Benchmarking in Six Sigma

Benchmarking can be a key step in DMAIC to improve processes

What is Benchmarking?

A highly structured strategy for acquiring, assessing and applying customer, competitor and enterprise intelligence for the purpose of product, system or enterprise innovation and design.

Why Benchmark to "Best Practices, Processes and Products"?

What do you gain?

Customers are Increasingly Demanding and Santa Must Deliver!

Customer expectations are simple. They want more goods and services at a lower cost, in a shorter time frame, with more information.

So you must improve your processes and products!

Benchmarking *within* the Six Sigma Perspective

Benchmarking comes in the Analyze Phase of DMAIC: It helps define Performance Objectives

Benchmark: World-class performance

Z short-term: The level of performance a business should be able to achieve given the investments already made.

P(x)

Benchmark

Z short-term

Baseline

Baseline: The current level of performance

% Defects
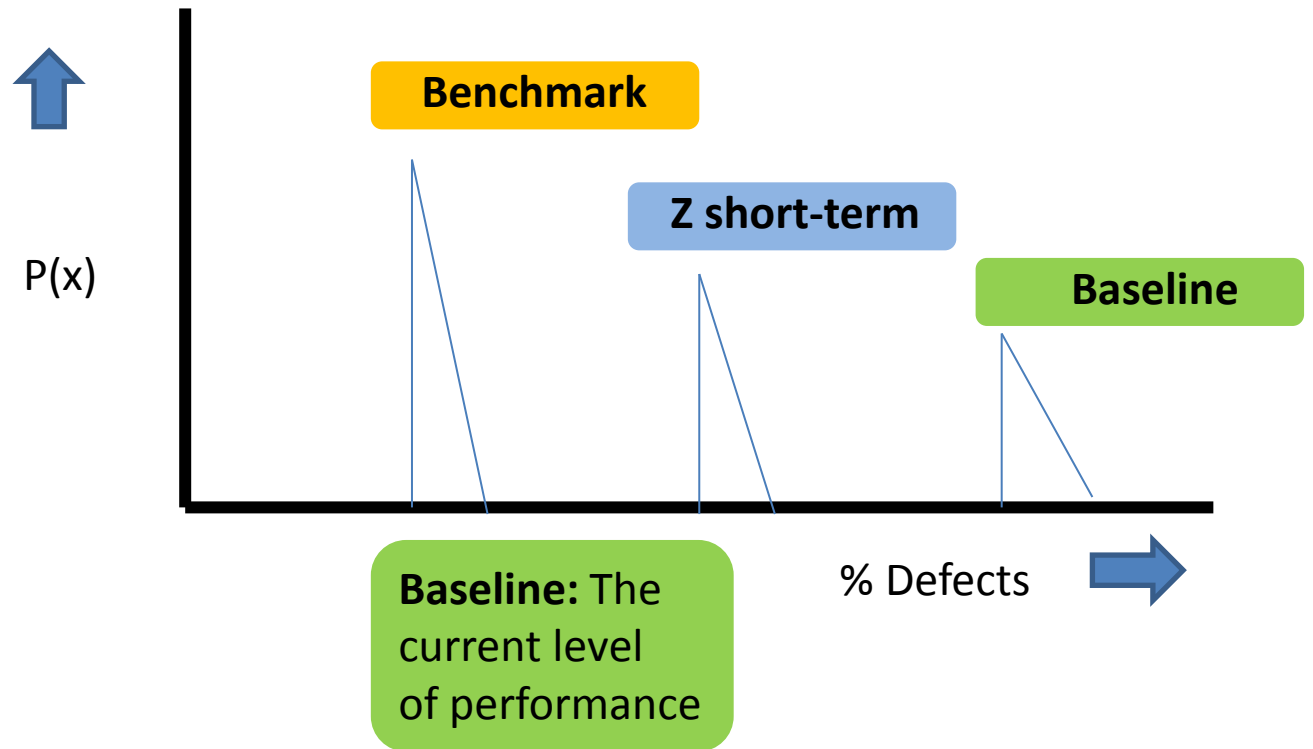
Benchmarking sets the ultimate goal while baselining takes current measurements to monitor a process
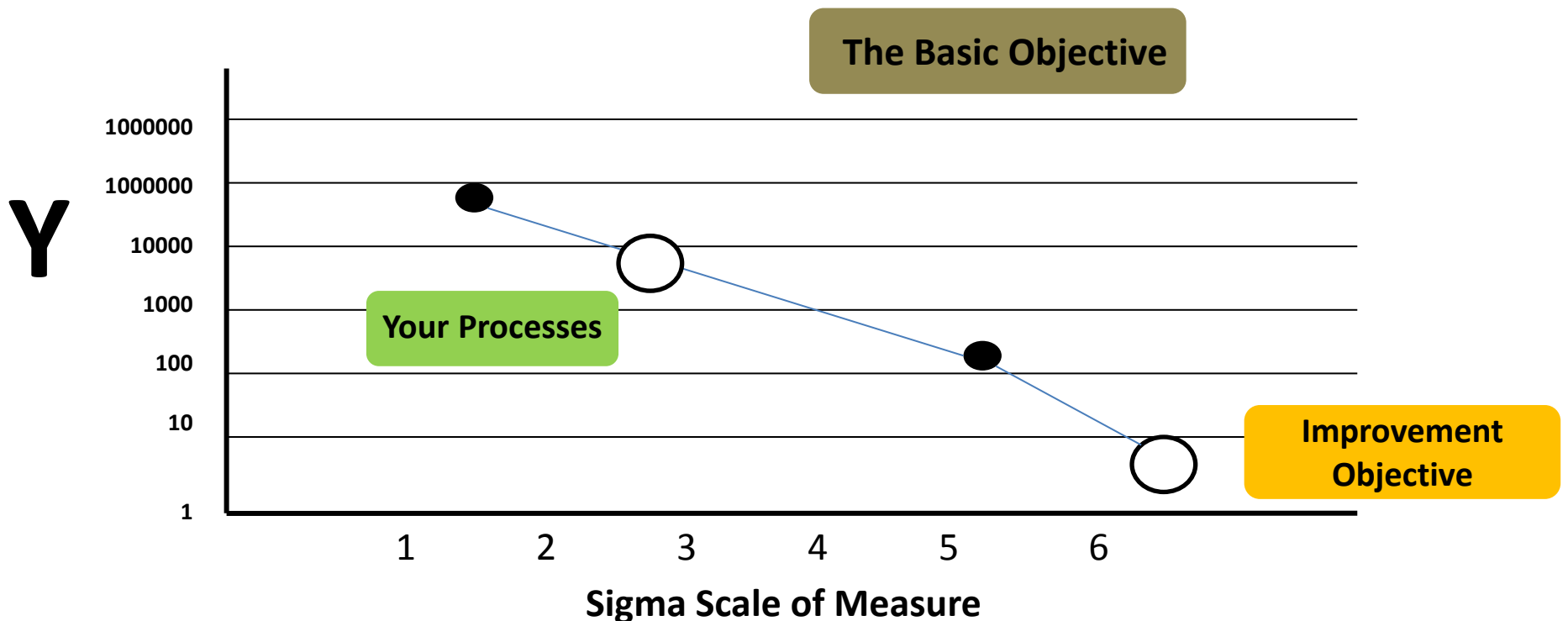
Defining Improvement Objective for Y

Z Short-term: Short-term performance of the process
Benchmarking: Get to best-in-class
Learning Curve-Based: Get to 6 Sigma across all processes in 3 years
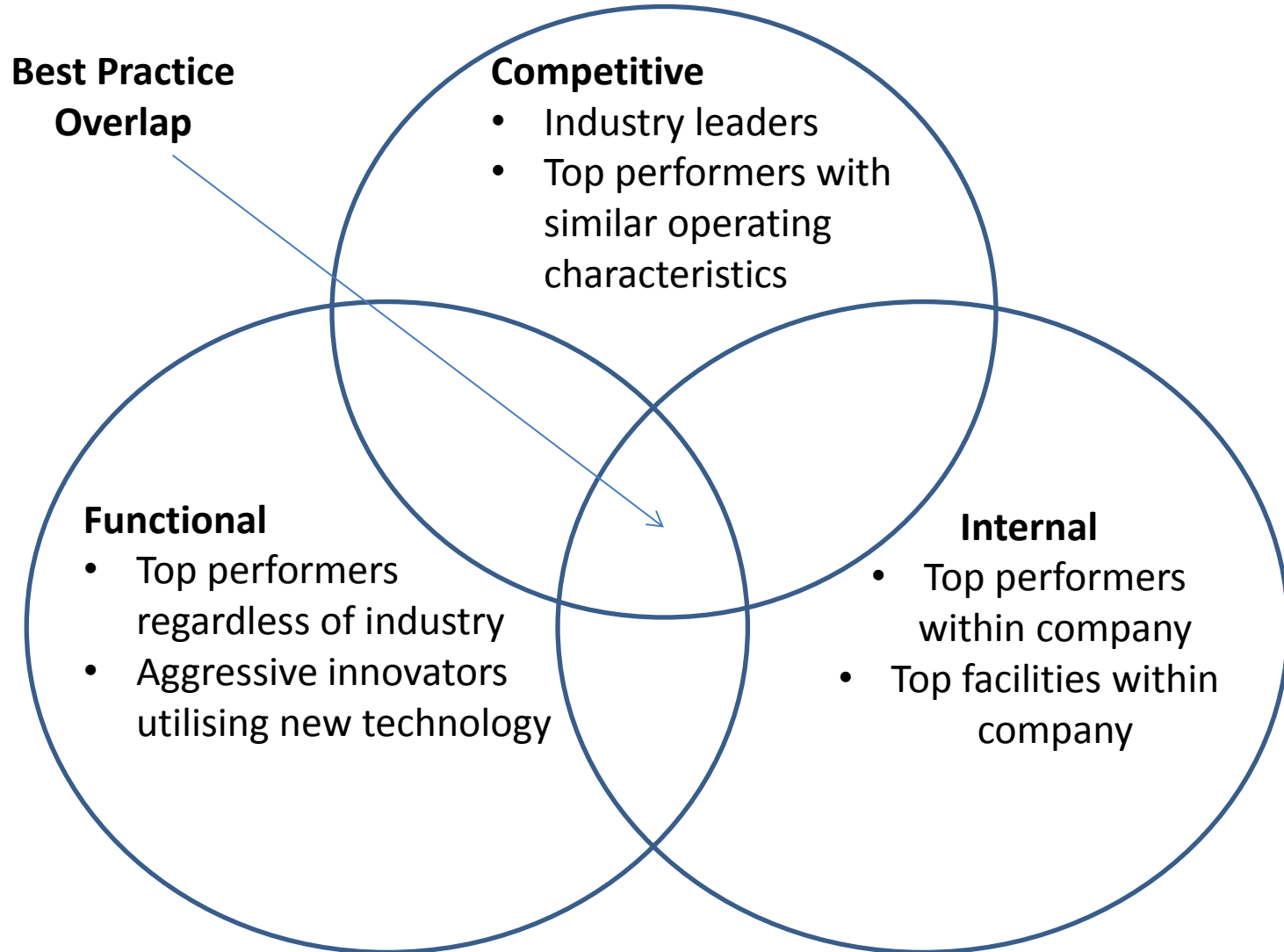**Defect Reduction**: e.g. Eliminate 90% of defects

Six Sigma Teams Set Aggressive but Achievable Objectives

In DMAIC, like DOE, Benchmarking provides an actionable approach for improvement

(a) The process of identifying and learning from best practices anywhere in the world is a powerful tool in the quest for continuous improvement.

(b) The systematic process searches for best practices, innovative ideas and highly effective operating procedures that lead to superior performance.

Learning by borrowing from the best and adapting their approaches to fit your own needs is the essence of benchmarking. It has broad applications in problem solving, planning, goal setting, process improvement, innovation, reengineering, and strategy setting. It is a fundamental business skill that supports quality excellence.

Typical Benchmarking Methodology

Best Practice Overlap

Competitive
- Industry leaders
- Top performers with similar operating characteristics

Functional
- Top performers regardless of industry
- Aggressive innovators utilising new technology

Internal
- Top performers within company
- Top facilities within company

Benchmarking is …

- A continuous process.
- A process of investigation that provides valuable information stimulating improvement.
- A process of learning from others; a pragmatic search for ideas – that are successfully working elsewhere.
- A time-consuming, labor-intensive process requiring discipline – the task is not easy!
- A viable tool that provides useful information for improving virtually **any business process.**

Benchmarking Line of Attack

The How-to-do in Benchmarking

1. Identify Process to Benchmark

- Select process and define defect and opportunities
- Measure current process capability and establish goal
- Understand detailed process that needs improvement

Benchmarking Best Practice

The How-to-do in Benchmarking

2. Select Organization to Benchmark

- Outline industries/functions which perform your process
- Formulate list of world class performers
- Contact the organization and network through to key contacts

Benchmarking Best Practice

The How-to-do in Benchmarking

3. Prepare for the Visit

- Research the organization and ground yourself in their processes
- Develop a detailed questionnaire to obtain desired information
- Set up logistics and send preliminary documents to organization

Benchmarking Best Practice

The How-to-do in Benchmarking

4. Visit the Organization

- Feel comfortable with and confident about your homework
- Foster the right atmosphere to maximize results
- Conclude in thanking organization and ensure follow-up if necessary

Benchmarking Best Practice

The How-to-do in Benchmarking

5. Debrief and Develop an Action Plan

- Review team observations and compile report of visit
- Compile list of best practices and match to improvement needs
- Structure action items, identify owners and move into Improve phase

Benchmarking Best Practice

The How-to-do in Benchmarking

6. Retain and Communicate

- Report out to business management and 6σ leaders
- Post findings and/or visit report on local server / 6σ bulletin board
- Enter information on your Intranet benchmarking project database

Sources of Benchmarking Information

Library Database	Internal Reviews
Internal Publications	Professional Associations
Industry Publications	Special Industry Reports
Functional Trade Publications	Seminars
Industry Data Firms	Industry Experts
University Sources	Company Watches
Newspapers	Advertisements
Newsletters	Original Research
Customer Feedback	Supplier Feedback
Telephone Surveys	Inquiry Service
Networks	World Wide Web

Designing a Benchmark Architecture

Ten Generic Benchmark Categories

- Customer service performance
- Product/service performance
- Core business process performance
- Support process and services performance
- Employee performance
- Supplier performance
- Technology performance
- New product/service development and innovation performance
- Cost performance
- Financial performance

Customer Service Performance Measures

Best Customer-related Measures Come from Objective and Valid Data Collected Directly from Customers

- Customer service performance measures typically probe organizational performance in the following areas:
- Overall customer satisfaction with products and services
- Customer evaluation of sales and services representatives
- Customer assessments of your organization's understanding of customer needs
- Customer ratings of how clearly your organization communicates cost information and how well the organization suggests customer solutions
- Customer appraisals of delivery timeliness
- Customer impressions about the usefulness of your organization's product and service documentation
- Customer feelings concerning how easy it is to conduct business with your organization
- The value customers place on your organization's products and services

Product/Service Performance Measures

Product and service performance benchmarks include measures of:

Accuracy, Reliability, Timeliness, Order ease, Delivery, Packaging, Ease of assembly and use, Documentation, Billing, After-sales service, Effective complaint management

These may also include:

Warranty exchanges and returns, Unit productivity and cost, Cycle time for key intervals, Market share
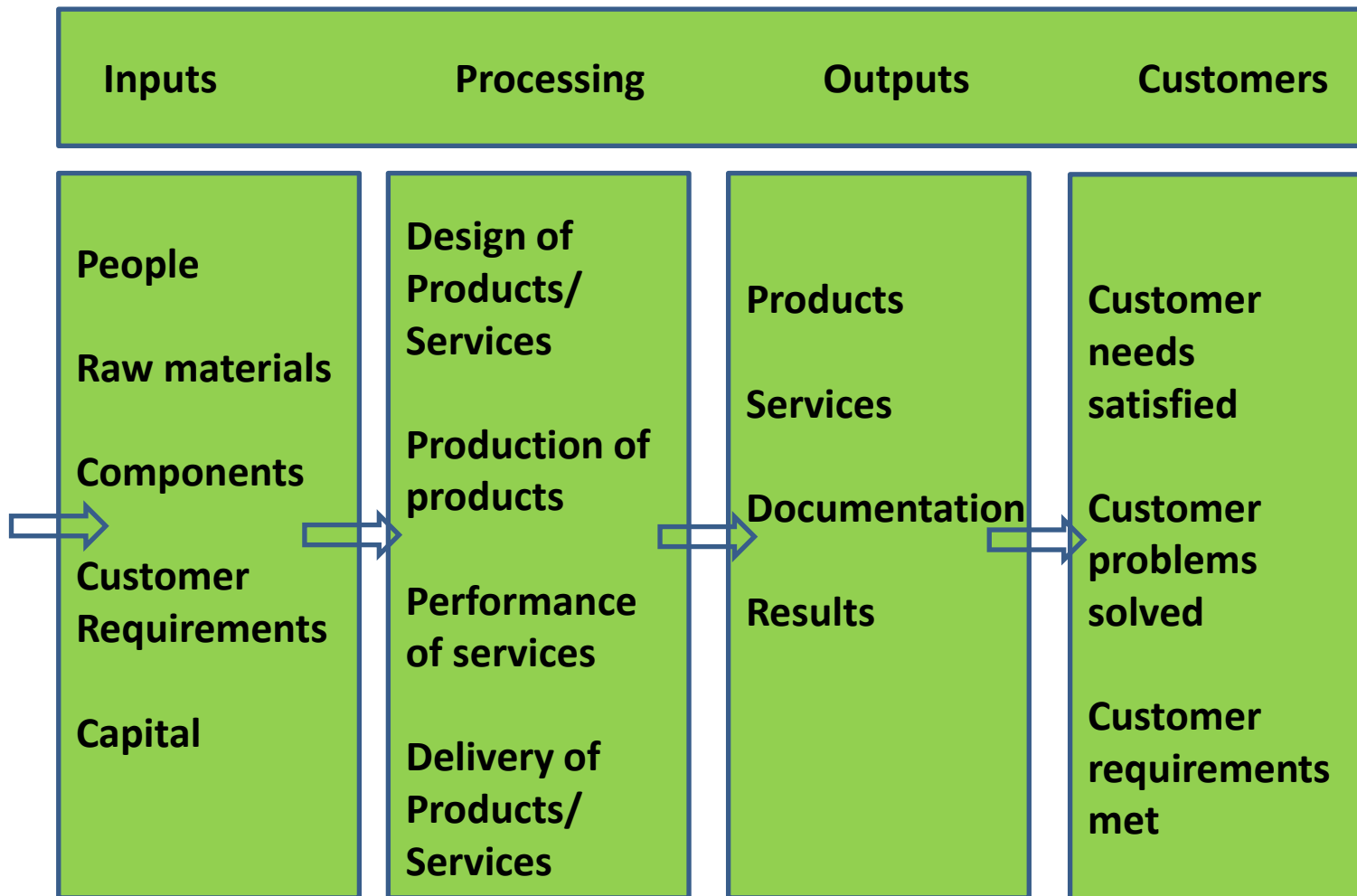
Business Process Performance Measures

A simple process analysis model can help identify your organization's most important workflows. This model reveals that all work can be viewed in four sequential stages:

1 **Inputs** (including those from both employees and suppliers)
2 **Processes** (including internal operations and support services)
3 **Outputs** (your organization's products, services and documentation)
4 **Customer satisfaction**

In the following graphic (the input-output process model) inputs are tangible (such as suppliers, raw material and component products) or intangible (such as information), delivered to the work process which transforms them into some final output – a product or service. The goal of the output is to create satisfied and loyal customers. Processing steps and output quality can be benchmarked.

Input-Output Process Model

Inputs	Processing	Outputs	Customers
People

Raw materials

Components

Customer Requirements

Capital | Design of Products/ Services

Production of products

Performance of services

Delivery of Products/ Services | Products

Services

Documentation

Results | Customer needs satisfied

Customer problems solved

Customer requirements met |

Best Practices – The Means to the Ends

Enablers – They let you achieve improvement

| SOFT	MEDIUM	HARD
Training	Goals & objectives	Plant
Communication	Sequence	Suppliers
Empowerment	Controls	Money
Attitude	Measures	Technology
Management Involvement	Policies and Procedures	Equipment

Benchmarks and Benchmarking: Managing Change

Best Practices Benchmarking can be described as the process of seeking out and studying the best internal and external practices that produce superior performance.

- Don't reinvent what others have learned to do better!
- Borrow shamelessly!
- Adopt, adapt, advance!
- Imitate creatively!
- Adapt innovatively!

Benchmarking for Best Practices

Information required to impact

Metrics	⟷	**Processes**
Benchmarks	⟷	Benchmarking
Operating Statistics	⟷	**Practices**

Best Practices
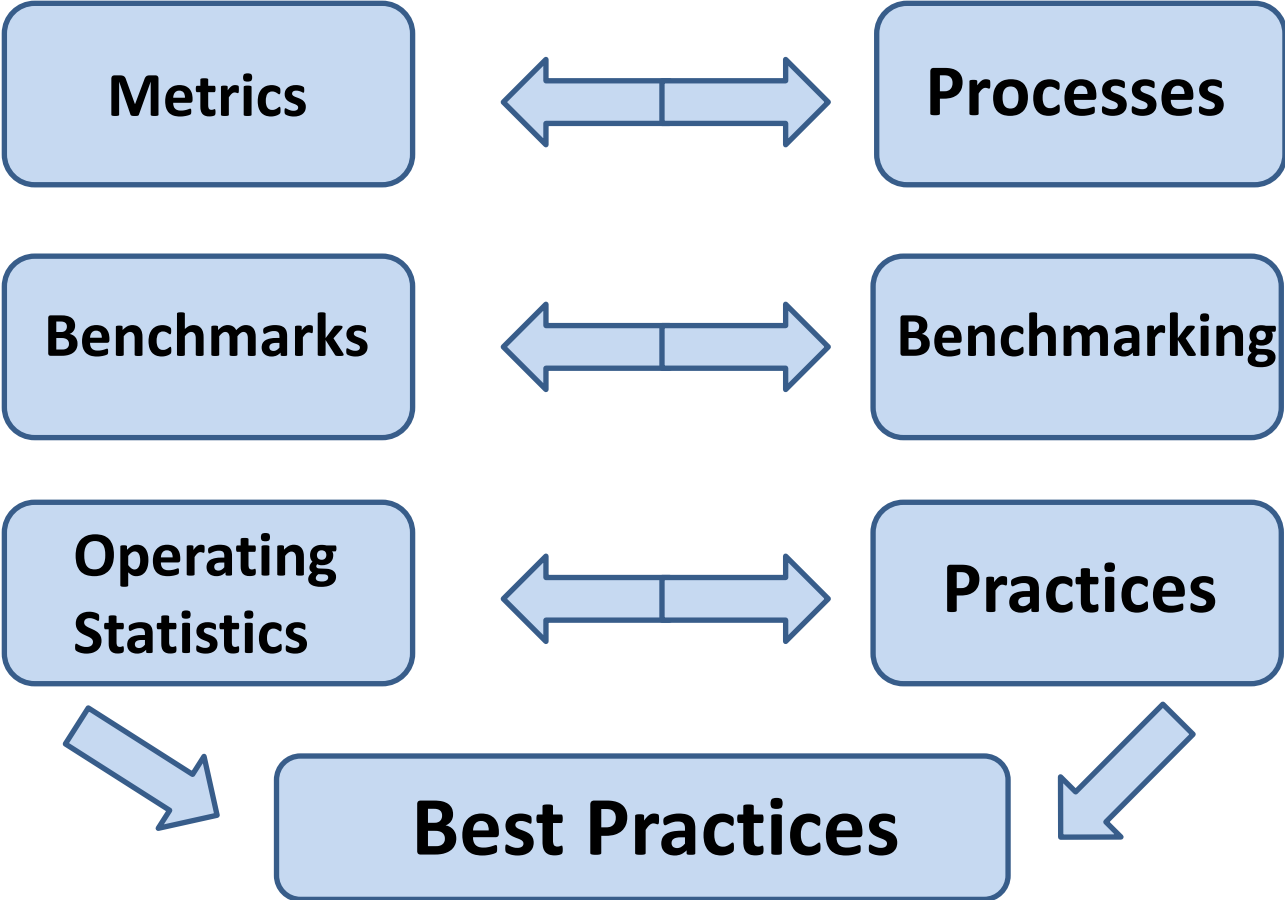
Process Benchmarking

Process benchmarking focuses on discrete work processes and operating systems, such as the customer complaint process, the order-and-fulfillment process, or the strategic planning process.

Process benchmarking seeks to identify the most effective operating practices from many companies that perform similar work functions.

Its power lies in its ability to produce bottom-line results. If an organization improves a core process, for instance, it can then quickly deliver process improvement.

Strategic Benchmarking

Strategic benchmarking examines how companies compete and is seldom industry-focused. It roves across industries seeking to identify the winning strategies that have enabled high-performing companies to be successful in their marketplaces.

Strategic benchmarking influences the longer-term competitive patterns of a company. Consequently, the benefits may accrue slowly.

Benchmarking Applications and their Benefits

- Setting and refining strategy
- Reengineering work processes and business systems
- Continuous improvement of work processes and business systems
- Strategic planning and goal setting
- Problem solving
- Education and idea enrichment
- Market performance comparisons and evaluations
- Catalyst for change

Widely Acknowledged Benchmarking Benefits

- Improves organizational quality – products and services
- Leads to lower cost positions
- Creates buy-in for change
- Exposes people to new ideas
- Broadens the organization's operating perspective
- Creates a culture open to new ideas
- Serves as a catalyst for learning
- Tests the rigor of internal operating targets
- Creates an external business view
- Raises the organization's level of maximum potential performance

Benchmarking Compliance – You must adhere to these

- Policy regarding benchmarking protocol should be communicated to all employees involved prior to contacting external organizations. Guidelines should address the following areas:
- Misrepresentation – Do not misrepresent your company's or personal identity in order to gather information.
- Information requests – A request should be made only for information your organization would be willing to share with another company.
- Sensitive/proprietary information – avoid direct benchmarking of sensitive or proprietary information.
- Confidentiality

Benchmarking Compliance contd.

- Avoiding inappropriate communication and contacts with competitors.
- Never propose, enter or engage in a discussion related to any agreements with a competitor to fix prices, in terms or conditions of sale, costs, profit margins, or other aspects of the competition.
- Keep communications with competitors to a minimum – make sure there is a legitimate business reason for all such communications.

Benchmarking Compliance contd.

Consult with business legal counsel before initiating any contact with competitors regarding Six Sigma (or any other topic):
- Benchmarking
- Training of suppliers and customers – they may also be competitors.

Comply with GECS guidelines for:
- Documenting competitor contacts – check with legal counsel first.
- Participating in trade associations and standards – setting groups.

Benchmarking Code of Conduct

Adopted by The Council on Benchmarking of The Strategic Planning Institute

- Personal interaction, openness, sharing and the transfer of information.

- Trust between benchmarking parties is fundamental.

- To respect the rights and prerogatives of others and reflect legal considerations and limitations, the following guidelines are suggested for any benchmarking interaction.

Legal and Ethical Guidelines

Ethics

- Principles, guidelines, or standards that determine a protocol of interaction between individuals and organizations.
- Deal in a forthright and above board manner.
- Provide for a clear understanding of the intended use of information. Consult your partner(s) should your intent change.
- Conduct benchmarking activities with integrity and in a professional manner. Establish specific ground rules in advance, particularly when benchmarking with a competitor.

Legal and Ethical Guidelines contd.

Legality

- Never misrepresent yourself or your organization's interest in a benchmarking exchange.
- Treat information obtained from a benchmarking partner as privileged. Identify all parties who will have access and the extent of that access.
- Comply with antitrust laws; Be aware of potentially sensitive issues and consult with legal counsel if gathering procedure is in doubt, particularly if dealing with current or potential competitors.

Legal and Ethical Guidelines contd.

Legality: Proprietary Information

Any information (in tangible or intangible form) created, acquired or controlled by the company that has not been published or released without restriction of a type the company wishes to maintain confidential.

Proprietary information includes various kinds of technical information per Securities & Exchange Commission requirements.

- Request and accept only the types and levels of information that you and your organization are willing to share.
- Understand your and your partner organizations definitions, restrictions and controls on proprietary information.
- Respect the sensitivity of partner organizations in areas that you might not consider proprietary.
- Seek prior understanding about what can be shared and/or how it might be used.
- Consult legal counsel on restriction or rights regarding proprietary information.

Legal and Ethical Guidelines contd.

Legality: Intellectual Property

Refers to the kind of property created from intellectual activities in the industrial, scientific, literary or artistic fields. It includes business and technical information (e.g. scientific works, inventions, industrial designs, computer programs) and the material that might lead to patents, copyrights, trademarks, service marks, and commercial names or designations.

- Know the internal organization source for any information that your organization plans to provide in a benchmarking exchange.
- Understand the nature and value of your organization's intellectual property. Respect the values of your benchmarking partner.
- Seek prior understanding about what can be shared and how it might be used.
- Consult legal counsel on restrictions or rights regarding intellectual property.

The Benchmarking Code of Conduct

Summary

In Benchmarking remember to:
1. Keep it legal
2. Be willing to give what you get
3. Respect confidentiality
4. Keep information internal
5. Use benchmarking contact
6. Don't refer without permission
7. Be *prepared* at initial contact

Etiquette and Ethics

In actions between benchmarking partners, the emphasis is on openness and trust. The following guidelines apply to both partners in a benchmarking encounter.

- In benchmarking with competitors, establish specific ground rules up front, e.g. "We don't want to talk about those things that will give either of us a competitive advantage, rather, we want to see where we both can mutually improve or gain benefit."
- Do not ask competitors for sensitive data or cause the benchmarking partner to fell that sensitive data must be provided to keep the process going.
- Use an ethical third party to assemble and blind competitive data, with inputs from legal counsel for direct competitive comparisons.

Etiquette and Ethics

- Consult with legal counsel if any information gathering procedure is in doubt, e.g. before contacting any direct competitor.
- Any information obtained from a benchmarking partner should be treated as internal, privileged information.
- DO NOT
- Disparage a competitor's business or operations to a third party.
- Attempt to limit competition or gain business through the benchmarking relationship.
- Misrepresent oneself as working for another employer.

Guidelines for Face-to-Face Site Visits for Benchmarking

- Provide meeting agenda in advance.
- Be professional, honest, courteous and prompt.
- Introduce all attendees and explain why they are present.
- Adhere to agenda: maintain focus on benchmarking issues.
- Use language that is universal, not one's own jargon.
- Do not share proprietary information without prior approval, from the proper authority, of both parties.
- Share information about your process, if asked, and consider sharing study results.
- Offer to set up a reciprocal visit.
- Conclude meetings and visits on schedule.
- Thank the partner for the time and for the sharing.

Lessons from Active Benchmarkers

1. Do not strive to benchmark everything as best-in-country or best-in-world levels. No company can be the best in every function – focus on processes and practices of strategic importance.

2. Seek best-in-class benchmarks for core processes and functions of the highest strategic importance, the Pareto Principle wins again. Other benchmarks can come from levels 2 through 5. World and country leadership benchmarks require precious time, resources and effort to develop.

3. Seek internal, regional or industry benchmarks for secondary and support processes, for some processes and business activities that are not critical to the organization's strategic advantage internal, regional or competitive benchmarks may be most appropriate. Such benchmarks produce incremental improvements that are substantial – even if not radical or breakthrough in terms of the size of the expected improvement benefits.

Benchmarks and Performance Measurement

- Revolutions begin long before they are officially declared.
- For several years, senior executives in a broad range of industries have been rethinking how to measure the performance of their businesses.
- At the heart of this revolution lies a radical decision: to shift from treating financial figures as the foundation for performance measurement to treating them as one among a broader set of measures.

Professor Robert Eccles, Harvard Business School

A Benchmarking Case Study

Greenwich Hospital

Surviving in a Competitive Marketplace:
Opportunities for Physician Practices

November 9, 2005

How to Improve Your Practice

Identify mission

Assess your Practice Performance
- Self-assessment tools
- Benchmark key indicators

Consider collaborating to leverage resources

Quantify opportunities and implement

Benchmarking Defined

"A continuous process of measuring

- Productivity
- Revenue
- Costs
- Quality

using standard, objective measures."

Keys to Profitability

Productivity Indicators

- Hours per week – example provided
- Visits per hour
- Revenue (collections) per physician – example provided
- Surgeries per week – example provided

Account Receivable Indicators

- A/R by aging – example provided
- Charges vs. Collections – example provided
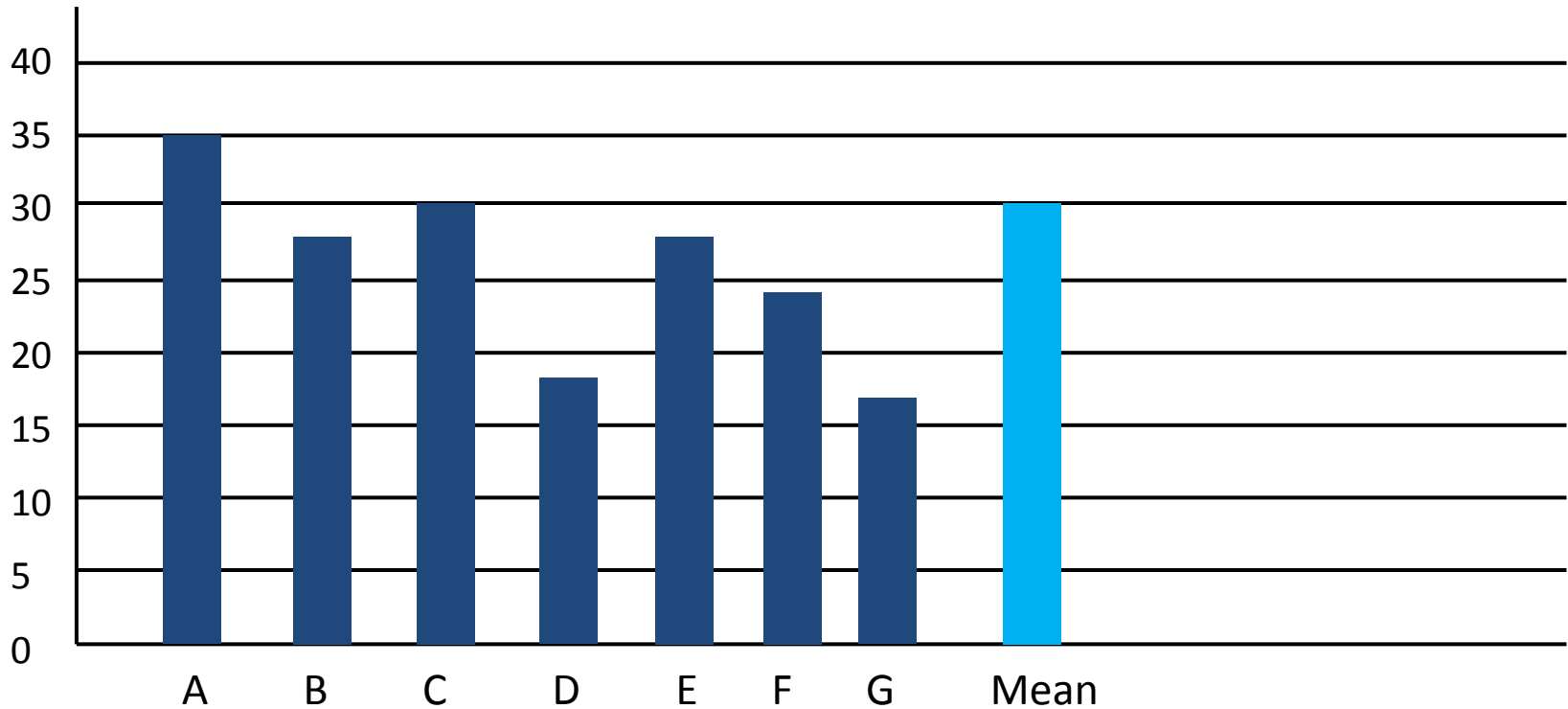- A/R by Physician

Expense Indicators

- Staffing levels – example provided
- Overhead as a percentage of revenue

Governance – Qualitative Indicator

- How effective is your decision-making process?
- Having a new MD – example provided

Productivity Indicator 1: Hours per Week

Office hours per week: Case Study

Annual Revenue Opportunity: $241,500

Worksheet to Calculate Revenue Opportunity

1. AMA means hours per week (30)*7 physicians =   210

2. Less total actual practice hours worked per week =   180

3. Difference in hours per week worked =   30

4. 30 hours per week *3.5 visits/hr equals visits per week of = 105

5. At collection rate of $50 per visit, lost revenue per week = $5,250

6. At 46 weeks per year lost revenue per year = $241,500

Accounts Receivable Indicator 1: A/R by Aging

A/R by Aging: Case Study

National Average

AGING	AMOUNT ($)	%	MGMA AMOUNT	MGMA %
0 – 30	158,866	32	151,667	55
31 – 60	57,794	12	44,636	16
61 – 90	20,536	4	24,534	9
91 – 120	19,094	4	17,118	6
>120	243,710	48	39,645	14
TOTAL	500,000	100	278,000	100

Greenwich Hospital

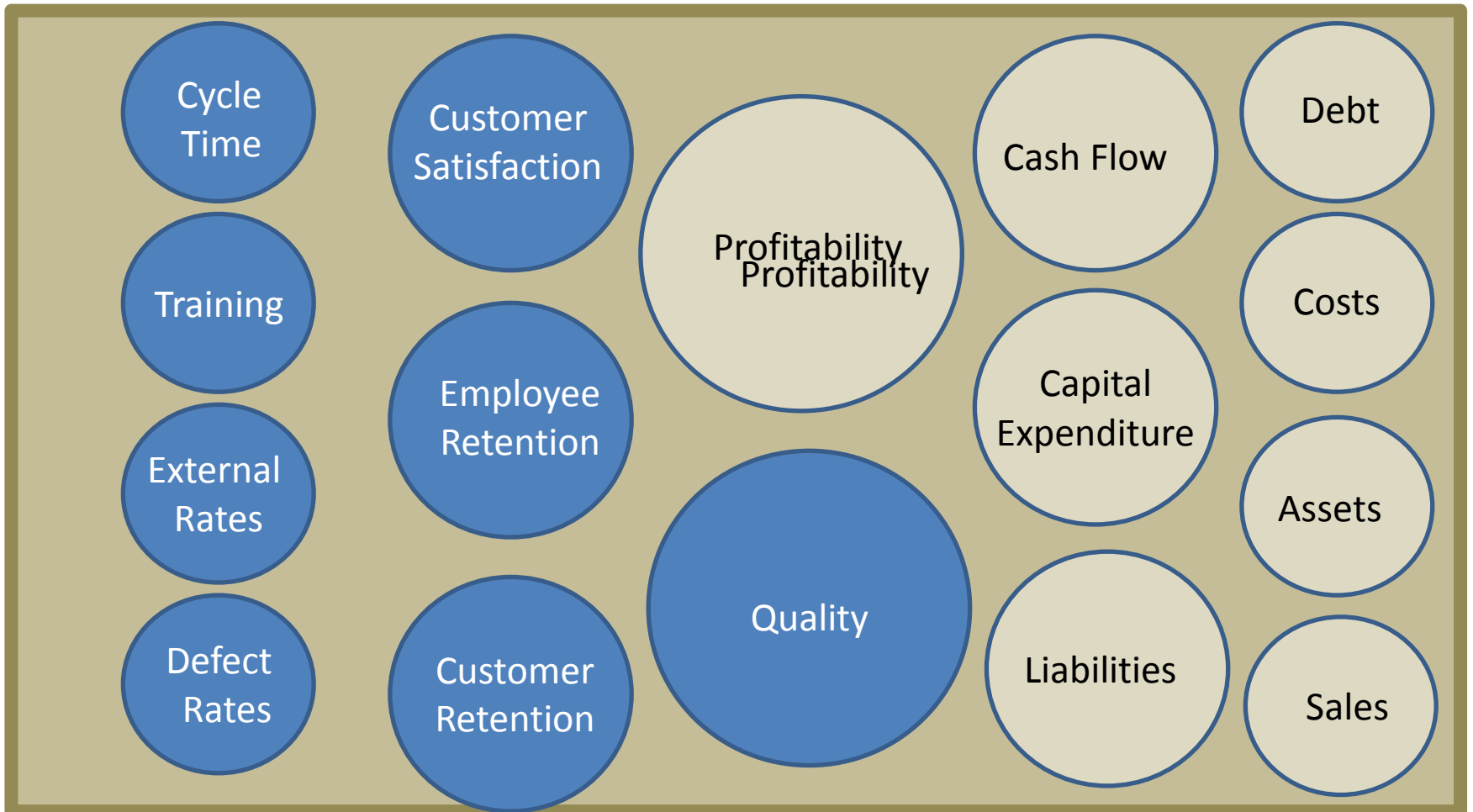# Accounts Receivable Indicator 1: A/R by Aging – contd.

A/R by Aging: Case Study

2. How long does it take to collect a patient bill?

Actual A/R	$500,000
Daily Charges	$7,000
	68 days
MGMA Avg	40 days
Days over MGMA	29 days

3. How much A/R should each physician have?

Actual A/R	$500,000: 4 phys =	$125,000
MGMA Avg		$20,000
A/R above MGMA		$55,000

Dashboard of Benchmarking Performance Measures

Performance Measure Examples

Accounting	Information Services	Marketing
Purchasing	Product Engineering	Quality Control

Employee Performance Measures

Employee performance benchmarks cover a wide range of employee activities that may include:

Employee Development	Employee Education
Employee Empowerment	Employee Recognition
Employee Recruitment	Employee Absenteeism
Employee Turnover	Employee Grievances
Employee Safety/Accidents	Employee Involvement
Employee Morale	Employee Performance Appraisal
Employee Promotion	
Employee Succession Planning	

Technology and Innovation Related Performance Measures

Technology-related measures reflect the productivity, deployment and effective use of computers and other technology in an organization.

Measure range broadly from processing speeds, deployment percentages, network down-time and error rates.

In turn, innovation-related performance indicators reflect issues such as product development times, employees' suggestion rates, new product sales as a percent of total sales, and process improvement rates.

Supplier Performance Measures

Supplier performance measures help an organization qualify or certify the vendors with which it will work.

These benchmarks then help the organisation monitor and manage on-going supplier performance.

Supplier performance metrics often include measures of cost, quality, reliability, speed or responsiveness, agreed-upon service levels, and product specifications.

Cost Performance Measures

Cost performance measures are broad and flexible. They include balance sheet liability requirements and information drawn from cost centers throughout the organization.

Companies can develop useful benchmarks by producing cost rations for specific products, services, organizational units, processing steps, inputs and labor.

A mortgage company, for instance, might use such measures as cost per loan application, cost per loan processing, human resources cost per loan, data processing costs per 100 bills, and service cost per loan.

Financial Performance Measures

Financial measure include performance indicators required by stock exchanges, security analysts, public accounting firms, regulatory agencies, and other organizations that may oversee reporting standards in your organization's industry.

Many of these measures make up the items on income statements, balance sheets and cash flow statements, including measures such as revenue, gross profit, operating income, net income, earning per share, long-term debt, book value, cash flow, debt/equity ratio, days/receivables ration, current ratio and so on.

Benchmarking Critical Success Factors

Adopt, Adapt and Advance: A well-designed performance measurement and benchmark system is essential, but there are other success factors:

- Senior management support
- Benchmarking training for the project team
- Useful information technology systems
- Cultural practices that encourage learning
- Resource dedication – especially in the form of time, funding and useful equipment

The Bristol-Myers and Baxter International 7-Step Benchmarking Process

1. Determine which function(s) to benchmark
2. Identify key performance variables to measure
3. Identify the best-in-class companies
4. Measure performance of best-in-class companies
5. Measure your own performance
6. Specify programs and actions to meet and surpass
7. Implement and monitor results

The Motorola Five-Step Benchmarking Process

1. Decide what to benchmark
2. Find companies to benchmark
3. Gather data
4. Analyze data and integrate results into action plans
5. Recalibrate and recycle the process

The AT&T 9-Step Benchmarking Process

1. Identify what to benchmark
2. Develop a benchmarking plan
3. Choose a data collection method
4. Collect data
5. Choose best-in-class companies
6. Collect data during a site visit
7. Compare processes, identify gaps and develop recommendations
8. Implement recommendations
9. Recalibrate benchmarks

A Generic Benchmarking Process: The Simple, Consensus Model

The Strategic Planning Institute's (SPI) Council on Benchmarking has developed the following model:

1. Launch
2. Organize
3. Reach Out
4. Assimilate
5. Act

The Xerox 12-Step Benchmarking Process

(often regarded as "benchmark" of benchmarking in industry)

Phase 1: Planning

1. Identify what to benchmark
2. Identify comparative companies
3. Determine data collection methods and collect data

Phase 2: Analysis

4. Determine current performance gap
5. Project future performance levels

Phase 3: Integration

6. Communicate finding and gain acceptance
7. Establish functional goals

The Xerox Benchmarking Process (contd.)

Phase 4: Action

8. Develop action plans
9. Implement specific actions and monitor progess
10. Recalibrate benchmarks

Phase 5: Maturity

11. Attain leadership position
12. Fully integrate practices into processes

Attributes of Benchmarking Studies: Success vs. Failure

	Success	**Failure**
	Clear Project Life Cycle	Keep going and going …
	Integrated with existing quality efforts	A la carte program
	Consider Cultural attributes	Hard data only
	Linked to strategy plan	No strategic integration
	Disciplined methodology	Casual approach

A Balanced Scorecard May Trigger Benchmarking

The Balanced Scorecard (Kaplan and Norton) manages performance measurements through an integrated system. This combines both financial and operational measures into an integrated system of performance indicators. This assumes that no single measure us sufficient for managing all companies at all times. It combines at least four perspectives:

Financial Perspective – "If we succeed how will we look to our shareholders?"
Customer View – "To achieve our vision how must we look to our customers?"
Internal Operating Perspective – "To delight our customers what management processes must we excel at?"
Innovation and Learning Perspective – "To achieve our vision how must the organisation continuously learn, improve and create value?"

Common Performance Measures that can Prompt Benchmarking

- Enhanced customer value – often observed through added product features or reduced costs.
- Production costs, frequently described as cost per 100, 1000 or million.
- Responsiveness and/or process cycle time.
- Defect error, waste, problem, or failure rates, often formatted as defects per 1000 or million output units.
- Productivity and resource utilization, often reflected in transactions per person, inventory turn rates, or projects operating within budget.
- Public safety and/or legal responsibilities, sometimes observed in accident rates, employee absentee rates, regulatory citations, or litigation rates.

Examples of Benchmark Business Processes

IBM

Xerox

British Telecom

Management's Benchmarking Challenge

- Commit required resources to key projects
- Provide focused training/facilitation to project participants
- Proactively manage the direction and momentum of benchmarking within the organization
- Create visibility of the benchmarking process
- Recognize benchmarking team efforts