# Creating Successful Process Improvement Programs: the Roles of Consultant and Industry

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**Abstract:** Many popular process improvement programs, such as TQM, Six Sigma, and others, fail to achieve the expected results due to reasons that are poorly understood. This study examines the interaction between consultants and industry that contribute to the success and failures of popular process improvement programs. The result is an implementation model that can assist practicing managers in improving the success rate of popular improvement programs.

**Keywords:** Quality Management, Six Sigma, Implementation Model

## I. Introduction

Chances are that your company has gone through a round of popular improvement programs such as Total Quality Management (TQM), Just-In-Time (JIT), Business Process Reengineering (BPR), Lean, Six Sigma, or technology-based programs such as Enterprise Resource Planning (ERP) – without the promised results (i.e. [4]). How is it possible to go through these programs year after year and yet show dismal improvements in performance over the long term? Managers implement these programs because they are in awe of the reported performance improvement. They spend an inordinate amount of time looking for new ideas outside the company because they have insufficient time, resources, or lack confidence in their own managers and workers to solve their internal problems [4] [9].

To implement process improvement programs (hereafter referred to as program(s)), firms often employ consultants to lead the implementation phases [4] [8] [14] [17] [18]. This is necessary because the firms do not have the requisite resources, experience, or knowledge in the beginning to lead the programs [9]. The problem with this approach is that while early successes are achieved, the effects of the consultant-led programs on sustained process improvement are mixed in that they have both positive and negative effects on performance (e.g. [1] [5] [9] [11] [12] [15]. A key difference between firms that sustain improved performance over the long term and those that don't is that successful programs are eventually nurtured by employees in the company rather than led by external consultants [2] [3] [4] [7] [10] [16] [19]. In these cases, nurturing refers to program ownership, leadership, and practice over the long term without the continued presence of external consultants. This does not mean that consultants aren't important to implementing programs. They are extremely important in the beginning to facilitate the transfer of knowledge, which is basic to all successful program implementations [9] [13] [14]. This suggests that consultants are beneficial and perhaps essential in implementing programs, but at some point they may actually harm a firm's efforts to improve performance or sustain a program over the long term [9]. Therefore, it is important for managers to differentiate between the activities of a consultant that provide the greatest benefit to implementing programs and those that inhibit sustainability. Haines and Goodhue articulate a theoretical model for the relationship between consultants and various stakeholders in a single context, using agency theory to partially explain harmful consultant behavior, but they do not describe how the interactions with the stakeholders take place nor separately consider the different entities that exist within each stakeholder organization. In fact, there is a paucity of research describing how detailed interactions occur between a client firm and its consultant that provide a framework to guide managers and researchers in improving the sustainability of programs. The purpose of this study is to use several action research field studies, in various contexts, from the author's own experience to develop a framework to guide managers and researchers in improving the sustainability of improvement programs. In doing so, this contributes to theory by extending current models on consulting, by answering the "How" questions implied in the model, and by developing a new method of classifying problems addressed by the programs that partially explains consultant behavior. This study contributes to practicing managers by developing a framework of program implementation that prevents many of the problems

found in real-world firms that can inhibit the sustainability of the programs.

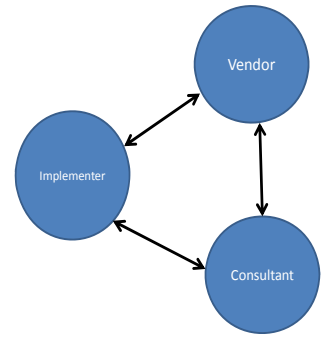
## II. Literature Review

Consultants assume three primary duties when implementing programs. They can act as Project Planner or Manager; as a Mentor or Trainer to workers; and as Technical Specialists in areas such as group or information technology, among others [9] [18]. In doing so, they assist in the knowledge creation process and diffusion throughout an organization, which is essential to successful program implementation. The literature describes the type of knowledge transferred as either autonomous/professional (tacit) knowledge or induced/formal knowledge (education and training) [6] [10] [13].

Studies suggest that both tacit and induced knowledge are required to develop deep problem-solving capabilities and sustain the benefits of improvement programs over the long term [9] [10] [13] [14]. For managers and workers to develop tacit knowledge, consultants must eventually remove themselves from the process and allow the employees to lead the program else it will not be sustained [9].

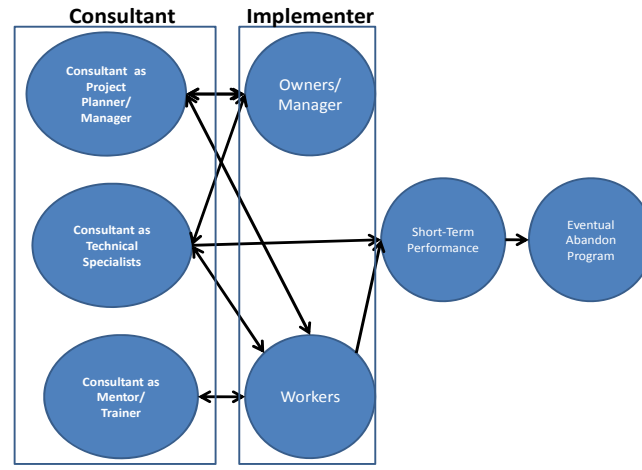
Haines and Goodhue (2003) examine a model that articulates three relationships that exist in consultant-led programs. The relationships in the model occur between players they refer to as the Vendor, Consultant, and Implementer. In the case of technology implementations, the Vendor is the company that invented or owns the program technology, the Implementer is the organization implementing the program, and the Consultant is an aide to the implementation – an agent of the Implementer. Some literature refers to the Implementer as the Client. The model they use is shown below in Figure 1. The arrows represent a bi-directional flow of information between the players that represents the interactions taking place.

**Figure 1 Vendor-Implementer-Consultant Model**




The following Model Figure 2, is an extension of the [9] model with the roles of Consultant and Implementer, and their relationships, presented in greater detail to reflect the roles suggested in the literature. The model reflects the traditional way that program implementations occur, with Project Planner roles interacting with managers and workers; with Technical Specialists roles interacting with managers and workers, and Mentor/Trainer roles interacting with Workers. Technical Specialists can affect performance in two ways, directly by implementing new technologies and indirectly by assisting workers to implement technologies. When Consultants act as Project Planners/Managers or Trainers/Mentors, workers report directly to the Consultants about program issues instead of Managers. The knowledge being shared and diffused by Consultants at this stage is induced knowledge.

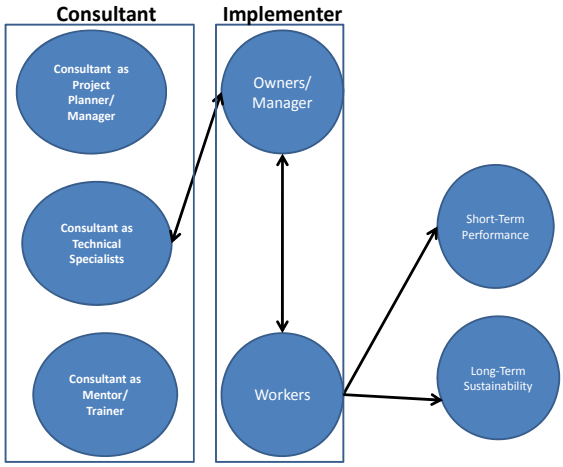
**Figure 2 Traditional Use of Consultants**




The following Figure 3 shows an extension of [9] on how the literature suggests programs create long-term sustainability. The Consultants leave the effort and managers

take over. They interact directly with workers who develop and implement new process improvement initiatives. It is logical to expect managers to call on Consultants for technical advice, and for workers to continue short-term efforts as they build long-term sustainability. In this stage, tacit/professional knowledge is being created and diffused by workers and managers.

**Figure 3 Consultants Leave the Effort to Managers and Workers**




## III. Methodology

The methodology used to collect data is known as Action Research [6]. Action Research refers to a type of case research where the researchers are participants in the research process rather than simple observers as found in traditional case study research. In this case the researchers conducted 12 case studies in diverse industries to develop the implementation model. Unlike analytical and statistical models, action research models are developed through reflection of the researchers and participants in the study as well as external reviewers. Through several iterations, a consensus is reached on the factors in the model as well as their relationships.

## IV. Results

The model shown in Figure 3 was used as a guide through several case studies that resulted in the framework shown in Table 1. The Chakravorty/Hales framework for program implementation is proposed to improve the success rate of popular process improvement programs.

**Table 1 Chakravorty/Hales Framework for Program Implementation**

**Step 1- Initially Use Consultants for Training**

Initially use experts to provide 2 – 3 weeks of training to workers and managers using some formal problem solving technique based on the scientific method, e.g. the DMAIC or PDSA method. At this stage consultants usually prepare cases designed for teaching and guide the participants through one or two easy problems on real production lines. A technique we found useful has five stages, but other techniques also work.

1) *problem identification*
2) *information gathering and analysis*
3) *generating alternative solutions*
4) *implementing the best solution(s)*
5) *follow-up to ensure solution worked*

**Step 2 – Let Managers and Workers Practice Without Excessive Pressure To Perform**

Segregate the consultant from the tactical implementation and allow managers to guide the program for 8-12 weeks. It is important at this stage for companies not to pressure managers or workers to achieve phenomenal results. Doing so will force them to take short cuts to achieve results at any cost rather than learning a new systematic problem solving process. Allow employees to work on relatively easy - moderate problems in their own work-centers during this period. Managers should avoid attacking difficult and complex problems at this stage nor should they involve themselves in every problem a worker is addressing. They should focus on securing the resources for workers to analyze and implement solutions. It is more important that the systematic problem solving program become part of a manager's and worker's daily routine. As employees practice their problem solving skills they gain confidence by improving performance; however, these initial stages are often time consuming and take much longer than a consultant-led process. We find that the employee-led efforts at this stage do not usually equate to large improvements in performance. While consultants can provide guidance to managers during this stage, workers must view the managers as leading the tactical effort.

**Step 3 – Managers Should Increase Involvement and Attack More Difficult Problems**

As easy problems are solved and problem solving becomes somewhat difficult, managers should increase their participation with the workers in the process. At this stage, the time it takes to identify the cause of a problem and its solution greatly increases. Workers exhibit frustration – thus signaling the managers to take a greater leadership role. Managers, who have matured themselves, should begin leading the efforts on more moderate-difficult problems because they probably involve cross-functional solutions, minor process redesigns, and resources that are not available

to the typical worker. Managers should work on problems where they and their workers feel challenged, but not overwhelmed. This stage may take 6 – 8 months before the tools of problem-solving are mastered and confidence is developed in the employees to tackle more difficult problems.

**Step 4 – Reengaging the Consultant**

As the problems increase in difficulty where managers and workers begin to feel overwhelmed, the consultant should again join the tactical effort. If necessary, the consultant may lead the group of managers and workers through a few difficult problems as they gain experience. At this stage we find that the identification and resolution to the most difficult problems almost always require changes to corporate policies (e.g. compensation systems), cross-functional cooperation, or a process reengineering effort. These efforts can take an additional 3 – 6 months. A skilled consultant can be instrumental in training managers and workers in how to achieve consensus with complex decisions and how to suggest corrections to company policies that interfere with process improvement. We find that policy changes usually involve the most senior-level managers in the company – requiring these managers to become actively engaged in the process. Senior management participation in identifying and solving the most difficult problems is often a huge morale booster and can increase probability of success of the program. Unfortunately, we find that many senior managers do not want to engage in problem solving at a tactical level because they do not want to 'own' the effort if it ultimately fails. Consultants can help with recommending policy changes to senior-level mangers because senior managers do not easily accept suggestions from more junior managers or workers.

**Step 5 – Worker Driven Program – Phasing Out the Consultant**

The last stage involves the gradual phasing out of the consultant and managers in day-to-day involvement so that workers can lead the tactical process improvement effort. We find that this transition takes 2 – 3 months to achieve as workers gain confidence in solving increasingly difficult problems. Managers should only get involved in strategic issues or when workers feel overwhelmed.

## V. Implications for Practicing Managers

Many organizations use consultants to implement improvement programs with the objective of remaining competitive. They do so because managers lack the time, resources, or expertise to lead the efforts internally. Depending on the context, consultants can play several roles in these firms that interact with two entities of the organization, namely managers and workers. Consultants are agents of the firm and can be Project Planners/Managers, Technical Specialists, and Trainers/Mentors. The literature suggests that managers should be aware of the roles consultants play in program implementation to encourage positive effects and prevent potentially harmful effects that can occur over the long term. This study finds that in organizations where consultants play all three roles beyond the implementation phase, managers are unable to sustain the benefits of the program over the long term. This occurs because the managers and workers, after receiving induced training, are not given the opportunity to practice leading the efforts internally through Learning By Doing. Thus, they lack the deep problem-solving capabilities that sustain programs long-term. By using consultants through the framework presented in Table 1, managers increase the likelihood that their programs will provide benefits over the long term. In summary, managers should initially use consultants for training, then phase out the consultant and let managers and workers practice program tools without excessive pressure to perform. Next managers should lead the efforts and attempt increasingly difficult problems, and only reengage the consultant for technical advice or on extremely difficult problems – finally phasing out the consultant altogether. This method should allow an organization to develop deep problem-solving capabilities in 18 – 24 months and sustain the effort over the long term.

## VI. Limitations and Directions for Future Research

This study is limited in that the primary models are based on qualitative evidence that was analyzed through the reflections of the researchers. While an external panel provided validity by reviewing the author's findings and models, the authors and panel were involved in the development stages. This creates potential bias which is difficult to overcome in AR, because panel review is the generally accepted method of providing validity to AR research. Another limitation is the sample size. The small sample size of four firms were chosen by convenience and therefore do not represent a cross-section of firms or industries. This means that the models may apply contextually and does not generalize to other program implementations. The active involvement of the researchers in the program could bias the findings because they view the shop floor level – from the experience and perspective of managers, workers, and consultants, which were not subject to objective review. Participant comments and discussions, used as evidence in the models, could contain error in interpretation and transcription into the research logs. Lastly, AR, is primarily exploratory research and therefore any findings and models must be validated through explanatory methods.

Directions for future research include testing the porposed model on a larger sample of firms and in different contexts.

However, eventually a large-scale empirical evaluation through structured interviews and/or surveys will be needed to inform the models and improve generalizability. This research focused on answering the 'how' question between the Consultant and Implementer. Answering the 'how' question for the relationships between the Vendor and Implementer, and the Consultant and Vendor (when the Vendor is an active player or when the Vendor and Consultant are not the same entity) would contribute to the literature.

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