

Process improvement in project expediting: there must be a better way

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Abstract

The development of process improvement approaches for the project expediting function is reported. The current expediting relationship can be quite confrontational and argumentative, loaded with disputes. Expediting failures often result from a mismanagement of expectations and poor communications. These negative implications can contribute to cost overruns and schedule delays. Based on interviews conducted with several professionals within the oil and gas industry, various suggestions are proposed to instill a more cooperative relationship between owner firms and suppliers.

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1. Introduction and literature review

“The performance of large scale projects depends to a major extent on the effectiveness of decision-making in the materials management area”.

Silver [1, p. 94].

As the above quote declares, materials management (also known as procurement and logistics) plays a significant role in the performance of large scale projects. Efficient performance allows one to excel on cost and duration dimensions. Expediting represents an approach for managing the materials used in a given project. Specifically, it monitors the performance of suppliers and sub-contractors so that required products are manufactured to appropriate quality levels, within contractual deadline dates. Therefore, one could postulate that the manner in which the expediting function is executed plays a substantial role in the performance of all types of projects.

This paper examines the nature of project expediting operations, specifically drawing commentary and improvement suggestions from professionals within the oil and gas industry. When undertaking projects, an “owner firm” (such as Husky Oil or Nova) acquires goods from suppliers or obtains the services of sub-contractors. It is claimed, by those interviewed, that the expediting function has become quite confrontational, argumentative and dispute-oriented. We contend that such an approach is dangerous to the performance of all types of projects. Consequently, this paper will discuss a number of process improvement initiatives that can be taken to avoid the inherent problems of expediting, before such difficulties materialize.

The accounts of costly and late projects are abundant. Thompson and Perry [2] examined all projects funded by the World Bank between 1974 and 1988. Of the 1778 projects checked for cost behavior, a full 63% came in over-budget. When the authors analyzed 1627 projects for schedule performance, 86% of them were completed subsequent to predicted completion dates.

Other researchers have suggested process improvement approaches in a variety of project environments. Tabatabai-Gargari and Elzerka [3] discussed process

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improvement in preconstruction activities. They examined computer-aided design and knowledge-based systems for expediting the generation of design alternatives, specifically focusing their work on the construction of mezzanine structures. Previously, the preparation of design quotations was conducted manually, taking about two hours. Now with this user-friendly automated system (the authors claim that salespersons with sparse computer literacy can be trained in a single hour to use the system), quotation time has been sliced to about ten minutes. More accurate cost estimates have also been realized.

Ngee et al. [4] applied process improvement to build, operate and transfer (BOT) project negotiations. In this type of situation, the specific project is transferred to another company at a later stage. The authors determined suitable pricing structures for the financial and contractual parameters associated with these types of contracts. Instead of relying on time-consuming approaches to negotiate pricing structures, the authors developed a multiple regression model using the tariff, concession period, and rate of return as explanatory variables, and internal rate of return as a response variable. In the end, such a method eliminated the consumption of considerable resources (namely time) that had occurred under the previous system.

Cho [5] discussed the conversion of the Bergstrom Air Force Base into a \$600 million, 25-gate civilian airport in Austin, TX. A program management venture was adopted in the project, specifically addressing the project's cleanup and environmental requirements. A rather high degree of project efficiency was attained; indeed, the author noted that this model may help to spur similar conversion efforts.

Wright [6] studied the construction of 32 pre-engineered metal dormitories in 24 sites of the Texas Department of Criminal Justice (TDCJ) prison state system in a six-month period. The projects were handled through a cooperative contracting agreement. This prevented an adversarial relationship from developing between the firms. In particular, the TDCJ facilitated frequent coordination between the various firms, sometimes on an hourly basis. Joint ventures were established, as firms realized that they could accomplish more together than by working as individual companies. A teamwork atmosphere ("if one of us failed, we all failed") prevailed among the firms.

As the above literature illustrates, process improvement is often required to ameliorate the performance of large-scale projects and to mitigate the problems of adversarial relationships. We do note, however, that other industries have recognized that less confrontational processes can lead to enhanced cooperation and results. A discussion of some of these cases will serve to strengthen our argument that improving project expediting leads to better project performance.

Various retail and manufacturing industries have appreciated the benefits of improved supplier-customer relationships. Kinsey [7] addressed the cooperative processes at work in the food industry. The author described the "Wal-Mart way of doing business", a model for improving efficiency and for allowing supply chain partners to combine together in an effort to share consumer sales data and inventory management information. Indeed, the use of Wal-Mart as an appropriate benchmark for assessing cooperative supply chains is well documented. Briggs [8] analyzed Wal-Mart's approach to collaborative planning, forecasting and replenishment (CPFR), a beneficial strategy for dealing with buyer-seller relationships. The company plans to implement such relationships with over 100 of its suppliers.

Frequently, these cooperative processes use electronic data interchange (EDI) as a means to effectively plan these overall operations. Holland et al. [9] offer a thorough analysis of EDI implementation. Using the apparel industry as a case study, Schieier [10] showed that quick-response technologies (like bar-code scanning and EDI) permit a change in retailer/supplier relationships from adversarial conflicts to more cooperative alliances.

Moynihan [11] focused his analysis on the beneficial outcomes of cooperative relationships within the health-care industry. In this particular case, improved interactions occurred between healthcare providers and product suppliers, as well as between providers and payers. In a study of the US automobile industry, Iskandar et al. [12] discovered that managerial pro-activeness, an important component of cooperative supply chains, was the most significant factor in explaining overall success.

This paper is organized as follows. In the next section, we examine the nature of project expediting and describe its current deficiencies. Then, we present some suggestions for improving project expediting. We make special mention of the benefits that could accrue from implementation of these proposals. Concluding remarks are provided in the final section.

2. Nature of project expediting

In the mid-1980s, Silver [1,13,14] conducted a study of logistics issues in the large scale projects of oil and gas companies (the work undertaken by Silver served as the genesis for this current paper). His analysis focused on over a dozen firms (both owner firms and contractor businesses) in the Alberta area of western Canada. When queried regarding the importance of expediting in a project, all firms claimed that its role was significant. It had a substantial impact on project performance. Traditionally, expeditors are those individuals in a company attempting to ensure that items are delivered, or received, on time. In the event of sched-

ule delay, they seek alternative methods of (very quickly) ensuring delivery reliability.

The nature of expediting has become quite argumentative, dispute-oriented and confrontational. To more fully investigate this environment, we conducted interviews with professional expeditors, owner companies and contractors involved in the oil and gas industry. To enhance the credibility of our efforts, we selected particular organizations that were among the industry leaders in oil and gas projects (a brief listing is provided in the Acknowledgment). All interviews were conducted in face-to-face meetings between the author and the industry professionals.

We noted a common belief held within the industry; namely, that a supplier will not be able to produce a particular item within appropriate quality levels on or before a specified delivery date. As a result, owner firms “get on their supplier” from day one. In truth, expediting begins on the initial day of a project!

Another common view realized from our interviews is that a project will *never* be completed on time, given that organizations are far too optimistic. In an effort to obtain important contracts, vendor firms oversell their capabilities. Further, owner firms and suppliers seem to compete in a world of continual bickering. Owner firms claim that suppliers are unreliable; suppliers perceive that the manner in which bids are evaluated contributes to the dispute-oriented process.

Granted, this type of relationship is not assumed to occur in each and every project undertaken in the oil and gas industry. Nonetheless, the fact that it does occur with some regularity is cause for alarm.

A further negative ramification of current expediting operations is the mistrust that can grow between owner and supplier. Rose [15] claimed that there exists an inverse relationship between cost and trust on all types of construction projects. Given that projects in the oil and gas industry are usually quite costly, there seems to be substantial basis for mistrust in this project management relationship.

The negative type of project expediting relationship described above leads to some critical deficiencies. Silver [13] reported that the expediting function can be quite costly. Large sums are spent to guarantee timely project completion. In order to receive required goods, some owner firms may be forced to pay for premium-priced shipping (e.g. air transport, as opposed to truck or rail).

Ironically, excessive expediting may not increase project completion time. If disputes arise, these could drag out the project indefinitely. Other unfavorable aspects include the excessive managerial intervention required to solve disputes. Clearly, if these disputes did not exist, then precious time could be spent in more productive pursuits.

Expediting can cause quality problems. If a particular supplier is not able to meet a schedule and an unresolv-

able dispute entails, an owner firm may be forced to rely on an alternative source. Quality may suffer with the rather short completion deadlines given to the substitute source. Further, this source may produce the required goods on an overtime production basis, thereby increasing overall costs.

Disputes in oil and gas projects, if unresolved, jeopardize the entire project. Consequently, it would be beneficial to all parties involved if one could find ways of overcoming the dispute-oriented nature of project expediting. We discuss some suggestions in the following section.

3. Process improvement suggestions

One clear suggestion arising from our interviews for improving the expediting process is to involve more teamwork in the project. This could involve ameliorated teamwork within, say, the representatives of the owner firm, or between members of the owner and supplier firms. The example of the Texas Department of Critical Justice alluded to earlier offers a prime illustration of the effectiveness of the teamwork concept in a project management environment.

Obviously, instilling teamwork within a project management is not simply a matter of stating, “let’s all work together on this particular aspect of the project”. Truly, it is easier said than done. Moreover, certain behavioral styles on the part of project participants may lead to enhanced growth within the levels of teamwork; on the other hand, there exist traits held by those in a project management situation that may diminish the intensity of teamwork. Using the results of interviews with construction practitioners, Nicolini [16] examined the broad idea of project chemistry. The author suggested a theoretical framework aimed at identifying specific external and project factors critical to teamwork success. In order to test the degree to which influence style, a key behavioral trait, affected project performance, Shim and Lee [17] collected data from 83 ongoing projects in such industries as electronics/telecommunication, chemical, and machinery. They determined that, although different leaders made use of particular influence tactics, the influence styles adopted by project leaders did shape overall performance. In truth, getting supplier and owner firms in the oil and gas industry to participate in a cooperative teamwork relationship has the potential to drastically reduce the number and duration of disputes. For some time, various academic references (e.g. Meredith and Mantel, Jr. [18] and Nicholas [19]) have advocated the use of teamwork in project management. In particular, Nicholas’ reference (p. 201) includes a well-designed representation of project teamwork.

There would appear to be at least three benefits to creating a more cooperative, teamwork-oriented situation in projects. In particular, such an approach would allow problems to be brought out into the open. By involving teamwork on both sides of the project, the notion of “hidden agendas” can be laid to rest. Secondly, teamwork would permit different viewpoints and interests to be taken into consideration. Without a teamwork concept, the dominant player in a particular scenario may be the one to “call the shots”. Teamwork may help to ensure that various issues of multi-faceted problems are considered. Finally, teamwork enables firms to devise an action plan as well as assign tasks and dates for implementation. If firms work in isolation, it can then be quite difficult and time-consuming to assign tasks between them. By remaining in close contact, it is much easier to get the ball rolling through various stages of a project.

A second suggestion for process improvement is to break a project down into easily definable stages. In other words, realistic and meaningful milestones are established for the duration of a project. These milestones have the effect of creating a workable environment within which owners and suppliers can operate. Vague stages result in uncertainty, which is never pleasant from a project standpoint.

Leech and Turner [20] indicate some precautions that need to be taken when setting these milestones for project performance. A breakdown that is not sufficiently detailed results in the obscuring of important activities. The overspending of both time and money may not be pinpointed. This lack of detail will frustrate all efforts to predict and closely monitor project costs and duration. On the other hand, a breakdown that is too detailed is clearly sub-optimal. One may spend precious time and money monitoring short and low-cost activities. In effect, a too-detailed breakdown may not provide valuable information.

Using more concrete terms when establishing project contracts is another approach that may improve project performance and assist the expediting operation. Examples could include establishing clear conditions with respect to what occurs in the event that a party fails to perform as desired (the “price of non-conformance”), providing estimated maximum task durations (so early warning of problems is detected), and supplying clear, detailed performance measures (project deliverables). Individually and collectively, these would have the effect of removing vague items and providing both parties with adequate clarification of project requirements.

Another suggestion for process improvement is to use a “project neutral” in the relationship between owner firm and supplier. Hartman [21] demonstrated that the use of a facilitator or mediator can improve the creation of the contract, thus getting both parties off to a “running start”.

A fifth possible process improvement tactic is to set up a “Pre-Award Meeting” in projects. Specifically, one of the large oil and gas firms we interviewed made use of such a meeting to call together groups of suppliers to examine various details of the particular project. This helped to establish the understandable terms and easily-definable stages that would be necessary to complete the entire project. Any number of qualified firms may be invited to the “Pre-Award Meeting”, although not every one of the firms is guaranteed to win the right to work on the project.

Strategic alliances could be used to avoid the problem of costly time-consuming expediting activities. A representative of one of the firms contacted in our interviews indicated that such alliances can assist in all aspects of a project. Expensive disputes and sub-par performance are avoided since, in a major project, an owner firm can immediately engage with one company rather than spending valuable time meandering through relationships with several companies for extended durations. In essence, the owner and supplier firms are both able to “hit the ground running” in a major project.

Morton [22] advocated the continuous appraisal of a project's development to alleviate expediting complexities. Such appraisal involves communication, coordination, involvement and commitment. In a way, this concept is connected to the teamwork notion illustrated earlier. By actually remaining in close contact with vendors, an owner firm can alert themselves to potential dangers before they occur. Proactive, rather than reactive, pursuits become the rule. In order to ensure an organization of appropriate quality within contractual delivery dates, it may be appropriate for the representatives of an owner firm to physically visit the supplier.

Poor, unreliable suppliers can present a problem. If a certain supplier habitually experiences difficulty in producing items of sufficient quality on time, then other parts of a project may be delayed. This contributes to expediting problems. Obviously, one could improve this process by simply not hiring these “rogue” vendors. However, the implementation of such an approach may not be so straightforward. For example, a construction firm operating in a strategic alliance with an owner firm may feel pressure from the owner firm to include a particular vendor in a project team. If this vendor is somewhat unreliable, then project problems become exacerbated. Further, the desire to have a high local content in certain projects [13] may result in a rogue vendor being selected for a specific part of a project.

Hartman [21] encouraged the implementation of a contractor screening program, a set of criteria by which potential contractors can be evaluated. In fact, one of the companies interviewed for this study has created a Vendor Qualification software program, *VQUAL*, to assist in vendor selection. Nonetheless, the trouble remains that this process of screening vendors may discriminate

against newer suppliers. They may not have had the experience necessary to score highly on the computer programs. Caught in somewhat of a “catch-22” situation, what can be done to assist these new vendors? Possible ideas include allowing such firms to qualify for particular projects involving minimal risk. Then, these suppliers can gain appropriate experience. Where feasible, an additional tactic would be to permit new vendors to work in tandem with a more experienced firm on a large project.

Another method of avoiding rogue vendors would be to adopt a policy currently used by some of the firms contacted in our study. Specifically, these firms created an organizational position known as “Coordinator of Vendor Development”. Such an individual would be charged with the task of developing techniques for qualifying vendors and monitoring their performance.

In summary, the following approaches may be used to improve the expediting process:

- Teamwork.
- Break a project into specific (and useful) milestones.
- Use concrete terms when setting up project contracts.
- Use a “project neutral”.
- Initiate a “Pre-Award Meeting”.
- Implement strategic alliances.
- Continuous appraisal of a project’s development.
- Fail to hire rogue vendors.
- Contractor screening.
- Create a “Coordinator of Vendor Development” position.

It is our claim that successful implementation of these suggestions into the expediting operations of oil and gas companies can lead to substantial benefits. The opportunities exist for “circles of improvement”. As both owner and supplier firms practice these principles, the expediting function would no longer be dispute-oriented and confrontational. As relationships continue to improve and greater planning and foresight are utilized in operations, more time would be available to identify additional cost savings and efficiency opportunities. Thus, process improvement breeds continual improvement.

Managers and employees in both types of firms would no longer be involved in costly disputes.

Improved quality (both in terms of final product and intermediate decision-making) could also result from implementation of these principles. Overall project costs would likely decrease as the number of disputes diminishes.

Another benefit of such process improvement approaches is that they could be applied to other areas in oil and gas projects. Nowhere do we claim that these suggestions can solely be used by the expediting function. Indeed, the same needs for “project neutrals”, continuous appraisal of development, and establishing concrete contract terms exist throughout the entire supply chain. Moreover, such procedures could even be applied *outside* the oil and gas industry altogether (in those industries or situations in which improvement is warranted). Since a considerable number of undertakings in real-world operations can be termed “projects”, the potential arena of application for such suggestions is quite enormous.

4. Concluding remarks

This paper has attempted to provide approaches for improving the process of project expediting, specifically within the oil and gas industry. Potential suggestions focus on the need for expediting to become proactive, not simply the reactive procedure that is often encountered today. Techniques for improving this process go beyond the bounds of the expediting function.

Expediting problems appear to occur due to two main reasons: the mismanagement of expectations and poor communication. Our suggestions address both of these issues. In Fig. 1, we illustrate the alignment of our approaches under either main reason. For example, the proposition that firms set significant milestones in the creation of project contracts would lead to similar expectations on both sides of the owner–supplier relationship. Further, when effective teamwork is involved, the problems of poor communication are alleviated. We feel that using a “project neutral” and initiating

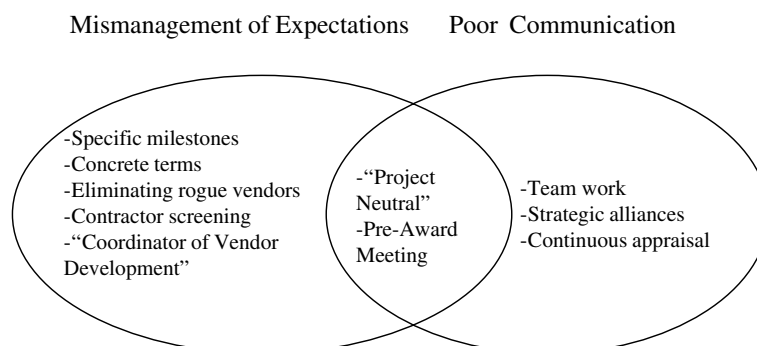


Fig. 1. Process improvement approaches.

Pre-Award meetings link to both causes. Either approach would allow for better communication, as well as an enhanced understanding of overall expectations, between all project parties.

This paper is not suggesting that there be a change in the relationships used in the project environment of oil and gas companies. It is perhaps appropriate that we continue to have owner firms dealing with vendors and various subcontractors. Nonetheless, we suggest that the *process* used to manage the project relationship be altered. The suggestions offered in this paper indeed represent an important change in the mindset of all players in project management.

In terms of future research opportunities, it would be appropriate to apply this process improvement framework in a variety of real-world projects. Specifically, an empirical study could document the quantitative and qualitative benefits realized when various companies create a “Coordinator of Vendor Development” position, break projects into significant milestones, or use “Pre-Award Meetings”. Successful implementation could ideally point the way to additional process improvement methods.

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