

Application of Benchmarking to Improve Productivity

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1. Introduction

The economic situation and business management at present face, both directly and indirectly, the effects of globalization. A business in any place on this globe needs a management which has the ability to run that business effectively, efficiently and with quality. This is because competitors have expanded without border. Competitors do not run their business only within one nation but outside among other nations. Our competitors are everywhere worldwide. With this fierce competition, a business at this turning point, from the 20th to the 21st century, must seek for the best techniques and principles of management. The management at all companies at this time must search for more efficiency, or more efficient techniques, that can help them overcome their competitors. The principle and technique which is regarded as being best able to guarantee success and ability to defeat competitors is the benchmarking technique.

In fact, the benchmarking concept has developed over a long time. Someone has said that Sun Tzu, who wrote "The Art of War," could be regarded as the father of benchmarking techniques. It is Sun Tzu who said "Know ourselves, know the enemy and know the situation; if we fight 100 wars we will win all 100 wars." This saying of Sun Tzu has been regarded as the starting point of the technique of benchmarking.

The role of benchmarking technique in the management arena can be traced back to two milestones. The first one is when the Japanese automobile industry took a study tour to the United States to learn the advanced techniques of management of

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the US automobile industry in the 1950s, in order to compare them with the techniques and management style of the Japanese automobile industry of the time, and in order to improve management techniques within the Japanese automobile industry. It has been recorded that the tour was successful. That is, after the study tourists came back from the United States to Japan, the Japanese automobile industry very much improved. The second milestone in benchmarking techniques was when the American automobile industry, in the 1980s decade, faced a serious situation; that is, its market share had been hit by the Japanese car industry. In fact it was not only the car industry that, facing the recession, lost its stronghold to Japan, but also other businesses such as the copier industry and so on. This situation made American management academics and practitioners rethink the techniques that once drew the Japanese car industrialists to make a study tour to the United States. The American management must have thought: Why did they not use what the Japanese recognized in the American car industry earlier? Now American management have come to realize that the Japanese knew on what and how the Americans worked but, on the contrary, Americans did not know on what and how the Japanese worked. This could be the answer as to why the American market share had to fall into Japanese hands.

It was the threat of Japanese competition that led Xerox to institute benchmarking as early as 1980. The experience of Xerox has become a classic case and its approach a model to be followed by many other companies since then. Adoption by other US companies was rather slow until benchmarking was made one of the criteria of the Baldrige Award, following which it has been enthusiastically embraced by US management. Whether successful or not, there is great willingness to make benchmarking work.

The reasons given above can be said to be why benchmarking techniques should not be neglected anymore. Anyone who wants to win the business competition must learn and understand the technique of benchmarking. This type of technique is not just for Japanese and Americans, but also for any nation that wants to become successful in business competition. It will be found that, since the

benchmarking technique spread out in the early 1990s, it has been embraced by a lot of companies in the United States, Europe, Australia and in many developing countries. Nowadays, these countries have their own country website, that includes Australia, Belgium, Canada, Finland, Germany, India, Mexico, New Zealand, Spain, The United Kingdom, and the United States. This website can be accessed through <http://www.well.com/user/benchmar/> which is maintained by @1997, The Benchmarking Network, Inc. Apart from the above website, there are also many websites organized by other organizations.

We may illustrate by considering the advent of benchmarking in Australia (Macneil et al., 1993) where the globalization of the market place has forced managers to face unexpectedly tough competition. In 1990, AeroSpace Technologies of Australia Pty. Ltd. (ASTA), alarmed by its lack of competitiveness in the market for aircraft components and maintenance services, and by sales figures that did not even cover labor costs, introduced an ambitious program of change in which benchmarking was a component. Initially, this took an elementary form: sales per employee and ratio of indirect to direct staff could be compared to known figures for Boeing, Hawker de Havilland and other successful contenders in the industry, and realistic goals set. Following this, teams were formed to benchmark partners in the aerospace industry worldwide. Within two years, ASTA had achieved a successful turnaround.

Other Australian companies were not slow to follow ASTA's example. By July 1992 a survey carried out by Monash University found that 70 percent of Australia's top 500 businesses were either actively benchmarking or intended to do so. Two thirds of these considered benchmarking essential to survival. The majority saw benchmarking as working best in conjunction with TQM and other continuous improvement strategies.

The above is the justification that the benchmarking technique is worthwhile to learn and to understand, in order to use it as a weapon for defeating competitors in the coming 21st century. We should keep in mind that, in the coming 21st century, business competition will become more tense than ever before.

Benchmarking techniques will become necessary for any size, any type, and style of business. We should keep in mind that to do business is not just to survive but also to thrive.

The purpose of this article is: (1) to overview literature on benchmarking techniques in order to see its significant role within business competition; (2) to study its role in relation to the improvement of productivity in business; and (3) to search for the possibility of its application to improve productivity when doing business in the developing countries such as Thailand.

2. Benchmarking in relation to productivity improvement

To improve productivity, there are two distinct approaches. That is, the American approach which pays more attention to using strategic planning with benchmarking in order to improve productivity; while the Japanese approach (especially in the local companies in some countries which are joint ventures with Japanese companies) pays more attention to step by step or continuous improvement techniques such as the techniques of Kaizen, 5S, just-in-time, and other aspects of the Japanese style of management. However both the American and Japanese styles use the technique of total quality management (TQM) as a main tool for productivity improvement.

As we all understand that at present business competition is very fierce, in each country business organizations, as well the public sector, cooperate in setting up organizations to confer a management prize on those excellent industries which are successful as well as giving new paradigms of management technique to industry, both in the manufacturing and service sectors.

Therefore, benchmarking has a close relationship with those keywords: strategic planning, new paradigms of management, TQM and so on.

What is *benchmarking*? To understand what benchmarking is, it is better to take a synopic view of competitive benchmarking as practiced at Xerox Corporation, as is seen in the following figure.

Figure 1. Competitive benchmarking.

Competitive Benchmarking	
Your Organization	Your Competitors
<ul style="list-style-type: none"> ● What you are doing. ● How you are doing it. ● How well you are doing it. <p>Result: Increased awareness of your organization.</p>	<ul style="list-style-type: none"> ● What they are doing. ● How they are doing it. ● How well they are doing it. <p>Result: Increased awareness of your competitors.</p>

The above figure tells us clearly that benchmarking is a technique of performance measurement, used in conjunction with improvement initiatives, to measure comparative operating performance and identify best practices. However, we should keep in mind what Sir Francis Bacon said “Nam et ipsa scientia potestas est” or “knowledge is power,” but only if we use it. Benchmarking is an excellent tool for searching for the best knowledge; but only if we use it wisely, will we be successful.

What is *strategic planning*? Strategic planning is a tool to help reach the goals given in the organization’s mission statement. Strategic planning, also known as long-range planning, began to gain widespread momentum and popularity in the 1960s. The meaning of business strategy is illustrated by what we call “Gause’s Principle of Competitive Exclusion”: No two species can coexist that make their living in the identical way (Henderson, 1991). According to the above principle, strategy means the unique technique or approach that we have and use for competition. This means if two or more have the same technique or same approach, they may defeat one another. But if only one has a unique excellent technique or approach, that one should be a winner in competition. Therefore, in business competition, one must seek for a unique, excellent technique of management which others do not know as such; or we must try to know what the other has in order to prevent the other from defeating us. This could be regarded as the relationship between strategy and benchmarking. Benchmarking does not

replace strategic planning, but supports it. Benchmarking takes strategic analysis to the next level of detail, which is necessary to win on the front lines.

What are the new *paradigms of management*? The right way of problem solving and decision making is an interesting subject to which many scholars have given close attention. Among these scholars, Albert Einstein once said: "The significant problems we face cannot be solved at the same level of thinking we were at when we created them." What Einstein said seems to be more or less the same as what Thomas Kuhn meant by the term "paradigm shift" (Kuhn, 1970). Today, "paradigm" is a buzzword and people use it loosely, but it is not a loose idea. What is a paradigm? If we look up the word in the dictionary, we discover that it comes from the Greek *paradeigma*, which means "model, pattern, example." For Kuhn, scientific paradigms are "accepted examples of actual scientific practice, examples which include law, theory, application, and instrumentation together - [that] provide models from which spring particular coherent traditions of scientific research." Kuhn adds: "Men whose research is based on shared paradigms are committed to the same rules and standards for scientific practice" (Kuhn, 1970, p. 10). Stephen Covey, a famous guru in management thought, says about paradigms that:

"If you want to make minor improvements in your behavior, in your relationships, in organizations, work on behavior, work on attitude. If you want to make major improvements, quantum leaps, work on paradigms. Behavior and attitudes will inevitably follow. A paradigm is a way of thinking. A paradigm is like a mental model. A good way of thinking about a paradigm is that it's a map. If you had an inaccurate map of the city that you're in and you're trying to find a certain location what success would you have by working on your behavior, that is you know, doubling your speed, really going at it? You'd be lost twice as fast. If you shaped up your attitude, if you went and studied positive thinking and applied positive thinking, now you wouldn't care you're lost - but you're still lost. The problem had nothing to do with attitude. It had everything to do with the fact that you had a wrong map, a wrong way of thinking."

To search for new paradigms of management is very important in this present time of fierce competition. At present, many organizations believe that good strategic planning will lead them to success, and many organizations also believe that total quality management (TQM) can help them become successful.

What is TQM? Total quality management (TQM) is the longest established of all the process movements, with its roots in the work of a number of US and Japanese experts during the 1950s. The Japanese automotive industry was the testbed for the concepts and tools of TQM, with Toyota the main innovator. It was not until the 1980s that US firms adopted TQM, primarily in response to the accelerating success of their Japanese competitors. TQM then became an overnight fad, with senior executives proclaiming their commitment to quality, even if that commitment remained purely verbal. They appointed relatively junior and often young managers to fill new positions as vice presidents for quality and expected results fast. But many quality programs failed. Without the combination of sustained leadership from the top that marked the successes of firms like Ford, Motorola, and Xerox and genuine empowerment of shop floor workers, TQM amounted to mere words not deeds. The deeds require, in the words of W.E. Deming, the patron saint of quality, that "companies drive out fear, so that everyone can work effectively." They also generate stress and fear; the executive responsible for quality at Xerox described the period since the company adopted quality as the drive of its efforts to recover its lost industry leadership as "eleven years of wrenching change." Ironically, one of the managerial goals of TQM being to substantially cut costs, success in quality means loss of jobs. Xerox announced in 1994 that it was reducing its staff once again, by 12 percent. It is difficult for managers to motivate workers to undertake the very hard and disciplined work of transforming quality and then sustaining it through continuous improvement. Xerox found that around six months' time was required to put together a team to implement total quality practices for new products.

TQM is a discipline, rather than a rallying cry or “vision,” founded on the following premises: (1) embrace the long term, (2) empower workers, (3) reduce variability, (4) manage by fact, (5) remove waste, (6) generate continuous improvement. All this adds up to a rich body of concepts, tools, and techniques. At its worst, TQM can become a metrics bureaucracy and a set of evangelistic clichés about putting the customer first, getting it right the first time, and so on. At its best, it is the foundation for the firm of the 1990s.

Benchmarking is a continuous process; and, as a commitment to continuous improvement it bears a close relationship to TQM, and to the related strategy of Kaizen. However, these processes are usually thought of as internal to the firm. Their objective is improvement on the past performance of the one organization. Benchmarking compares the organization with others, specifically with the foremost in the field. It seeks to improve on the best worldwide.

Finnegan (1996, pp. 11-15) lists among the benefits to be expected from benchmarking that of calibrating true productivity – by providing basic data on what organizations do well and converting this data into action.

3. Meaning and history of benchmarking

A “benchmark” was originally a surveyor’s term, to denote a standard point, in practice a mark on some permanent object, from which measurements of position could be made. It was adopted by computer technologists to mean a standard program or set of programs, by which the performance of various computers could be compared.

The term entered business management, as a key word of the 1990s, in a sense nearer to its original meaning: as the product of *benchmarking*, that is the detailed study of some aspect of performance, such as productivity, quality or value, of a department or organization as compared with that of other departments within the organization, or other organizations (Koch, 1995, pp. 38-40).

For Senn (1995, p. 506), benchmarking involves seeking the world’s best practice: the measure of the best practice becomes the *benchmark* against

which to compare the performance of one's own firm, and attempt to exceed. Likewise Bovee, Thill, Wood and Dovel (1993) define benchmarking as "The process of comparing an organization's processes and products to the standards of the world's best and then working to match or exceed those standards" (p. 680). The manager sets out to find and emulate the best, not in one industry or region alone, but anywhere in the world, in order to gain competitive superiority. For Hellriegel and Slocum (1992) it is "the process of measuring an organization's goods, services or practices against those of its toughest competitors" (p. 693). Bartol and Martin (1994) focus on productivity in defining benchmarking as "the process of identifying the best practices and approaches by comparing productivity in specific areas within one's own company with the productivity of other organizations both within and outside the industry" (p. 550).

Finnegan (1996, pp. 4-8) quotes a preferred definition: "Benchmarking is a continuous systematic process for evaluating the products, services, and work processes of organizations that are recognized as representing best practices for the purpose of organizational improvement."

Finnegan then goes on to elaborate the key words of this definition:

1. Evaluation: the performance to be considered must be measurable. The practice or process must first be understood before the unit of measurement can be decided.
2. Continuous: evaluation must be continuous because the world is a rapidly changing place. The organization's competitors will not themselves stand still.
3. Best practices: benchmarking focuses on the most successful activities, not necessarily those of direct competitors, but of whoever is judged to be first in the particular activity.
4. Systematic: data and information are gathered in a systematic, step-wise manner.
5. Improvement: the information that is gathered can be used in various ways as a basis for short- and long-term improvement objectives.

Harrington and Harrington (1996, pp. 16-17) adopt the definition: "A systematic way to identify, understand, and evolve superior products, services, designs, equipment, processes, and practices to improve an organization's real performance."

The key phrase highlighted here is real performance. Aiming to be best involves a concept of what is of best value to the organization. It is of no value to optimize performance in an area that is of no interest to the firm's customers. Benchmarking solutions should bring about real performance improvement.

From the early 1980s onwards the importance of technology to competitive advantage became evident - in particular the costs of falling behind in this rapidly evolving field. Hence, in reviewing the assessment of the technology needs of an organization, Bateman and Zeithaml (1993) define benchmarking as "the process of comparing the organization's practices and technologies with those of other companies" (p. 605).

As Sun Tzu's admonition quoted above, to "know yourselves and know the enemy," illustrates, the idea of benchmarking, as a principle of evaluating one's competitive advantage as compared with an opponent, has a long history.

An early example quoted by Finnegan (1996, pp. 25-16) is that of Francis Cabot Lowell who, in 1814, drew on his observations of the Lancashire textile mills and, using improved technology and organization, reformed the cotton manufacturing industry of Massachusetts.

It was following the end of World War II that the Japanese conducted their "industry tours" around the world, researching and observing the best industrial practice with the objective of adapting it to Japanese organization in order to gain competitive advantage. Indeed, Mosley, Pietri and Megginson (1996, p. 473) consider that benchmarking, as a distinct managerial discipline, may have first emerged in the 1950s, when Deming introduced the idea of quality control to Japan. The study by Toyota Motor Corp., in 1950, of automobile manufacture in the United States, belongs to this period. Concluding that General Motors had the best manufacturing technology, Toyota was quick to adopt it, in combination with

a just-in-time manufacturing strategy, and began its inroad on the American automobile market.

It was not long after Xerox adopted benchmarking in the effort to recover its disastrous loss of market share to the Japanese, that, in 1984, General Motors started its joint venture with Toyota to learn from its former rivals. Benchmarking was under way.

4. What are the benefits and why do you need it?

The primary reason for benchmarking is to build a sustainable competitive advantage for the organization. If the goal is anything less, benchmarking loses much of its value (Boxwell, 1994, p. 45). Its principle is: learn from the best – and, draw on the accumulated knowledge and experience of management around the world.

The benchmarking technique helps any organization which uses it to understand world-class performance indepth. This is because all world-class organizations use the benchmarking technique. In addition, the benchmarking technique helps encourage and stimulate innovation. By comparing ourselves to other, excellent companies, we have a better opportunity to understand the weak points of our own on-going efforts at innovation and to see the strong points of these other, excellent companies. In this way we can have an opportunity to originate our own innovations by reverse engineering studies or by initiating our own innovations.

The benchmarking technique helps accelerate and manage change effectively. At the present time, businesses are running fast; if we cannot handle changes effectively we may face a serious problem due to time constraints. In addition, benchmarking helps provide measurements for competitive analysis. By comparing our own data and facts to other data and facts, we have a chance to measure the gap between our own weakness and our competitor's strength.

The benchmarking technique gives us a practical tool for continuous improvement. By study of others we have a chance to learn the effective tools of

these others and adopt and adapt them to our own organizations. By continuous improvement we will, in the near future, become successful, like other world-class companies.

When asked: Why do you need it? - this may be the answer. Benchmarking has been identified as the most valuable management tool for improving productivity and quality in industry of today. In addition, it is a powerful device for achieving breakthrough performance in key business processes. We are using the benchmarking technique because increased competition and uncertain market demand have necessitated a drive towards improving performance to gain competitive advantage.

Firms today must compete on a global basis (Ivancevich, Lorenzi, Skinner & Crosby, 1994, p. 123). Any product made anywhere may have to compete with a similar product made anywhere else. Remaining competitive is a major challenge for management. Competitiveness is closely related to quality. To remain competitive, a firm depends on continual quality improvement. Yet competitors are also continually improving quality. This intense competition has led to the interest in benchmarking: the continuous measurement of a firm's products, processes and services against those of its strongest competitors, and those of leading companies in other industries. Benchmarking is one way to find the best way to do something and implement it.

Benchmarking provides an objective way of determining how well a company is performing and where it must improve (Cortada & Woods, 1995, p. 36). Establishing benchmarks, standards of best performance against which to evaluate one's own performance and learn how to improve, has become an integral part of process improvement and reengineering.

Finnegan (1996, pp. 11-15) summarizes the benefits to be expected from benchmarking. Firstly, for the organization, five basic benefits can be expected:

1. Improving the probability of meeting customer requirements the first time - by searching out the best practices for meeting these requirements.
2. Guaranteeing that best practices are incorporated into work processes.

3. Calibrating true productivity - by providing basic data on what organizations do well and converting this data into action.

4. Implementing fact-based goals - by bringing in successful new ideas and practices.

5. Becoming more competitive.

For the manager, benchmarking enhances performance by learning to incorporate best practices, provides a motivation for improvement and breaks down resistance to change, and reveals new insights that may increase the probability of a breakthrough into a new process or technology.

Harrington and Harrington (1996, pp. 15-28) say of benchmarking that

1. It will help the organization learn from the experiences of others. No organization has the time or the resources to make all the mistakes itself.

2. It will show the organization how it is performing in comparison to the best.

3. It will identify the organization's weaknesses and strengths.

4. It will help the organization prioritize its improvement activities.

5. It will provide the organization with proven corrective action plans.

Benchmarking enables organizations to provide superior products and services at reduced cost. The many reasons why benchmarking might be used are summed up by Harrington and Harrington as those of setting challenging yet attainable goals and finding means for their accomplishment to bring about major improvements in the organization. Benchmarking not only defines how one's own firm measures up to its competitors and non-competitors, but also provides a "future-state solution" to the problem of overcoming the gap.

Benchmarking reveals the need for change and the magnitude of the improvement needed; and, by taking examples of success as models, enables quantum leaps in improvement (Watson, 1992, p. xviii).

5. Benchmarking Studies

Benchmarking studies may be divided into two main types: the first being commercial studies undertaken by or on behalf of companies at their own expense

and for their own benefit. For obvious reasons, these rarely enter the public domain and so it is difficult to generalize about the extent and sophistication of these studies. The other type of benchmarking study, of which there are several examples, constitutes what might be termed "public domain" research and is typically undertaken by universities and/or management consultancy firms. The purposes of this type of benchmarking study are varied but typically involve an academic agenda of investigating the characteristics of high-performing organizations and a consultancy agenda of spreading alarm in order to generate consultancy work.

One of the earliest and best known examples of benchmarking which is in the public domain is the first IMVP which was coordinated by MIT. This program aimed to systematically compare the performance of car assembly plants around the world to identify the reasons behind this performance. The program ran from 1985 to 1990 and culminated in the publication of the influential "The Machine That Changed the World" (Womack et al., 1990). This book represents a powerful cocktail of shocking statistics (concerning the superior performance of car assembly plants in Japan vis-a-vis those in the West) and prescriptions for success (in the form of lean production concepts, the main explanation offered for this performance superiority). The impact of this book is a useful illustration of the potential leverage of a benchmarking study. Hundreds of thousands of copies of the book were sold in the five years following publication and many managers, particularly (but not exclusively) in the automotive industry, took it as the blueprint for achieving high performance manufacturing. The process at work here is twofold: On the one hand there is the shock of a comparison which reveals that one's own organization is being massively outperformed by others. In the aftermath of this, people are likely to be very receptive to alternative models (such as lean production) which appear to be tried, tested and vastly superior.

Other benchmarking studies which are publicly available include studies into the autocomponents industry (Andersen Consulting, 1993, 1994; Delbridge et al., 1995) and general manufacturing (IBM Consulting Group, 1993, 1994; Miller et al., 1994). The industry specific studies tend to emphasize precision and

comparability of performance and therefore restrict the products covered in order to achieve this. The more general studies (for example, the IBM Consulting Group studies) attempt to be more generic and tend to use executive self-reports as the measure of whether each company is more or less competitive than others in its field, a practice which generates performance data of questionable validity.

6. Types of benchmarking

The four major types of benchmarking project are: (1) internal benchmarking, (2) industry study, (3) business process (exchange model), and (4) business process (group model).

(1) Internal Benchmarking.

The comparison is between various business units or locations within one's own organization to find the best practices and extend them throughout the organization. It is recommended that an organization carries out internal benchmarking first, as it provides detailed data on the organization, and is an excellent training for personnel in the practice of benchmarking.

Most organizations do not get full value out of internal comparison possibilities. Though they have mutual-exchange meetings between counterparts from different divisions, product lines, and/or locations, these are rarely done systematically. It becomes too easy to dismiss the success story of another division by saying that one aspect of what they did is not relevant to the other division. If they analyze the story, however, they might well find that they could transfer most of the true innovations if they bypass the complicating detail.

Internal benchmarking at IBM.

IBM developed a form of internal benchmarking called the "Common Staffing Study" (CSS), which made simple comparisons across all plants and then across all corporate staffs around the world (Conway, 1983, pp. 181-200). The comparisons used number of people assigned to a function versus an indicator of the magnitude of output of that function (number of invoice clerks versus number of invoices emitted). There are many valid reasons why organizations might differ

in their staffing philosophies, but it is constructive that everyone understand and interpret these reasons to separate the valid from the invalid. IBM has gone on to much more sophisticated approaches to benchmarking, but the CSS got them started, and created in everyone the desire to make comparisons where possible on the reasonableness of what is being done or proposed (Balm, 1992).

Internal benchmarking and small organizations.

It may be objected that small organization cannot do internal benchmarking. This is true at the very small level, but many modest-sized organizations have several plants, regions, and/or offices that can be compared.

(2) Industry Study.

One of the more fruitful and cost-effective means of benchmarking is the cooperative industry study. The focus is to learn about your competitors, but in a general way rather than specifically. The conclusions are usually presented as tendencies of segments of the industry. These are based on averaging several responses or on heavily disguised individual company data. The subject matter is usually strategic rather than operational detail, although both appear frequently.

An industry study is organized by a trusted middleman, either an industry trade association or a specialized consultant. Data is gathered by survey, phone interview, and/or focus groups. The individual responses are kept confidential. The middleman is responsible for analyzing the data and coming to conclusions. The conclusions may be presented only to participants or, in some cases, released to the outside world without identifying the participants.

Issues that have been the subject of successful industry studies are:

- vertical integration/resource mix
- maintenance / support levels
- internal quality levels
- customer satisfaction results / costs
- equipment configuration / costs
- personnel statistics / employee mix
- environmental policies/practices

- major equipment problems/ costs

One risk of an industry study is that, especially in an oligopoly situation, the competitors start looking like each other and doing things the same way. If data is gathered on the maintenance policies of the eight dominant companies in an industry, for example, we may conclude that all companies are covered by a range of 2.5 to 4.0% of sales. In fact, it may be perfectly rational to invest 8.0% or 1.0% in certain circumstances. This might be the practice in a closely related industry or among smaller players in this industry. A multi-industry study, though it has other problems, gives you a wider window on the world.

(3) Business Process: Exchange Model

Much of the progress in benchmarking has been in using a two-organization exchange model, well-described in Camp's work (Camp, 1989). In this model, an organization that desires to benchmark strategically analyzes its needs, then identifies the most interesting areas of study. The company then researches the issues using libraries, consultants, and clearinghouses to identify the best practitioners in the targeted business process, regardless of industry. The company negotiates with the potential partner to meet and to exchange carefully described data in a mutually agreed format.

An example: Company A has described Customer Complaint Handling as the critical business process it wants to improve. They identify Company B as the best practitioner of Customer Complaint Handling. Company B agrees to provide information on how they handle complaints if Company A, in turn, gives a similar level of information to Company B on how their Safety Program works. Thus, both companies gain. Since Company A and Company B are not competitors, neither is giving up corporate secrets to the competition.

Most authorities (Harrington & Harrington, 1996, pp. 33-37; Macneil et al., 1993, pp. 23-29; Boxwell, 1994, pp. 30-34) have distinguished three categories of company-to-company benchmarking.

3.1 Competitive Benchmarking.

The organization compares itself with its direct competitors. Few competing organizations are likely to be willing benchmarking partners; and recourse must be had to reverse engineering and competitive shopping. Typically, a competitor's products or services are purchased and analyzed. Tangible products are tested and disassembled. The investigation may extend to aspects not directly related to the product, such as packaging and delivery.

External competitive benchmarking is effective when industries are very competitive, where competitors have very different management philosophies and histories, and in industries driven by emerging technologies and processes. Today, few organizations can compete without a clear understanding of their competitors' products and services at the least.

3.2 Industry Benchmarking

The comparison is with organizations in a same or similar industry, but not direct competitors. Such organizations will generally be willing to share information. The emphasis is not so much on the final product as on the processes of design, manufacture and marketing by which excellent products, services or financial results are achieved.

3.3 Generic Benchmarking

The comparison is made with similar or identical processes in different industries from that of one's own organization. This is possible because many operations, such as inventory control, distribution, personnel management and customer relations, are practiced in common across industries.

This type of benchmarking is the most difficult to do, but may be the most powerful. It covers all industries worldwide. From comparison of dissimilar industries, innovative ideas often arise which may make an organization truly world class.

Harrington (1991, p. 224) distinguishes a sub-category of Activity-type Benchmarking, which is directed at specific process activities or steps, such as invoicing or personnel recruitment.

In addition, and cutting across the above categories, benchmarking may be considered as (a) **Strategic**, when a specific function, such as that of finance, is benchmarked to discover its strengths and weaknesses; or (b) **Organizational**, when directed at specific processes or tasks that will affect the organization's competitive position. Strategic benchmarking is often followed by a series of specific organizational benchmarking projects.

It is generally conceded that a combination of one or more of the above categories with internal benchmarking produces the best results.

(4) Business Process: Group Model

One problem with the exchange model is that it may be difficult to find a reciprocal subject that Company B needs and Company A has. An alternative approach for Company A to get its information is to hire a consultant or other neutral party to find several companies from different industries who are interested in Customer Complaint Handling. The neutral party analyzes and synthesizes how these organizations implement the process. This avoids the risk of wasting time and money if Company B turns out not to be a good match for the exchange. By identifying several excellent companies who agree to participate (in the group model), the odds are good that one of them, or perhaps some combination of their approaches, truly represents the "best practice," especially if they represent many industries, approaches, and even nations. On the other hand, big money can be spent gathering all that information. And if the facilitating consultant is more of a peak-smoother than an innovator, then the result may be an expensive lowest common denominator!

7. Subject of benchmarking

Benchmarking can be done over a wide range of subjects:

- financial data
- nature of products/services
- operational practices
- process/department descriptions
- operational metrics

1) Financial data

Business magazines often sponsor huge studies that compare financial statistics, essentially a form of benchmarking. Sometimes they target one industry, and other times they include all industries.

Within an industry, it is reasonable to compare rates of growth and various types of return on investment over the long term. Increasingly, these comparisons have deteriorated to shorter time periods, and the proliferation of adjustments to earnings makes any organization's rating a function of how the analyst read the footnotes.

Another problem is industry membership. Many organizations prosper because their niche crosses traditional industry boundaries. Perhaps financial comparison tables give an ordinary company an idea of what it takes to become Wall Street-famous in their industry, but those who know the industry in depth rely on "physical" data to make the final judgement. They want to know the target company's record in productivity, cycle times, quality improvement, safety, new products, research directions, and key market shares. We can benchmark these too, but only with the cooperation of the organizations involved.

Attempting to take isolated financial statistics across industries is worse than worthless. Each industry has its typical configurations of costs, leverage, market growth and inventory practice. To say, for example, that the 3M Corporation is 2 1/2 times better than WalMart because that is the proportion of their returns on sales is truly meaningless.

2) Nature of products/services

The marketing research industry uses a well-established form of benchmarking: They have consumers compare features, costs, and longer-term performance results of competing products and services. We rarely recognize this as a form of benchmarking, because it is done quietly by outside experts rather than by the producing organizations themselves. As with other forms of benchmarking, the parties involved gather data with product/service improvement in mind, not just to have data.

3) Operational practices/equipment

Trade associations often poll their members on how they do certain things or what equipment they use. The responses to this form of benchmarking are typically binary: Do you have one of those (yes or no?), Do you make or buy?, Do you use distributors or direct-sell? These kinds of questions may be included in a survey that is partly financial information and partly general operating data.

4) Process/department descriptions

This is now mainstream benchmarking. For strategic planning purposes, it is good for the top of the organization to know that they are out of step in some things and basically sound in others. But the place where direct improvement action can take place is in the middle of the organization, through which all cross-cutting business processes thread. It is usually no simple matter to say who is best at doing the work at this level, because the work can be so different from organization to organization. One organization thinks customer complaint handling is simply paying off customers as soon as they say anything. Relatively few people are involved in this. The cycle time of "handling" is short, but the cost is very high. The pay-offs cost money, and very little data is gathered on how to prevent it from happening again.

Another organization assigns a small army to customer complaint handling. They analyze the validity of the customer's complaint, thus gathering useful information on where the system broke down. They come up with different ways of satisfying the customer, depending on the customer's needs, and they set up problem-solving teams to implement preventive corrections. This involves many people, has a longer cycle time, but probably costs a little less in the short run and a great deal less in the long run because it fixes the problems and prevents them in the future.

Which is the "best practice"? We can only begin to answer this question when we fully describe each way of doing the job in terms of inputs, deliverables, controls, and resources. This is the heart of benchmarking (and we haven't even gotten to numbers yet!).

5) Operational metrics

Much benchmarking starts out to be an exercise in comparing numbers. Once process and/or department descriptions are laid out and adjusted, it then becomes possible to compare numbers intelligently to see who is best. But we still have to say what is best.

Below are lists of categories of measures with numerous examples that might be part of a comparison project. The situation usually dictates what measures represent the important issues, but different observers emphasize different measures.

Quality

- error rate, rework
- unintended scrap/waste
- variation reduction
- cost of (poor) quality
- customer satisfaction survey results
- returns/warranty cost
- service quality level
- emission level/pollutants

Cost/Productivity

- labor productivity
- energy productivity
- materials yield
- inventory turnover
- cost of service
- designed interruptions in process flow
- utilization of fixed resources
- number of process steps

Timeliness

- on-time delivery
- cycle time, customer view

- cycle time, in-shop
- documentation timeliness

General effectiveness

- safety
- employee attitude
- creativity
- team effectiveness/participation
- new products/services
- housekeeping/cleanliness
- employee skill mix
- market success

Most “best” candidates satisfy their customers first. Most customers want quality first. (“It works.” “It is what I ordered/expected.”) So, measures of quality are part of most benchmarking projects. Rivaling quality are cost and timeliness. Cost may not play much of a role in comparing heart surgery suppliers, but it dominates the choice of commodity food or chemical products. Timeliness surpasses even quality with some parts suppliers to assembly manufacturers, but may be way down the list with some noncritical construction projects.

Still other factors may determine who is best in some other special applications. Ad agencies are differentiated by their creativity. Some maintenance operations are dead without good/prompt documentation. For some sensitive environment manufacturing, cleanliness/housekeeping is a key requirement. Gunpowder manufacturers had better consider safety. Airlines need energy productivity. Some retail businesses are most affected by inventory turnover.

Benchmarking may appear to be about metrics, but a great deal of behind-the-scenes thinking is required to make comparisons fair and to choose exactly the right parameters before nominating the “best.”

8. Benchmarking examples

8.1 Industry study

An industry study is usually organized by an interested but neutral party. In many countries a government or quasi-governmental entity sponsors comparison studies between firms in an industry. Their prime objective is to gather information to use in their industrial policy formulations and adjustments. The worst of these are the political rationalizations for a predetermined policy shift. The best of these are honest attempts to see how to help domestic industry compete internationally or how regulations might improve the dynamics of domestic competition.

The better studies are often those that are organized routinely, rather than in response to a special problem or plea. The prime objective of these studies is to give "strategic profile" information so industry participants can more intelligently help themselves to compete by lowering costs, improving quality, or better satisfying special customer needs. The Canadian government provides an excellent example. The Industry Canada Department of the federal government selects industries for their studies and then asks for voluntary and confidential participation from the firms in that industry. Each firm is visited by an Industry Canada representative who gathers financial and physical data that pertains to their operations. Approximately 25 to 40 performance ratios are calculated from that data for each firm and the industry median is determined. Each firm receives a unique report on their relative position and an interpretative visit. The industry as a whole and the parts of the government concerned with industrial policy receive the aggregated but disguised report containing all the data. Eighty-five industries and 2,700 companies have participated in this program to date (Christopher and Thor, 1993.)

Potential nongovernmental sponsors include trade and professional associations, private nonprofit productivity centers or research organizations, specialized consultants, and regional economic development centres. They all share a knowledge of the industry in question. They are also in positions of adequate

trust. This assures the main industry organizations who participate that sensitive information will be kept confidential. It also helps if the sponsoring organization can manage the project and its funding smoothly.

8.1.1 Finding participants

The original hurdle any organizer faces is to convince some of the more secretive industry leaders that they can gain by participating. "Help your competitors" is not a very good rallying cry! But beating a new foreign competitor industry or a substitute product industry (metal cans for glass) might serve. Even without any external threat, the industry's collective bankers, for example, would like the whole industry to operate on a higher plane even if the relative positions of market share stay the same. Also, in some industries, such as electric utilities or bread baking, the organizations are mainly regional and do not all compete with each other in the traditional sense.

8.1.2 Planning the study

Once an organization decides to conduct such a study, the first step is to get technical help to plan the study, with emphasis on the means of gathering and interpreting the data. Some sponsoring organizations already have the technical basis in the industry and in productivity and quality concepts. Others have to bring in an outsider acceptable to everyone. Most sponsoring organizations set up a special committee of industry leaders to find the technical help, plan the contact with potential participants, and direct the study as it proceeds.

The selected technical specialist typically spends time with the committee, using it as a sounding board for determining how to gather the data and what data to gather. The specialist then usually gathers data by asking participants to fill out a questionnaire and return it to the sponsoring organizations or to a neutral technical specialist. In the case of a small group of organizations engaged in a complex business, consultants might travel to the participants' locations and help them fill out the questionnaire. Smaller groups can also use focus groups or other interviewing techniques to supplement and/or replace a mail survey.

8.1.3 Survey development

The committee and specialists who develop the survey need to decide the following:

- who to survey (members, customers, several categories)
- what kind of data to ask for (available/weak or unavailable/strong)
- what to find out (facts, ratios, opinions, strategies)
- time period of data
- physical and/or financial data
- participant categories
- marketing of survey (due date, length, graphics, endorsements)

There is usually a trade-off between using readily available data and the data that is needed but less available. A relatively trusted sponsoring organization can be more ambitious in this regard than a newcomer. A newcomer may take a tried approach. They can make moderately useful conclusions from readily available data on a first survey. Then, when transmitting those results, or a few months later, they can propose a follow-up survey to develop more challenging data. "Forcing" the industry to develop this new data may turn out to be an important unforeseen benefit for the industry.

8.1.3.1 Survey participants. Choosing participants for the survey also raises some issues. An association sponsor tends to choose only members. On some issues, however, it may be important to include suppliers, customers, industry financial analysts, reporters covering the industry, regulators, union representatives, community leaders, and so on. Many associations have associate members who are suppliers to the main industry or are in a specialized segment. If you include them, some of the wording may need to be more general; you may need to add special sections to the survey; or you may need more than one survey format.

8.1.3.2 Survey Results. Surveys can generate many types of results. In some cases, they emphasize simple fact-finding with yes/no questions. In other cases, the survey gathers data in a relatively raw form. A survey processor then

calculates ratios of performance or characteristics, based on the raw data. Sometimes, in addition to benchmarking comparisons, a survey also gathers opinions on legislation, equipment design, management practices, and so on. There are some strategies that can be asked about directly with yes/no questions, such as make-to-stock or to-order, eliminating inspection, preventive maintenance. Others must be inferred, such as degree of customer responsiveness or attention to technology.

8.1.3.3 Survey data. The time period of the data is important. Some questions concern current practices, but others require data from the latest reporting period or a specific month, quarter, or year. The questions must be absolutely clear or some of the responses will be unusable. As a general rule, physical data is more useful for diagnosis than financial data; but, using financial data, if you are looking for improvement trends, be sure to remove the inflationary effects before drawing conclusions. If the survey uses physical data, be careful of merging unlike units, whether they are units of output, accomplishment, or headcount. It may be worth the trouble to gather data at a more detailed level than you need to protect against “mix shift” or other weighting issues.

Along with information that pertains to productivity, quality, cycle time, and other data being analyzed, it is necessary to find out where the respondent fits in several sorted categories. Below is a list of many of these categories. (The most important are usually size of organization, detailed nature of product, market segment, and geographic region.)

- type of product or material
- type of packaging or format
- size of product/service
- geographic region
- company/division size
- plant size
- key equipment age/capacity
- market(s) sold to

- type(s) of fuel used
- population density
- maintenance policy
- degree of vertical integration (buy or make components)
- make for stock or order
- worker profile
- existence of “quality” program

Be careful also about the length of the survey and the return date. A survey that is longer than four pages, folded over, is likely to be thrown away rather than answered. Precede longer surveys by a letter (under separate cover) from the most notable person possible as to why response is the only sane option! Include clear advice on who in the typical organization is best positioned to answer the questions. The deadline should be two to three weeks after expected receipt of the survey mailing. This should be enough time to gather the data, but not enough to allow the recipient to put it off until later. Good graphics, clear and eye-catching, help, but are not enough. Test the survey on a few of the target recipients to see what problems they have. Parkinson’s Laws exist mainly for those who write surveys!

8.1.4 Processing and Interpretation

Participants can return completed surveys to the sponsoring group or the assisting specialist. Or, the sponsor can develop a double-blind system to ensure complete confidentiality. (A double-blind system lets one neutral party mail and receive the survey in sealed envelopes. Another neutral party opens the sealed envelopes of data and handles data entry and analysis of what is to them anonymous data.) It is good to maintain a track to each respondent through a double-blind type of system so you can check and revise “absurd” data if necessary, rather than reject that participant. It is very easy to misplace decimal points or use data from the wrong time period (month vs. quarter).

8.1.4.1 Reporting Results. The most powerful method of reporting is to report the overall industry results and inferences to the whole body of

participants, the whole group of association members, or even the whole world. But each participant also wants a private report on how they stand relative to the rest of industry. This is easy to do, as long as you retain the track to the participant and the budget takes the extra work into account.

In public meetings, absolutely no one admits to being below average in anything, but it is likely that almost half of the group is below average overall, and everyone is below average in something. The private individual reports thus provide at least some shock value and stimulus to do things differently.

If the survey becomes an annual event, the value expands greatly, because level data can be supplemented with trend data. This can include who is best or worst, and who is doing something about it! Table 1 shows a generic industry report. Table 2 presents the type of report that an individual participant could receive, even in the first year of participation.

Table 1: Typical Industry Benchmarking Report

Measure	End of Quartile:		
	One	Two (Median)	Three
Units produced/employee	242.3	317.7	369.1
First-pass yield, %	84.1	96.6	97.9
Units produced/BTU (MM)	573	719	903
\$Output/WIP inventory	12.4	19.5	31.6
Rework, %	5.3	3.7	2.9
On-time delivery, %	78.3	85.9	91.3
Order cycle time (call-delivery)	43	32	23
Emission level, NO ₂	2.0	1.3	0.7
Absentecism	5.3	3.8	2.1
Maintenance/cost goods sold	7.2	5.8	4.5
OSHA reportables/1000 empl.	3.2	2.3	1.5
Changeover time (Fletzer machine), hr.	11.3	7.8	3.1
Units/square foot	133	210	298
Standard handlings from Ace to Fletzer	12.3	10.2	7.3
Downtime on Ace machine: %			
• planned	2.3	1.9	1.7
• unplanned	16.2	10.4	2.1
Floor computer terminals per 100 production empl.	0	2.1	53.7

A trade association or sponsoring consultant may choose to use the survey results to suggest that the industry could benefit from further study of certain topics or help in converting their own common performance shortcomings into systematic improvement plans. Remarkably, improvement is private, but up to that point, much of the learning and practice can be quite generic.

Table 2. Typical Individual Benchmarking Report

Measure	Your Data	Quartile
Units produced/employee	382	4
First-pass yield, %	86	2
Units produced/BTU (MM)	880	3
\$Output/WIP inventory	9.2	1
Rework, %	4.8	2
On-time delivery, %	88	3
Order cycle time (call-delivery)	20	4
Emission level, NO ₂	10	3
Absenteeism	3.0	3
Maintenance/cost goods sold	3.5	4
OSHA reportables/1000 empl.	5.0	1
Changeover time (Fletzer machine), hr.	2.7	4
Units/square foot	320	4
Standard handlings from Ace to Fletzer	15	1
Downtime on Ace machine: %		
• planned	1.3	4
• unplanned	9.3	3
Floor computer terminals per 100 production empl.	0.5	2

8.1.5 Response to Survey Findings

After receiving a report, some participants might respond with disappointment. Here are some ways disappointed participants can assess the results:

- Match your preconceptions with data. What does not fit?
- What are our largest and most important weaknesses?
 - in our view
 - in our customers' view
- Calculate the gap and set goals to close it.
- Investigate reasons for the gap.

- Form improvement team to work on the details

It is important to analyze participants' preconceptions in comparison with the benchmark data and set goals for improvement. It is unnecessary to attack all the weaknesses at one time. It is more important to decide which most significantly affect their business and their customers. To help make these decisions they might choose to join a business process benchmarking project to work on the most important project with others outside their industry. Or, using the industry report to obtain an idea of how large a gap they need to jump, they may feel they already know what they need to do. They can then create an improvement team and get to work.

The benefit of having a report in black and white that shows a weakness is that skeptics and status quo advocates are put on the defensive, and the activists have the ammunition they previously lacked to move ahead.

Finally, this sort of benchmarking doesn't just expose weaknesses. It can also show you that your organization is unusually good at something. This could be the basis of an enhanced strategic effort, also.

8.2 Process (Exchange Model)

The first step in organizing a process benchmarking project is to determine which process(es) should be the topic of the study. The most common source of a topic is what we can call executive intuition. There is a feeling at the top of the organization that some aspect of the business needs to work better. This might come from previous studies that revealed the target issue, but it might also come from a business magazine article or a casual conversation on the golf course. Informal origins do not make it a wrong selection. Many executives reach their position by having a better feel for the business and its needs than their peers. But the benchmarking topic(s) may also come from serious and extensive analysis, such as the results of a previous industry benchmarking study that demonstrates the organization has less productivity and/or quality per unit of cost or attention than other members of their industry.

Harrington and Harrington (1996, p. 40) suggest two areas in which to commence benchmarking:

1) All customer interfaces: This includes not only products but delivery, telephone communication, invoicing, sales and services - in general, all points at which the company interacts with customers.

2) Critical business processes, and their key subprocesses and activities: These are, for example, products, equipment, manufacturing and business processes.

The benchmarking process should support the business plan and itself become part of the business plan. Most organizations can easily identify areas where there is a need for improvement. If in doubt, they may listen to their customers. However, prioritizing these needs may be more difficult. Boxwell (1994, pp. 56-61) suggests as activities to benchmark:

1) Those that explicitly increase the organization's value. Thus activities or inputs that consume the greatest proportion of total costs are most likely to yield benefits from efforts at cost reduction. However, factors such as product differentiation and after sales service may have more competitive significance than cost. It is in those activities perceived as most important by customers that performance improvements achieved by benchmarking will have the greatest impact.

2) Those where the climate within the organization is most favourable to change. In any area where the people within an organization are anxious for change, improvements generated by benchmarking are likely to be successful. Some organizations have resorted to polling of employees to determine activities to benchmark. This helps to ensure that those responsible for implementing the improvement will be committed to the benchmarking programme.

In general, where the resources for benchmarking are limited, those projects which appear likely to add the most value will be chosen. Those areas in which the organization must excel to be competitive and in which, at the same time, the organization is falling behind its competitors - as revealed by surveying customers, competitors' customers, managers and employees - are the ones on which management should focus benchmarking efforts.

8.2.1 Getting Started

Regardless of the topic's origin, the resolve to do something about it is usually formalized in a periodic planning document when some constraints have become imposed on the desire to improve (for example, improve customer perception of the results of a certain process while lowering personnel costs at least 10 percent).

8.2.1.1 The Benchmarking Team. During the planning exercise participants probably identified a process owner who will establish a team to make the study and implement the recommendations. Below is a list of some business processes that have been the focus of benchmarking projects.

- concurrent engineering
- individual performance appraisal
- after sales service
- software quality review
- customer complaint handling
- new product development administration
- cycle time reduction methodology
- patent applications
- customer requirements setting
- supplier certification
- customer satisfaction measurement
- machine tool setup
- training needs analysis

A successful benchmarking team does not have to include only high-powered people. In fact, the best teams are made up from a diagonal slice of the organization that includes people from various parts and levels. The team needs a high-level sponsor to ensure that the team gets the proper resources, entries, and exemptions, but the team should include many of the people who actually do the work being studied. They know the truth about how they are accomplishing the process now, and their cooperation (enthusiasm, if possible) is necessary when it

comes time to install the modified process or approach. If they have had some influence and responsibility in designing the new process, they will be much better at conveying the new approach to their coworkers with genuine enthusiasm.

An effective benchmarking team also needs some technical expertise and/or previous training. The team should contain at least one person with flowcharting skills, some people with good interviewing skills, at least one person familiar with the accounting systems of the company, a good meeting facilitator (this can be an outside consultant), and someone familiar with the customers' needs and methods of operating. Skill in using computers, writing, and graphics also helps in the various levels of presentations that are needed. Below is a list of possible training topics for the team after it is formed:

- the nature of a process, systems, flowcharts
- team behavior, meeting skills, interviewing, negotiating
- technical content of target process
- legal considerations in "going outside"
- basics of performance measurement, cost accounting
- computer use: on-line data bases, graphics, note-taking

It is also necessary that the members of the new benchmarking team have time to do the project work. Senior executives and renowned technical specialists would become bottlenecks in scheduling the team's work.

8.2.1.2 Benchmarking Issues. Most of the issues that benchmarking addresses are not profound. They may be subtle or tricky, but any person who thinks about them can understand and contribute to these issues. In fact, the benchmarking projects are those in which a company completely reinterprets the best customer's needs and/or the best way to meet those needs. The required intellectual flexibility may well be found among people who have not "done this sort of thing" before.

8.2.1.3 Benchmarking Time Frames. The time requirement for benchmarking teams varies with the size of the process chosen and the deadlines imposed. Some successful benchmarkers have assigned a full-time team and have

the project completed in three or four months. Others plan a one-day-per-week meeting, and the project requires nine to twelve months. Other variations are full-time leaders/analyst and part-time team; full-time benchmarking specialist participating in three projects; three full-time project leaders and part-time team members.

8.2.2 Information Base

Once the topic is selected and the team is organized, there are two distinct types of preparatory activities required. They are often done in parallel, splitting the team into two subteams for more efficient coordination.

8.2.2.1 *Researching the Process Externally.* One subteam looks outside the immediate organization and gathers information on how others do the process they are studying. Some of this is formal library research and database search, gathering printed words from the public domain. There is much more of that than most people realize. (The International Benchmarking Clearinghouse of the American Productivity & Quality Center in Houston, Texas was organized to provide library and partner-matching services of the type described. They provide many services for nonmembers in addition to "turnkey" benchmarking help for members, including an asynchronous computer network exclusively for benchmarking specialists and a variety of training courses.) Not only do the generic business magazines directly put out much information on best practices, but also much information is buried in stories on an organization where the main theme is not significantly related to the benchmarking topic. Trade magazines and newspapers do not specialize in management issues, but they can include some articles for breadth or mention management issues in passing while discussing technical tools or product characteristics. Wall Street analysts both hear and make presentations. Consultants and marketing research groups conduct studies. Some industries bury a lot of information in tedious regulatory reports.

This subteam should not just read. Talking to industry associations, consultants, bankers, your employees who have worked elsewhere, and community associations or even neighbors, can be fruitful in some cases. Interviewing

journalists who have written the most useful and relevant articles is the best single “sure thing.” Much more useful and specific information is left on the cutting room floor than was put in the article, and most reporters can add their own subjective judgement to the more hedged material they published.

8.2.2.2 Researching the Process Internally. While one subteam is out researching the public domain, the other is gathering information about how the organization does the work now. This is more difficult than it sounds. A visit to the procedures manual is a good idea, but it may not reflect many of the informal and undocumented changes the process has gone through over the years. Some of the most interesting and fruitful projects deal with business processes that are relatively new and/or cut across many departments in a subtle manner. Here the procedures manual may not even recognize the existence of that process. The manual may also treat it as a series of mechanical handoffs from department to department rather than the chaotic, but cooperative, “fire drill” it has become.

Another problem (actually opportunity) is that different departments may perform the process differently. It is important to document and compare all these methods to arrive at the best one or few internal approaches before anyone talks very much to any outside organizations about comparison.

The next section, on the process template, outlines the information to gather. The focus is on flowcharts of all process alternatives along with data on the cost, time, and type of result for each approach. Also, the outline includes information on who owns the process and how it is managed (if it is).

The two subteams then present their findings to each other, and they will find a great deal of overlap. What one article discussed is actually being installed in one remote part of this organization. The approach that “Industry Week” joked about is exactly how we do it at headquarters! The consultant who said the relevant range of cycle times is three to four days needs to be questioned further as to inputs and outputs, because the best we can do is five days. One company actually claims to do it without any inspection – how is that possible?

The above is the raw material for a plan of how to proceed to the outside world.

8.2.3 Process Template

Many of the ways practices differ between organizations involve scope and intent rather than ways of doing a certain type of work. Once organizations address scope and intent issues, a fair comparison is possible between different ways of doing the same work. The following is a list of the main kinds of information to gather:

- definition and boundaries
- inputs
- outputs
- ownership
- participants
- measures
- inspections/reviews
- improvement in progress
- subprocesses
- previous benchmarks

To help gather this information, ask the following questions for each category:

(1) *Definition and boundaries.* What exactly do different key players call the target process? Where does it begin, where does it end, and where is it physically located?

(2) *Inputs.* What resources are present at the starting point? What materials are received? What information is needed? From whom is energy or capital required? Can the process be done with either “less finished” or “more finished” components?

(3) *Outputs.* What is delivered from this process and to whom? Is the product/service different with different customers? Are there different degrees of

“finish” or different levels of quality specified and/or tolerated? Is the output called different things by different people?

(4) *Ownership*. Each relevant department has a department manager. For processes that cut across several departments, who takes the lead on issues that concern the effectiveness of that process? Also does the organization have a “czar” for that subject who knows the most about the process regardless of formal reporting relationships?

(5) *Participants*. What parts of what departments are assigned to the process (or act as if they are so assigned)? Who else is critical to the process as a supplier, customer, advisor, inspector, reviewer, author, and so on? Do the human resources vary with the type of product/service or nature of customer?

(6) *Measures*. How is the process now measured within the relevant departments? How is the process measured as a whole? What is the performance trend in those measures? Are there any level measures? Which measures does the company currently use? Which could be used if they were available or desirable? Are the measures technically sound (weighting soundness, inflation adjustment, farmouts, target point vs. control range, etc.)?

(7) *Inspections and reviews*. How often does the company halt, divert, or otherwise intervene in the process for inspection and review? Is this required by customer, procedures manual, informal practice, or executive decree? Would the company/process gain any cycle time if they canceled the practice, or was that dead time anyhow? Who does the reviewing/inspecting and does it vary depending on the person?

(8) *Improvement in progress*. Are you dealing with a “moving target” here? What is driving the company to change the current method? Can you stop it or integrate it with the benchmarking project? Who is doing the improvement work?

(9) *Defined subprocesses*. Once interviews and work in the field have defined the target process, can you separately analyze the natural subprocesses involved? Are the subprocesses the same at each location organizationally? What is

the breakdown on cost, people, time, and error rate per subprocess? Is there a Pareto conclusion here?

(10) *Previous benchmarks.* Are there any “everyone knows” type of statements that lead to formal or informal goals/targets dating from the past? What is their source and justification? Can you change or erase them?

8.2.4 Outside Comparisons

The research has probably shown that plenty of information is now available on how the organization performs the process and what the outside world has to say about that type of work. It is now time to find an “exchange” benchmarking partner outside the organization. The team might have done this in parallel with the above research. Executive intuition might have already identified the process to benchmark as well as the company to benchmark with, or library research might have already suggested an obvious partner with apparently excellent practices in the target area. Regardless, an appropriately high-ranking executive must be the one to approach the most interesting potential partner. The team might arrange a meeting of the sponsoring executive and the project leader with their counterparts at the target organization.

8.2.4.1 Preparation. If the target organization has not been itself preparing for a mutual benchmarking project, they may need some time to think through what they want from you. You then, will probably need time to develop your side of the subject they suggest. The target organization also needs to formalize their excellent process. This usually is not a problem. One of the attributes of an excellent process is that it is quite simple and transparent. You would not have heard about it unless they had been talking about it, which in turn required some preparation on their part. Identifying the best partner early in the research gives them more time to prepare and can prevent delay to your project. On the other hand, it is not wise to cut the internal analysis project short because you can learn so much that is of permanent value. Nor is it wise to cut the library work short, because there is always a chance this partner cannot provide a usable approach and you will have to choose a second partner.

8.2.4.2 Ground Rules. An early and necessary part of the external project is to come to an agreement with the outsiders on general conduct of the study. Many organizations, unfortunately, choose to admit lawyers to the project at this point. What the partners need most at this point, however, is ground rules rather than strict procedures and prohibitions. Usually the participating organizations are not competitors. They may have previously cooperated as supplier and customers. They may be geographic neighbors. They may share a minority owner or an investment banker. Or they may have no previous relationship. A benchmarking code of conduct was developed by the International Benchmarking Clearinghouse of the American Productivity & Quality Center. Most of the issues are more concerned with common courtesy than with legal issues.

Benchmarking Code of Conduct

- Conduct yourself within legal bounds.
- Participate by exchanging information.
- Respect confidentiality of information.
- Use information only for the intended purpose.
- Initiate contacts with designated individuals.
- Obtain permission before providing contacts.
- Be prepared for each benchmarking event.
- Follow through with commitments to partners.
- Treat information from others as they desire.

Source: International Benchmarking Clearinghouse

The two parties also have to decide if they want neutral facilitation or whether the two team leaders or someone else can handle it. They have to decide at what point visitation becomes important. At one extreme is the highly visible production process that you have to see to talk about it. At the other extreme is computer-based support process or production process apparent only through the morale of the workers and the computers they use. If in doubt, delay site visits

until the participants understand not only what is happening, but also what is supposed to be happening, and how this looks on measurement charts and tables.

8.2.4.3 Comparing Approaches. Once the teams from both organizations have done their ground work, they need to present their approaches to each other. This meeting, or series of meetings, can last for minutes, hours, or days. The teams need to compare, contrast, challenge, and generally clarify for the originating team how they might use what they learned from the approach of the target team/organization. Sometimes this is of little value. The target organization might have a special circumstance, customer quirk, or unique equipment that is difficult for the originating organization to reproduce. The target organization usually agrees to present and discuss their approach, but usually not to help in the installation of the new approach, even if it is fully acceptable.

8.2.4.4 Accepting the Approach. So the originating team has to return home, contemplate what they learned, and then either proceed to more benchmarking or to the development of an installation/implementation project. The returning team usually only makes a recommendation. It is up to the sponsoring executive(s) to decide whether to accept and proceed or not. Much of the discussion revolves around proforma goal setting. For example, they currently might be producing at \$456 per shot, with a 5.3 percent error rate, and a lead time of six weeks. Their goal for next year was to be producing at \$425 per shot, 4.5 percent error rate, and a five week lead time, although it was not clear how they would achieve this. Now this (crazy?) team comes back and says they can do it for less than \$100 per shot, 1.0 percent error rate, and lead time of one week initially, and later, two days. To pull this off requires changing some previously sacred work rules, so the union has to agree. (Fortunately two people on the team were union members.) They would need to buy more versatile and lighter-weight machinery. And, they would need to convince some of their customers to receive the product in different packaging. This has become a complex decision.

8.2.5 Implementing Change

But note the good news: The venture created a very substantial improvement project without the large cost of a consultant's formal study. The proposed changes work elsewhere; so they do not have to be the pioneers. Many of the recommending team are familiar with both the old way and new way of doing things; this is certainly a first around here! All the departments were involved, the union was involved, and someone else, in addition to the accountants and engineers, was working with the numbers. It sounds like a good chance for success, and they now have some experienced benchmarkers who can move on to other process teams. They incurred some cost to provide information on their other process to the partner company. But even here they might learn something new. Once the benchmarking team provides its recommendations for change, two cautions are worth mentioning:

- Several stakeholders are watching with some apprehension, unless the company brought them into the project earlier. The process owner and some of the people in the current process, hopefully, were involved in the project and received the proper assurances about employment security and a chance to influence the current solution. If not, provide this groundwork before the installation project begins.

- If the benchmarking affects outside customers and suppliers, they also should have been on the project early. Their opinions are valuable and they also need proper assurances that the improvement benefits them as well. They need to know that the company will correct any problem.

- Finally, the rhetoric of change needs to emphasize that this is one in a series of ongoing changes rather than the final solution for all time. Most benchmarking organizations recognize the need for periodic strategic reviews every few years of previously benchmarked subjects. Reviews guard against lapses into the "old way" and encourage the realization that an even better way can be developed at any time especially as corporate strategies change (Watson, 1992, 1993).

9. Models of Benchmarking

Harrington and Harrington (1996) distinguish five categories of benchmarking:

1. *Internal benchmarking*: The comparison is between various business units or locations within one's own organization to find the best practices and extend them throughout the organization. It is recommended that an organization carries out internal benchmarking first, as it provides detailed data on the organization, and is an excellent training for personnel in the practice of benchmarking.

2. *External Competitive Benchmarking*: The organization compares itself with its direct competitors. This requires a detailed analysis of competitors' products, services and processes. Few organizations can compete without a clear understanding of the competition's products and services at least. Commonly, a competitor's products or services are purchased and analysed. Products are tested and disassembled, to determine their strengths and weaknesses. The investigation extends to some aspects not directly related to the product, such as packaging and delivery.

3. *External Industry (Compatible) Benchmarking*: The comparison is made with the best organizations in the same or a similar industry, but not directly competing.

4. *External Generic (Transindustry) Benchmarking*: The comparison is made with similar processes in different industries from that of one's own organization. This is possible because many operations, such as inventory control, advertising, personnel management and customer relations, are practiced in common across industries. Innovative ideas may well arise from consideration of dissimilar industries.

5. *Combined Internal and External Benchmarking*: A combination of internal benchmarking with one or more of the external approaches frequently produces the best results.

In addition, and cutting across the above categories, benchmarking may be considered as (a) Strategic, when a specific function, such as that of finance, is benchmarked to discover its strengths and weaknesses; or (b) Organizational, when directed at specific processes or tasks that will affect the organization's competitive position. Strategic benchmarking is often followed by a series of specific organizational benchmarking projects.

10. The Technique of Benchmarking

Harrington and Harrington (1996) again divide the benchmarking process into five phases: (1) Planning, (2) Internal data collection (3) External data collection, (4) Improvement of performance, and (5) Continuous improvement.

1) Planning

The first requirement is to decide what to benchmark. Business procedures, equipment, production processes, products and services can all be benchmarked. The items chosen will be ones critical to the success and competitiveness of the organization and must be clearly defined and prioritized. The team assigned to initiate benchmarking will then, in many firms, present a benchmarking proposal to top management.

It must then be decided how to measure the desirable characteristics of the chosen benchmark item. Only with an accurate and consistent means of measurement can one compare performance between different organizations and units.

The core of the benchmarking activity is the collection of a comprehensive database. The team will at this stage decide on the data collection plan. Information required will be (a) Internal, on how the item is performing at different locations within one's own organization; and (b) External, on how the item is performing at other organizations. In either case the team will first look for published information (secondary data), before carrying out its own original research (primary data). It is now that a provisional list of benchmarking

“partners,” organizations or units selected for final detailed comparative study, will be drawn up.

2) Internal Data Collection and Analysis

It is an advantage first to compare how the various divisions and departments within one's own organization are using the benchmark item, before looking at external organizations. Published information will comprise internal reports and studies produced within the organization; but there may exist external sources, such as journal articles and news coverage on how the organization is using the item. On the basis of this information, internal benchmarking sites, especially of the “best” users, will be selected for original research. The team will conduct internal interviews and surveys, at the chosen sites especially, and endeavour to determine the root causes why some units fall behind others, and devise corrective action to close the performance gap.

At this stage a benchmarking committee may be formed from representatives of the study sites plus additional technical experts. This phase will conclude with visits by the team to the study sites to obtain further information and define corrective action.

3) External Data Collection and Analysis

Attention will now be turned to external benchmarking partners. The process is in some ways similar to internal data collection. Published information on potential partners will be public and not difficult to obtain, but it may be very large and analysis time consuming.

It is at the stage of external original research that the team will meet its first real challenge. Other organizations, particularly competitors, may be reluctant to reveal information. Data may first be obtained from external experts, professional associations, consultants and business research organizations.

Except in the case of competitors, the team will then contact potential external partners for exchange of information and site visits.

Where competitive products and services are being benchmarked, the team must make an effort to generate the information itself. The team will need,

firstly, to survey comparative customers' opinions of the item from the various producers. A common practice is to purchase the services or products of the competitor for assessment. Tangible products will be tested, disassembled, and performance compared.

At all these stages the database is updated and reanalysed. At the conclusion of phase 3 it should be possible to identify the reasons for negative gaps in one's company performance.

4) *Improvement of Performance*

The team will now define and evaluate alternative future state solutions. The objective is not merely to equal the best performance – in this case the competitor will again be ahead by the time one has caught up – but to exceed it.

Having decided the best value solution, the team must plan to implement it. Part of this will involve designing an Organizational Change Management Plan, that will minimize resistance to change. Top management's commitment to the plan must be gained.

When the plan is implemented its impact must be measured.

5) *Continuous Improvement*

The effort to improve the item's performance must be continuous. The database must be continuously upgraded, on the basis of new research. It is suggested that the performance of the item should be reviewed yearly.

11. Cases in Benchmarking

11.1 *IBM*

Activities begun by IBM in the early 1960s are an example of internal benchmarking. At that time IBM perceived a great deal of variation in the quality of performance among different locations. Key indicator measurements were established for each function. Functions were, for instance: development engineering, product engineering, personnel management, quality assurance, accounting and customer engineering. Key measurements were for instance of:

new product release cycle time, ratio of quality inspectors to manufacturing operators, span of control, maintenance cost as percentage of equipment cost, cost of research and development per patent granted. Results of measurement were reported to corporate headquarters annually, for analysis and comparison between locations. Reports were returned to all locations and those with inferior performance were required to study those performing well and propose strategies for closing the gap. A problem encountered was that poorly performing managers often reacted defensively, rather than considering how they could improve; and there was insufficient follow up by management to realize all the potential benefits.

Later IBM extended internal benchmarking to its locations worldwide. Production cost, quality and consistency of products were benchmarked. The aim was to make the best practices found common to all IBM plants. The result was a significant gain in international competitive advantage (Harrington & Harrington, 1996, pp. 30-31).

11.2 Xerox Corp.

This is often considered the classic example of benchmarking, at least among US companies. Xerox became worried when it began to lose its market share in high-end copiers to Canon and other Japanese competitors. One of its first benchmarking partners was its own Japanese affiliate, Fuji-Xerox. Data exchange later extended to other Japanese manufacturers such as Canon, Minolta and Toyota. Xerox discovered that its competitors could sell copiers at the price it cost the US corporation to make them. Benchmarking was thus first aimed at cost reduction and was so successful that it was made an integral part of corporate policy for total quality management.

Companies in widely differing lines of business were benchmarked; for instance L.L. Bean, the garment distributors, who were considered superlative in warehousing and distribution techniques.

Xerox devised a 10-stage benchmarking model:

Planning

- Stage 1. Identify benchmarking subject.
- Stage 2. Identify benchmarking partners.
- Stage 3. Determine collection method and collect data.

Analysis (commencing at Stage 3)

- Stage 4. Determine current competitive gap.
- Stage 5. Project future performance.

Integration

- Stage 6. Communicate findings and gain acceptance.
- Stage 7. Establish functional goals.

Action

- Stage 8. Develop action plans.
- Stage 9. Implement plans and monitor progress.
- Stage 10. Recalibrate the benchmark.

At the end of Stage 10, one returns to Stage 1. Benchmarking is thus continuous (Boxwell, 1994, pp. 38-43).

11.3 Motorola

In developing its Bandit pager, Motorola instructed its development team to abandon the traditional resistance to ideas originating outside the corporation, and to use anybody's good ideas they could find anywhere. The team visited the best engineering and manufacturing organizations in the world, learning for instance from Honda just-in-time manufacturing, and from other Motorola divisions. The Fort Boylloss Beach Plant set up to manufacture the pager became an automated "factory of the future," able to reduce the production time for a highly personalized item from days to minutes.

12. Summary

Benchmarking is systematic comparison between organizations. Anyone can benchmark with anyone, but the search is for best practices, so the demand is for high reputation companies. The meaning of "best" varies widely - it can be

lowest cost, highest perceived quality, lowest actual error rate or waste, shortest cycle time, or other variables or combinations.

Organizations can benchmark internally, within an industry, or outside an industry. The issues in question can be strategic or operational, industry-specific or quite generic. Studies can involve two organizations, several organizations, or a whole industry or category.

Regardless of the subject, the organization, or the format, benchmarking outreach and comparison provide several substantial advantages:

(1) The goal-setting process gains objectivity. The organization sees evidence of what others can do and accepts goals more readily because they are more realistic.

(2) An organization examines itself. The pressure of giving information on itself to outsiders makes an organization think seriously about how it does things. Facts replace hunches. Measures replace vague words.

(3) Benchmarking teams become effective change agents. Given cross-cutting responsibility, they carry an issue through from definition, to discovery, to implementation.

(4) Benchmarking increases profits. Officially the teams were developed to make substantial improvements or breakthroughs. Sometimes this happens, but sometimes the improvement is more modest on any one process or strategic issue. An overall benchmarking program, however, employs several different appropriate approaches, which makes it a high-yield project in many terms!

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