

Benchmarkingto be the Best!

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Benchmarking has been written about in many books by Robert Camp¹, Greg Watson², Michael Spendolini³, McNair and Liebfried⁴ and others. Their writings have covered everything from the definition of benchmarking to the ethics involved and how to make a site visit. In order to gain a full appreciation of the process and use of the "tool" of benchmarking, all these aspects must be understood.

1. Culture Change

At Texas Instruments we've found that to attain world class status in all key processes requires a major cultural change. Most organizations that are truly successful attain world class performance in one key area but find it difficult to achieve that status in all key areas. The secret to the cultural revolution in companies is that each operating group has a clear focus on what it takes to successfully compete in that process...even though it may be an internal process not readily visible to outside customers. Benchmarking serves to be the "reality check" for internal processes. *Doing your best* is no longer good enough. Benchmarking can educate internal teams and mold the ingredients for this cultural revolution.

1.1 Deployment

At Texas Instruments, we have worldwide employment of 58,000 in over 30 countries. Deployment of any policy takes excellent planning and execution. One of the basic building blocks of this culture is the corporate philosophy toward continuous improvement and goal setting. Without these two factors and an aggressive competitive nature, a benchmarking program will not survive. Given these, it is relatively easy to follow the logic path to "How do we compare?" and finally "How do we create a competitive advantage?"

2. Management Support

Our CEO is an active supporter and he published a company wide policy statement requiring benchmarking to be an institutionalized process from the top to the bottom. This statement provides legitimacy across the organization and allows us to participate in any department and any decision making process.

3. Training

To support benchmarking, we designed a comprehensive training program to help deploy process knowledge and provide guidance for benchmarking teams.

3.1 Overview Training

The overview class was designed around benchmarking from a historical perspective with help from The Quality Network, a consultancy established by former Xerox employees. This class serves as an orientation and motivational tool. The course runs for 3-4 hours and involves some fun classroom exercises that generate interest. In this particular class, we have instructed over 1700 employees and approximately 4500 customers and suppliers.

3.2 Business Process Management Training

The second level of training can be traced back to our policy. We want each benchmarking team to fully understand their own process before investigating other companies. This is extremely important because our teams are usually cross functional and there can be a considerable learning experience just to arrive at a common understanding. This Business Process Management class takes one full day and the team produces a "product"...a detailed process map including inputs and outputs at each step and a clearer understanding of customer requirements. Reengineering can occur here as the team sees steps that can be modified, combined or eliminated prior to actual benchmarking.

3.3 Benchmarking Team Training

The third level of training is Benchmarking Team Training in which the team goes through the planning phase of benchmarking and is briefed on ethical and legal concerns as well as data research techniques. From this class, they emerge with a detailed plan for their benchmarking study.

4. Benchmarking Champions Network

This culture change is further supported by our Benchmarking Champions Network that has members in every major group and site. The Champions are responsible to promote and facilitate teams and the process in their area. They identify core processes that need to be benchmarked, act as a resource for teams and follow-up to aid change implementations. We have 124 Champions in our worldwide operations. Communications, a key element in deploying best practices, is accomplished through an on-line database of completed studies and tools to aid facilitation.

5. Benchmarking vs. Reengineering

In the current literature we can become confused about the interaction of some of the change processes. We often hear that reengineering efforts are underway in many companies and even governments. Our belief is that both reengineering and benchmarking are complementary and not in competition. Through reengineering, we use all of our internal brain power to eliminate waste and non-value added operations to increase process efficiency. In benchmarking, we use worldwide brain power to make step function improvements using techniques that have already been perfected. In fact, that's the goal, use everything at your disposal to speed up learning and constructive change!

6. The Benchmarking Process

6.1 Management as a Team Member

One of the most important steps in cultural change is mid manager support for Benchmarking Team objectives and a willingness to implement changes recommended by the team. In order to achieve this support, we have implemented the use of an authorization form that binds management to benchmarking team goals. Gaining mutual agreement on expectations helps prevent downstream misunderstandings. Items covered on this agreement are:

- Team Members
- Scope
- Approximate Completion Date
- Expected Results

This simple contract validates the need for a team study, dedicates resources and creates the boundaries necessary for effective team operation. The team and manager can always review the scope to stay on track.

6.2 Benchmarking Process Steps

The four phases and ten process steps of benchmarking are necessary to obtain full benefit and leverage from a benchmarking study. Some of the steps can be done in parallel to reduce cycle time but they all must be done to gain maximum sustained benefit. (See figure 1)

Step #9 - "Implement specific actions" is the most important step, since, if this is not done, then no benefit will be derived from the study and simply will be reduced to "interesting data."

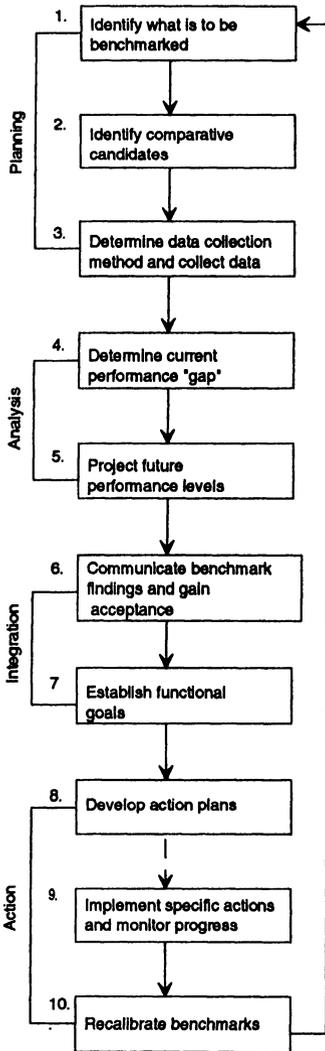


Figure 1.

7. Benchmarking Application Opportunities

7.1 Production Operations

The benchmarking process is particularly useful in production operations that contain readily measurable indices such as:

- Cycle Time
- Defects
- Equipment Capability
- Factory Layout
- Overhead Costs
- Factory Management Levels
- Set up Time

7.2 Administrative Operations

But of equal or greater importance are the administrative processes that lie at the heart of the company:

- Order Entry Time
- New Product Development
- Design Quality
- Accounts Receivable
- On-Time Delivery
- Customer Satisfaction
- Training Programs
- Teaming and Empowerment
- Recognition and Reward

In fact, the white collar administrative practices can yield some of the most outstanding results because many of them have not been subjected to the same engineer - like scrutiny that production processes have historically undergone. Until you have benchmarked your core processes, how do you know if you are competitive?

8. Success Stories

8.1 Printed Wiring Board Assembly

There are a couple of success stories I would like to share with you. The first is a study done in one of our Printed Wiring Board Assembly Shops that originally had been constructed to support one high volume product. As our continuous improvement philosophy became imbedded, the manager of this shop was concerned about the shop's viability when its sole customer product line became obsolete. He commissioned a benchmarking study that surveyed many PWB Assembly Shops in the USA. They looked at all aspects of operations from factory layout to defect levels to cycle time and even management structure. The benchmarking study concluded that to be competitive, all of these areas needed to change and change quickly. For instance, we set cycle time goals...that we thought unbelievable at the time because the change was so drastic. But during the past months, we have seen a 78% reduction as shown in figure 2.

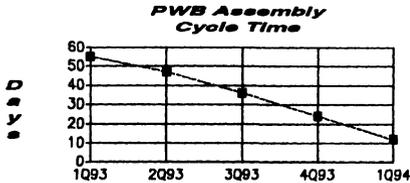


figure 2.

The benchmarking study caused us to take action and focus on gaining competitive advantage by reengineering the entire process..... cycle time, management organization, factory layout and defect levels. In effect, the benchmarking study was our "wake-up call" and we saw radical change was needed and was possible. "If they can...we can too!" became our motto. A true cultural change occurred thanks to an enlightened management, a realistic benchmark and lots of hard work by everyone in the shop.

8.2 Machine Shop Coolant

A second study is one done by one of our fabrication machine shops. The study began when several machinists noticed a foul odor coming from their machines as they returned to work on Monday mornings.

They determined the odor came from the machining coolant sumps. In order to eliminate the odor, they formed a benchmarking team, studied their process and began making contact with other manufacturer's, the milling machine supplier and others. They discovered several best practices, including one coolant that did not create an odor and also was much less expensive!

During the year the coolant not only solved the odor problem but saved the company \$153,000 in this shop alone. We passed this information on to our other machine shops and implemented change across the company.

9. Recognition and Reward

Benchmarking Teams are like all other teams, they need to have rewards and recognition. At Texas Instruments, the teams present to Group and Site management both during their studies and at completion. They share best practices at the Quarterly Champions Reviews, are recognized in Site newspapers and are eligible for Annual Team Bonus Awards. The Benchmarking Champions are responsible for making sure their teams are recognized.

10. Summary

Benchmarking is a powerful tool but it is *not* for the faint hearted. An organization that is committed to continuous improvement will find benchmarking to be a barrier buster. In many cases it leads to drastic change and management must be committed to support "management by fact," not intuition or we've always done it this way.

10.1 Lessons Learned from our Team Studies

Some lessons we have learned from conducting hundreds of benchmarking studies reveal some common mistakes that can be avoided.

- Always examine your own process first.
- Make team goals specific and not too broad.
- Maintain team member enthusiasm by having regular meetings and assignments for all members.
- Someone on the team must act as a leader.
- Do not take "industrial tourism" trips
- Remember metrics are not the answer...best practices are.
- Take Action!

References

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4. McNair, C.J. and Leibfried, Kathleen, H.J., Benchmarking, a Tool for Continuous Improvement, ONMEO, 1992