system where there is no risk transfer, or rather it is shared among all parties. The basic necessities are a trustworthy and knowledgeable client, an experienced team, and a contract that promotes collaboration. (Lichtig 2010)

The birth of collaborative contracts in the US occurred in a context in which the owner of Sutter Health found himself in a difficult situation, needing to invest a lot of money to upgrade his hospitals in a short period of time. Never before had he

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managed to complete a project portfolio of such magnitude, which motivated him to seek an innovative solution. Although the benefits of IPD have been demonstrated on numerous occasions and every day there are more projects using collaborative contracts, we must recognize that the need arose out of a customer need (AIA 2012). And it was precisely this customer need that began searching for a team of experienced consultants to consult on it, and later for an architect and experienced contractor that were not afraid to work under an unknown but innovative scheme. Although the collaborative model has been available in the market for several years, cases in South America and especially in Peru are scarce, if not nonexistent. There are cases in Brazil on Target Value Design but, still, we don't really find documented cases that can serve as a reference for our case, hence the decision to apply the existing model without considering the differences in maturity and knowledge of the stakeholders.

ANTECEDENTS

The construction industry in Peru is characterized by mainly applying three project delivery methods: design-bid-build, design-build, and project management at risk. In all three models there is a key figure—the supervisor—who advises the owner and attempts to help him in defining the project, then in the conceptual design, and then between the final design and the realization of the project documents (Figure 1). Finally, the Supervisor handles the bidding and then performs the construction supervision. While this figure is very similar to a Construction Manager, in reality there are some differences, especially in the construction stage where his work is more fiduciary than executive. The Supervisor is key to the process as he is the only one who speaks, in full confidence, on behalf of the owner. Other parties, such as the manufacturer, designer, consultant, and subcontractors do not have the same degree of confidence, which results in a strained relationship during the project implementation.

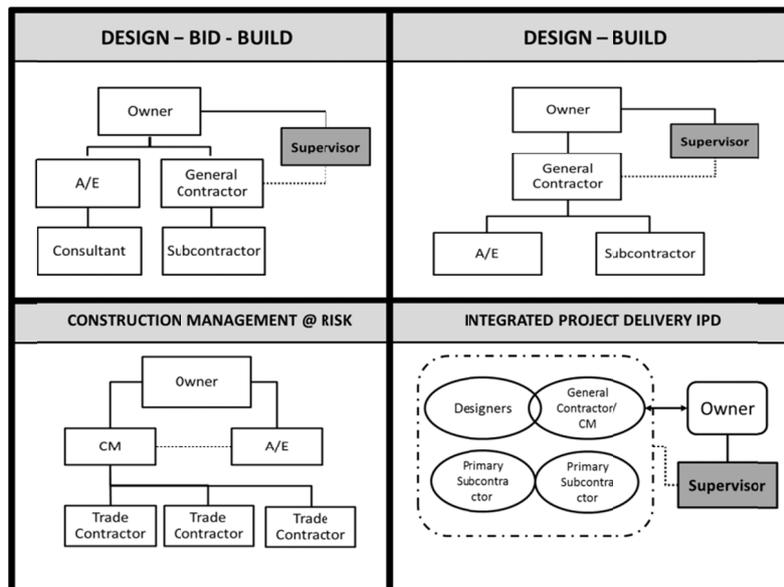


Figure 1 Project Organization and Delivery Methods

Collaborative agreements involve three key players: the owner, the architect, and the contractor. Whereas the architect specializes in architectural design and principal coordinator of engineering, the owner is the one responsible for establishing the initial amount of construction and guarantees the financing for the implementation of the project and the contractor is ultimately the one who has the experience at the construction stage and whose contribution is valuable for constructability issues and cost estimation.

There is a strong belief in the industry that the best cost is achieved through competition; this is partly true when we have a defined project, where there are no changes during implementation and during the bidding process, and contractors compete for the lowest cost – some even succumbing to reckless deals. This situation of course is unrealistic, since no project is quite like this scenario and changes in construction are an inherent part of the process; there is no perfect project and it is the work of the project team to respond quickly to changes that arise.

It is inaccurately assumed that, during the implementation, more revenue will be made to offset the initial offer and deliver a profit at the end of the project. This has happened in recent years in Peru, partly because irresponsible competition has led companies to bid on jobs with margins well below average, but it is clearly an unsustainable situation and one that does not promote the continuous improvement of construction - the central principle of Lean philosophy.

THE CONSTRUCTION SITUATION IN PERU

Historically, the construction industry in Peru has been based on mistrust between parties – a product of a culture that does not have ethics or honesty as core values. Despite this, in recent years, there has been a steady growth in the construction sector, with growth rates of around 15% per year (Figure 2). The sectors that have increased the most are real estate, retail, and offices, among others, where forecasts are very optimistic for the coming years.

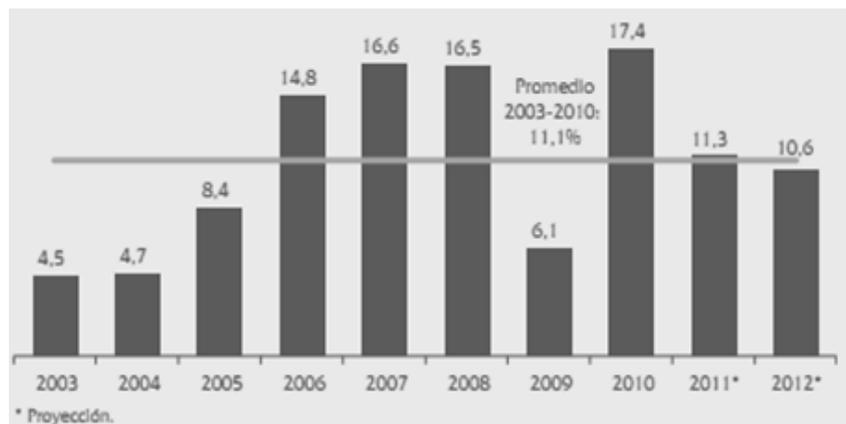


Figure 2 Growth of the Construction Industry in Peru (INEI 2013)

This rapid growth is being threatened by multiple factors such as the shortage of qualified personnel and the informal nature and corruption of some construction companies. These factors have proven to be obstacles to improving safety, quality, and productivity of construction in recent years. Productivity in Peru has been

reviewed in detail by Ghio (2001) and Morales and Galiano (2006), who found productivity rates of the order of 28% and 30% respectively. As we see, these productivity levels are of some concern because we are missing a huge opportunity to capitalize on this growth while the rates of productivity are very low.

Other problems within the industry are increasingly demanding construction deadlines, further which need to be accepted by contractors out of fear of losing the opportunity to run the project. The design stage is becoming shorter and less participatory, erroneously believing that enough knowledge and expertise have been achieved to allow for these deadlines, when in reality we see projects with many errors where the work in the field is constantly being detained. The competition to be the first, especially in the retail sector, makes projects have increasingly tighter deadlines and demanding budgets, while the specifications and drawings have become less detailed, transforming almost into Fast-track projects. The business has become increasingly competitive, and for this reason, along with the degree of the specialization of contractors, has led to unfair competition and an unusual amount of empowerment for the owner, which creates a false sense of security that makes him reluctant to seek new ways of project delivery.

PROPOSAL

At Graña y Montero, in early 2013, we had the opportunity to participate in some conferences and listen to the advice of external consultants that showed us the benefits of IPD. Moreover, being a company characterized by innovation and applying the Lean philosophy in its processes, we went in search of clients to begin this process as soon as possible. The benefits and experiences of IPD were identified and shown to these clients, followed by advanced negotiations with a private client (see Figure 3) of the retail sector that had defined objectives and needed, above all, agility and flexibility during the construction phase.

The project profile is shown in Figure 3, where we clearly see that the expectations were above all in terms of cost and time. The technical complexity of the project did not pose any major challenges in its implementation and risk management was going to be managed through incentives and share profits or losses. Finally, the market position was not a priority for the client, since he was not the end user.

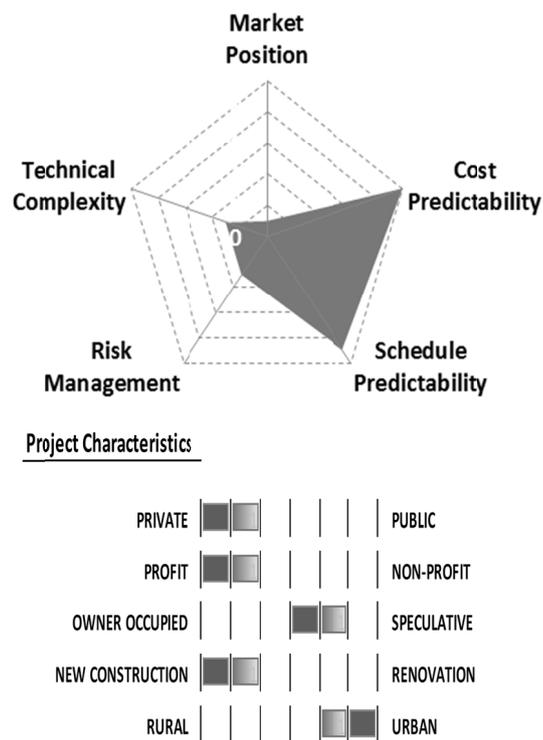


Figure 3 Project Profile and Characteristics

The bases for developing the IPD version of the contract were Sutter Health contract and AIA guide to IPD (AIA 2007). Even though, there are currently much simpler and less complicated IPD contracts that could have being used as a starting point, both were our best reference at that moment. The proposal was to create a management team that would make strategic decisions and an executive team that would make decisions at the project level. In both cases, the decisions would be shared and consensus would be sought. The risk sharing scheme, after setting the Target Price, would have a cap on the savings generated by cost overruns and equipment of 20% in both cases. The purpose of this cap was to guarantee to the owner that the Target Price was challenging, when in fact all that was to be achieved was to limit any savings because, once passing that percentage, the team would have no incentive to keep looking for savings.

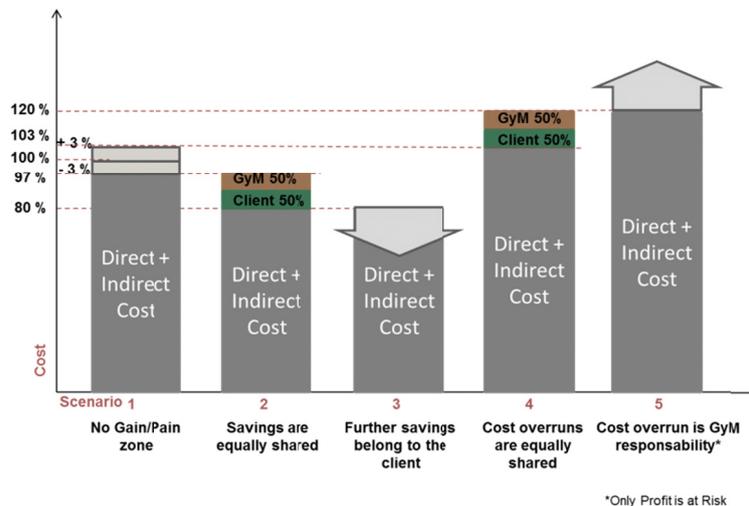


Figure 4 Risk/Reward Scheme

As they moved forward with the negotiations, fears surrounded the decision-making of the IPD team, falsely believing that this would affect the final result and generate conflicts at runtime. Finally, we realized that the owner was becoming more skeptical, that he was actually looking for advice on the construction stage, and that he remained solely responsible for the decision making, regardless of the impact on the others involved. In the next section, we will review the key factors of a collaborative contract and analyze each in the context of negotiations:

- **Multiple Contract:** this was the main problem in this case because having a contractual relationship that provides a framework for collaborative work upsets the owner and there is a fear that the project costs will rise uncontrollably and deadlines will linger indefinitely – realities that are the opposite results that IPD contracts have.
- **Targets developed together:** setting goals of cost, quality, delivery, performance, are not so valued by customers. Cost and time are the only indicators that matter, but even if they are probably the most important (although the quality and safety are not being taken into consideration), they are not the only things that matter and the evaluation of a project should be comprehensive.
- **Share gains or losses:** in order to explain the system, the discussion needs to focus on setting the target price, which leads us from the conversation at hand briefly to the related topic of a design-bid-build diagram. There is a fear of leaving money behind on the table if we set a target that is too high. The owner does not have the confidence to reveal his investment amount, which is the product of a business plan, and only tells the team that he has a certain amount of money to move the project forward. It is virtually impossible for the owner to take the first step in disclosing the amount of investment, which brings us back to negotiating the best price for an uncertain design.

The basis of sharing risks and profits is not in the substance, because who earns more at the end of the project is not a product of establishing amounts at

risk well, it is the result of collaboration and more precisely it is the foundation of this scheme. In reality, what is being looked for is a mechanism to facilitate the transfer of funds from one team member to another. In other words, what is being looked for is a way to optimize the whole and not the part (or when each pursues his own gains that results in inefficiencies that could easily have been avoided if there was only one team). Finally, what does it matter if one subcontractor was much more efficient than the other when the final cost of both is greater than what would have been achieved if both were equally efficient?

- Collaborative decision making: the owner was very clear when he said he needed to take control of the decision-making process. In conclusion, why seek collaborative decision making? To meet the cost target and the project objectives, decision making should favor the project and not be to the detriment of the owner. Nobody on the team is going to oppose a change that benefits everyone, and if the proposed amendment is necessary but affects any objective either in terms of cost or time, then the owner will have to be principled enough to generate an order changes that modifies the target. This brings us back to some of the criteria recommended by Lichtig (2010) for the delivery of collaborative projects, which is to choose the right team members.

LESSONS LEARNED

The first lesson is that we must insist on engaging the team as soon as possible in the design, and if the design is at a later stage, then it should be clear that the potential to generate savings is considerably reduced. According to Lichtig (2010), it is ideal to involve the team before the 25% of the design has been completed. It is important to change the focus to be on finishing the design and then making the budget. The goal should be to find the best design for a defined budget and not the best cost for a defined design. At the time, we were not clear on the importance of this and never insisted on working a Target Value Design, when this is finally what allowed us to generate savings.

Secondly, one of the biggest challenges was to convince the owners of the benefits of IPD. Most people fail to understand the background, or the rationale for IPD. In part, this is because they lack an experienced internal team that is sophisticated enough in design and construction processes to understand the differences or to manage a new process that they themselves do not understand. If you really want to implement IPD's in Peru, we must work to identify opportunities, coordinate with technical committees, and work with institutions representing the AEC industry – finding potential customers in their own environments and approach them in their own language. We strive for knowledgeable clients who can appreciate the benefits in both the short and medium terms and work one-on-one, face-to-face, assuring that they share their experiences with owners from other countries that have experienced the benefits of IPD and also share their doubts, fears, and expectations. If we create more dialogue with industry owners, it is more likely that we will achieve successful IPD projects.

Another lesson learned was directly reaching clients, leaving out one of the key stakeholders – the Supervisor. We know the importance of monitoring for the

customer and therefore we work side by side with them to seek a collaborative plan that is inclusive, taking advantage of its role and educating them on the benefits. One of the key factors of IPD is the transparency of information and it is what we should show by sharing our experiences and information in order to convince them that it is the only sustainable way to deliver projects.

The contract used for the IPD proposal prescribed a lot of processes for the Team that would have been difficult to implement during the life of the project. There are other contracts that are less than half the number of pages that could provide a cleaner approach and would have ensured a good and solid base contract to inspire the teams and provide clear responsibilities. We strongly believe that the success of a good implementation of IPD will start on a solid legal contract that is equitable and provides a clear path for all the stakeholders.

Finally, it is important to develop options for the clients; if we want to implement IPD's in Peru, we have to advance undeterred. Initially, we wanted to create a "true IPD" where we formed both one management and one executive team where all stakeholders were empowered, however we only discouraged potential clients who were interested in collaborative agreements, but only in small doses. Here, we needed to develop a kind of IPD-ish contract, which served as our first experience, where we could apply concepts such as cost, collaborative sharing, etc., but without having a legal bond that, in the end, would deter the customer.

CONCLUSIONS

IPD can be seen in Peru as a novel methodology to deliver projects. What we believe is very important is that we truly understand the risk/rewards scheme for a potential success of the implementation. It's key that before embarking on an IPD project, we truly take the time to develop the Business Model associated with IPD. By Business Model we refer to the legal, financial and relationship structure that will serve its purpose and benefit the project. It's very important that a solid contract tailored and tropicalized be developed so a good strategy is implemented. The training of this initiative is key, but it needs to have solid background and applicability in the location where the projects will be constructed.

The first experience of IPD in Peru was not successful, although we did learn many lessons that are being implemented for the benefit of our clients and the construction industry. The priority is to start a pilot project that would allow us to break with the status quo; we believe that we have learned a lot in the past year about IPD, but until we implement it, we cannot enjoy its benefits or develop more knowledge on the subject. Finally, as we move forward in the implementation of an IPD project, we must emphasize that none of the lessons learned will be useful if we do not work on trust based relationships with our customers.

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