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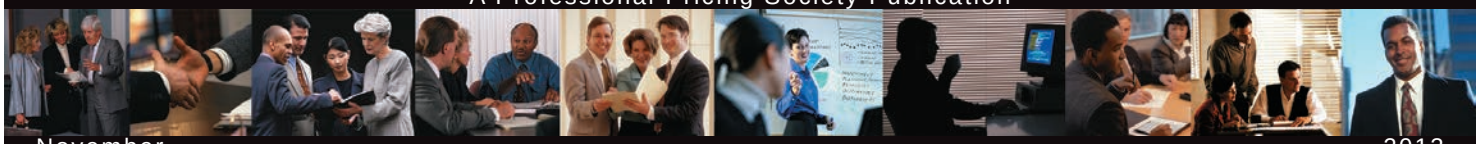

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Pricing Complex Projects – Is It Really All About the Cost?

Special qualifications are required for project as well as pricing managers of complex projects because special demands arise, such as cost determination, scope optimization and risk analysis. In this article, the author examines the difficulties in pricing large, long-term and complex projects and offers suggested strategies for pricers in these situations. Reno Koepp serves as strategic consultant concentrating on pre-sales at PROS Germany GmbH. He can be reached at rkoepp@pros.com.

In project management there's a concept called "complex project management" that provides guidelines and directions for project managers who coordinate "complex projects." These projects are uncharacteristic and you can't take a cookie-cutter approach when dealing with the issues that arise along the way, including pricing and costs.

Special qualifications are required for project as well as pricing managers of complex projects because special demands arise. I'll discuss some of the issues and solutions in this article.

What about quoting and pricing complex projects?

Pricing managers who work in conjunction with project managers on complex projects draw largely from their rich fund of experience. Sure, there are a plethora of publications on the topic of pricing; however, complex projects have special characteristics that are worthwhile to examine more closely. It's certainly not the same challenge for a construction company to price a €100M construction project, as compared with an aftermarket parts company that prices a brake disc that is sold a million times.

In pricing projects, customers often ask for support to properly price complex projects. But what defines a "complex" project? Here are a few examples that illustrate the characteristics of complex projects:

- An *oil and gas project* that involves building huge industrial plants with turbines, compressors, pumps, etc., to process oil and gas from the ground.
- A *construction project* that involves building a high-rise or a new highway.
- An *outside plant project* that buries

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thousands of miles fiber-optic cable.
- A *turnkey project* in the telecommunications industry in which the supplier not only delivers the equipment, but also plans and builds the radio stations.

What do these projects have in common?

- They all are *big investments*, with a very high project price. In the construction industry, a single miscalculated project could mean insolvency for the entire company.
- These projects usually last a *very long time* – sometimes several years from start to finish.
- Offers are often created through a tender, a price bid for a construction project. *Many assumptions about the scope, timing and design of the solution* are taken during this phase.
- Articles or objects are *configured for a product or solution* by a product or solution expert. Often, the concept of the product only exists as a logical category. This product may possibly consist of hundreds of items such as software and hardware.
- *The responsibility and accountability* for such complex projects are spread over many areas. Who is ultimately responsible if the project goes wrong?
- The *large number of subcontractors and suppliers* in complex projects should not be underestimated. Sometimes you have to deal with many different countries and cultures as well, and the differences are not negligible.
- One of the most important factors, however, is the *uncertainty* in the planning, costs and implementation of complex projects. Mastering the uncertainty is ultimately the decisive factor for success and failure.

Why do many complex projects go wrong?

The practice shows that complex projects are calculable, predictable and can be successfully carried out. In all sectors that perform complex projects, there are necessary qualifications, including experienced project and pricing managers who can successfully plan, calculate and in the end implement a project. Successful companies have the appropriate organizational structures, processes, know-how and supporting tools for this purpose. In my opinion, the construction industry is leading the pack. This sector deploys a variety of widely available tools and systems for planning and budgeting of complex projects. However, most of the time these offers are limited to budget, time and cost planning.

Here are a few examples of complex projects that have room for improvement:

- *A telecom equipment manufacturer* suffered substantial losses on a turnkey project in Asia. Various factors influenced the negative result, including cultural differences, unreliability of local subcontractors, poor project management, and far too aggressive costs and prices.

- While many construction projects are completed on time and within a predetermined budget, there are a few notable cases that don't. For example *the new construction of the Berlin airport or the Hamburg Opera*. In 2004, private developers estimated the cost of the Hamburg Opera to be approximately € 100 million. It ended up costing five-times that amount, more than €500 million.

A 2010 U.K. survey of 250 project organizations in the *construction business*, found five inhibiting factors that lead to cost and time overrun in construction projects:

1. Design changes
2. Risks/uncertainties
3. Inaccurate evaluation of project duration
4. Complexity
5. Non-performance of subcontractors

So what's the solution? In construction, project control is a key element to the success of a project. Methods have been developed, such as Gantt bar charts, Critical Path Method and many others to manage the project control.

Other influencing factors and complexities

The examples above represent only the tip of the iceberg for complex projects. The following characteristics affect not only project management and implementation, but also pricing:

- The **sheer number of products and services** for a project. Thousands of items for a project are not uncommon.
- Products are often mistakenly offered that will **reach "end-of-life"** status during the time of implementation. The other extreme represents future products or "roadmap products."
- The products have a dependency on the installed base.
- The potential customer doesn't give the providers enough time to respond to calls for tenders. This leads to more risky assumptions and errors under deadlines.
- The pressure to succeed is large. Sales reps want to win deals. A few providers are competing for a few big projects.
- The service portion of complex projects often represents up to 70% of the project scope. The scope of services is very often a "moving target" and may be much more difficult to estimate as compared with products and materials.

When you think of building a wireless network or the construction of an airport, the thought arises in the tendering phase whether this complexity is manageable. It is manageable under certain conditions that have to be created by the providers themselves. Important requirements are:

Scope and scope optimization

The definition of the scope of deliverables and services is the most important prerequisite for a profitable complex project. However, an optimized scope represents just the ticket for playing along. But it does not mean at all that they will successfully complete that game.

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The name of the game is creating an optimal "entry-solution" i.e., to find a possibly cheap **entry-level solution** that leaves enough room for future expansion through which you can make the whole project profitable. This concept is also known as **"Low-Entry and Recovery."**

Challenges in determining the cost base

The subject of "scoping" and the subject to determine the cost baseline are closely connected. This is a complex process that includes many small cogs in the wheel need to be integrated:

- A professional bid management is essential
- An integrated project plan between product side and the various services should be matched
- A large number of subcontractors, suppliers and third parties must be coordinated
- Possible savings through negotiation gains should be included in the cost base
- Very early in the process product gaps and "roadmap products" should be identified
- Future cost savings are important to consider
- The project duration is often decisive for understanding the profitability
- Efficient quoting processes and excellent technical know-how are the lifeblood to successfully pricing complex projects
- Complex projects cannot be conducted without a risk analysis

Challenges in the pricing of complex projects

So far we have discussed the cost determination, scope optimization and risk analysis. So, is it in fact just a matter determining the correct scope and cost to win complex projects? This is certainly not the case. A few examples illustrate this point:

- *Construction companies* are working with blueprints to determine the scope, but also in terms of cost and price determination. Starting from a reference or benchmark price for a similar project or blueprint, the normalized offered price is determined and then adjusted according to the difference in scope.

- *A leading oil and gas company calculates various reference prices:* On the one hand, a similar project is referenced, and then the company tries to normalize the scope to make the offer price comparable to the reference price. A second reference point is a business case for the customer, as in modernization projects. While modernizing outdated turbines and compressors, the value for the customer increases. The customer ultimately can produce more oil and gas. The value of the extra-production is determined. This model is very detailed and can be applied to the different equipment types. In a subsequent ROI analysis, another reference price is determined. Through a smart triangulation, the final offer price is determined.

- *A large telecom equipment manufacturer* determines benchmarks for specific sub-projects, as well as products and services. For example, in a new LTE mobile network, the price for the radio sub-network is carved out, and a price per LTE base station or the price per Mbps (megabits per second) transmission capacity is calculated. This benchmark is again compared with "standardized" reference projects or reference configurations, and the prices obtained for comparable customer projects in the past.

Benchmarking and comparability are the absolute central issue for the pricing manager. The argument is often made that projects are not comparable because no project is alike. The latter is true, but you can compare them anyway at any level of granularity. The pricing manager can compare complete deals with each other or apply specific benchmarks on parts of the offer. He can go down to a level of detail where it might make sense to compare the price of a ton of steel. The important thing is that these benchmarks make sense and are applied uniformly throughout the organization.

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In any case, additional analysis is needed to give a final assessment of an offer. Analyses of margins, discounts, rebates, etc., play an important role. Not only a comparison of the absolute price, but also comparisons of margins, discounts, etc. are desirable. Benchmarks are of central importance in the pricing of complex projects. It is through collecting and analyzing big data that benchmarks can be established.

Summary

The challenges with complex projects aren't just limited to scope and cost of materials, but also pricing. An optimized scope and optimized costs are only the ticket to the game. The pricing manager can make the difference whether you leave the game as a loser or winner.

Best-in-class companies are strategically utilizing their technical products and also pioneering new pricing processes by properly training pricing managers to meet the changing profile and handle complex projects. These companies use innovative methods, pricing tools and big data to be successful in the marketplace and to improve their margins in an increasingly competitive environment, where only a few large complex projects succeed. Potentially, individual projects may be the deciding factor in the success or failure of an entire company. Be sure to stack the odds in your favor by using big data to your project's advantage.