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С.О.ШАПОШНИКОВ

# ПРОФЕССИОНАЛЬНЫЙ АНГЛИЙСКИЙ ЯЗЫК
## Часть 3. Методы и средства Всеобщего управления качеством

# PROFESSIONAL ENGLISH
## Part 3. Total Quality Management Methods and Tools

Учебное пособие

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**Lesson 3-1. Business strategy**

**1. Strategy - what is strategy?**

Johnson and Scholes define strategy as follows: "Strategy is the ***direction*** and ***scope*** of an organization over the ***long-term:*** which achieves ***advantage*** for the organization through its configuration of ***resources*** within a challenging ***environment***, to meet the needs of ***markets*** and to fulfill ***stakeholder*** expectations". In other words, strategy is about:

- Where is the business trying to get to in the long-term (**direction)**?
- Which markets should a business compete in and what kind of activities are involved in such markets? (**markets**; **scope**)/
- How can the business perform better than the competition in those markets? (**advantage**)?
- What resources (skills, assets, finance, relationships, technical competence, facilities) are required in order to be able to compete? (**resources**)?
- What external, environmental factors affect the businesses' ability to compete? (**environment**)?
- What are the values and expectations of those who have power in and around the business? (**stakeholders)**?

**2. Strategy at Different Levels of a Business**

Strategies exist at several levels in any organization - ranging from the overall business (or group of businesses) through to individuals working in it.

***Corporate Strategy*** - is concerned with the overall purpose and scope of the business to meet stakeholder expectations. This is a crucial level since it is heavily influenced by investors in the business and acts to guide strategic decision-making throughout the business. Corporate strategy is often stated explicitly in a "mission statement".

***Business Unit Strategy*** - is concerned more with how a business competes successfully in a particular market. It concerns strategic decisions about choice of products, meeting needs of customers, gaining advantage over competitors, exploiting or creating new opportunities etc.

***Operational Strategy*** - is concerned with how each part of the business is organized to deliver the corporate and business-unit level strategic direction. Operational strategy therefore focuses on issues of resources, processes, people etc.

**How Strategy is Managed - Strategic Management**

In its broadest sense, strategic management is about taking "strategic decisions" - decisions that answer the questions above. In practice, a thorough strategic management process has three main components, shown in the figure below:

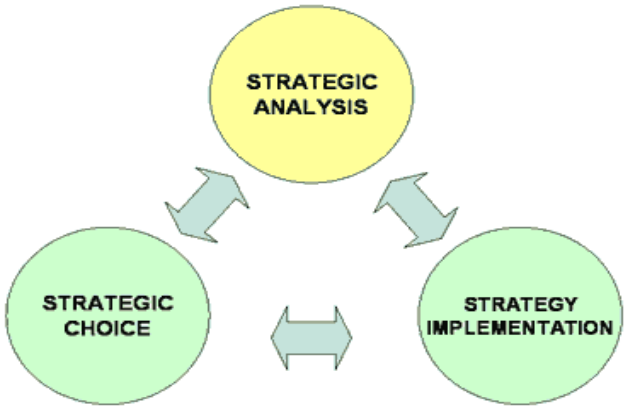



Fig.1 Components of the strategic management process

**3. Strategic Analysis**

This is all about the analyzing the strength of businesses' position and understanding the important external factors that may influence that position. The process of Strategic Analysis can be assisted by a number of tools, including:

***PEST Analysis*** - a technique for understanding the "environment" in which a business operates;

***Scenario Planning*** - a technique that builds various plausible views of possible futures for a business;

***Five Forces Analysis*** - a technique for identifying the forces which affect the level of competition in an industry;

***Market Segmentation*** - a technique which seeks to identify similarities and differences between groups of customers or users;

***Directional Policy Matrix*** - a technique which summarizes the competitive strength of a businesses operations in specific markets;

***Competitor Analysis*** - a wide range of techniques and analysis that seeks to summarize a businesses' overall competitive position;

***Critical Success Factor Analysis*** - a technique to identify those areas in which a business must outperform the competition in order to succeed;

***SWOT Analysis*** - a useful summary technique for summarizing the key issues arising from an assessment of a businesses "internal" position and "external" environmental influences.

**PEST Analysis** is concerned with the environmental influences on a business. The acronym stands for the Political, Economic, Social and Technological issues that could affect the strategic development of a business. Identifying PEST influences is a useful way of summarizing the external environment in which a business operates. However, it must be followed up by consideration of how a business should respond to these influences.

The table below lists some possible factors that could indicate important environmental influences for a business under the PEST headings:

| Political / Legal | Economic | Social | Technological |
|---|---|---|---|
| ***- Environmental regulation and protection*** | - Economic growth (overall; by industry sector) | - Income distribution (change in distribution of disposable income; | - Government spending on research |
| ***- Taxation (corporate; consumer)*** | - Monetary policy (interest rates) | - Demographics (age structure of the population; gender; family size and composition; changing nature of occupations) | - Government and industry focus on technological effort |
| ***- International trade regulation*** | - Government spending (overall level; specific spending priorities) | - Labor / social mobility | - New discoveries and development |
| ***- Consumer protection*** | - Policy towards unemployment (minimum wage, unemployment benefits, grants) | - Lifestyle changes (e.g. Home working, single households) | - Speed of technology transfer |
| ***- Employment law*** | - Taxation (impact on consumer disposable income, incentives to invest in capital equipment, corporation tax rates) | - Attitudes to work and leisure | - Rates of technological obsolescence |
| ***- Government organization / attitude*** | - Exchange rates (effects on demand by overseas customers; effect on cost of imported components) | - Education | - Energy use and costs |
| ***- Competition regulation*** | - Inflation (effect on costs and selling prices) | - Fashions and fads | - Changes in material sciences |
| | - Stage of the business cycle (effect on short-term business performance) | - Health & welfare | - Impact of changes in Information technology |
| | - Economic "mood" - consumer confidence | - Living conditions (housing, amenities, pollution) | - Internet! |

The process of **Strategic Choice** involves understanding the nature of stakeholder expectations (the "ground rules"), identifying strategic options, and then evaluating and selecting strategic options.

**Strategy Implementation** is often the hardest part. When a strategy has been analyzed and selected, the task is then to translate it into organizational action.

**4. Strategic planning - mission**

A strategic plan starts with a clearly defined business mission. Mintzberg defines a mission as follows: **"A mission describes the organization's basic function in society, in terms of the products and services it produces for its customers".**

A clear business mission should have each of the following elements:

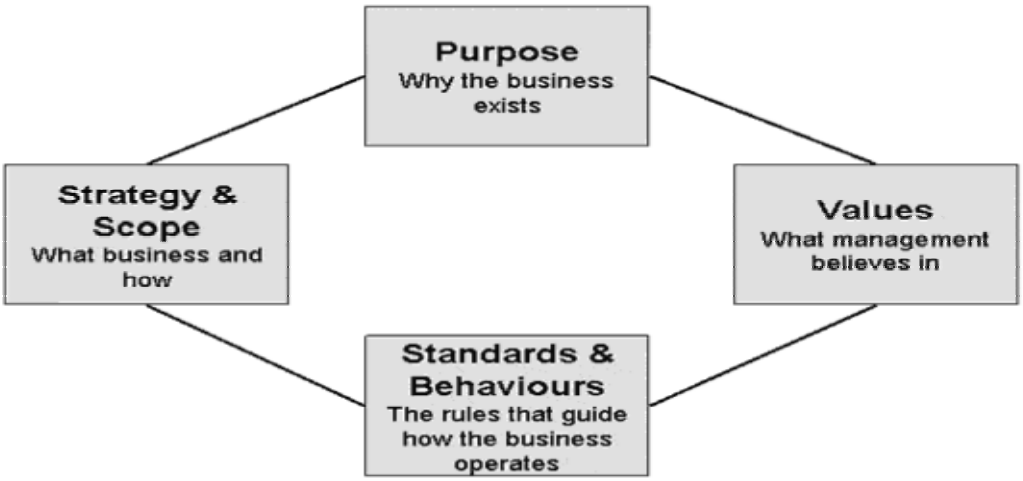



Fig.2. Element of Business Mission

Taking each element of the above diagram in turn, what should a good mission contain?

**a) A Purpose.** Why does the business exist? Is it to create wealth for shareholders? Does it exist to satisfy the needs of all stakeholders (including employees, and society at large)?

**b) A Strategy and Strategic Scope.** A mission statement provides the commercial logic for the business and so defines two things:

- The products or services it offers (and therefore its competitive position)
- The competences through which it tries to succeed and its method of competing

A business' strategic scope defines the boundaries of its operations. These are set by management.

For example, these boundaries may be set in terms of geography, market, business method, product etc. The decisions management make about strategic scope define the nature of the business.

**c) Policies and Standards of Behavior.** A mission needs to be translated into everyday actions. For example, if the business mission includes delivering "outstanding customer service", then policies and standards should be created and monitored that test delivery. These might

include monitoring the speed with which telephone calls are answered in the sales call center, the number of complaints received from customers, or the extent of positive customer feedback via questionnaires.

**d) Values and Culture.** The values of a business are the basic, often un-stated, beliefs of the people who work in the business. These would include:

• Business principles (e.g. social policy, commitments to customers)

• Loyalty and commitment (e.g. are employees inspired to sacrifice their personal goals for the good of the business as a whole? And does the business demonstrate a high level of commitment and loyalty to its staff?)

• Guidance on expected behavior – a strong sense of mission helps create a work environment where there is a common purpose

What role does the mission statement play in marketing planning? In practice, a strong mission statement can help in three main ways:

• It provides an outline of how the marketing plan should seek to fulfill the mission

• It provides means of evaluating and screening the marketing plan; are marketing decisions consistent with the mission?

• It provides an incentive to implement the marketing plan

**5. Strategic planning - values and vision**

Values form the foundation of a business' management style. Values provide the justification of behavior and, therefore, exert significant influence on marketing decisions. Consider the following examples of a well-known business – BT Group - defining its values. BT's activities are underpinned by a set of values that all BT people are asked to respect:

- We put customers first
- We are professional
- We respect each other
- We work as one team
- We are committed to continuous improvement.

These are supported by our vision of a communications-rich world - a world in which everyone can benefit from the power of communication skills and technology.

A society in which individuals, organizations and communities have unlimited access to one another and to a world of knowledge, via a multiplicity of communications technologies including voice, data, mobile, internet - regardless of nationality, culture, class or education. Our job is to facilitate effective communication, irrespective of geography, distance, time or complexity.

Why are values important? Many Japanese businesses have used the value system to provide the motivation to make them global market leaders. They have created an obsession about winning that is communicated at all levels of the business that has enabled them to take market share from competitors that appeared to be unassailable.

For example, at the start of the 1970's Komatsu was less than one third the size of the market leader – Caterpillar – and relied on just one line of smaller bulldozers for most of its revenues. By the late 1980's it had passed Caterpillar as the world leader in earth-moving

equipment. It had also adopted an aggressive diversification strategy that led it into markets such as industrial robots and semiconductors.

If “values” shape the behavior of a business, what is meant by “vision”? To succeed in the long term, businesses need a vision of how they will change and improve in the future. The vision of the business gives it energy. It helps motivate employees. It helps set the direction of corporate and marketing strategy.

What are the components of an effective business vision? Davidson identifies six requirements for success:

- Provides future direction
- Expresses a consumer benefit
- Is realistic
- Is motivating
- Must be fully communicated
- Consistently followed and measured.

**6. Strategy analysis**

**a) SWOT-analysis**. SWOT is an abbreviation for **Strengths, Weaknesses, Opportunities** and **Threats.** SWOT analysis is an important tool for auditing the overall strategic position of a business and its environment.

Once key strategic issues have been identified, they feed into business objectives, particularly marketing objectives. SWOT analysis can be used in conjunction with other tools for audit and analysis, such as PEST analysis and Porter's Five-Forces analysis. It is also a very popular tool with business and marketing students because it is quick and easy to learn.

**b) Porter's Five-Forces analysis.** The most influential analytical model for assessing the nature of competition in an industry is Michael Porter's Five Forces Model, which is described below:

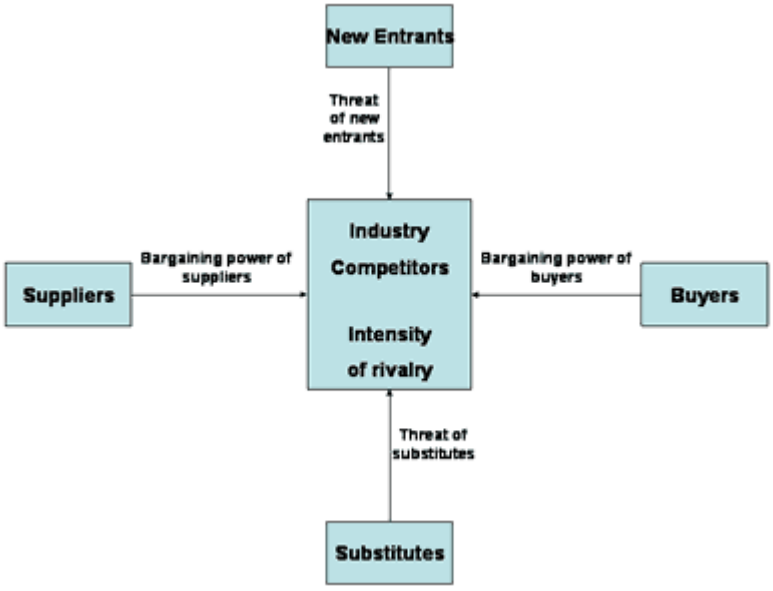



Fig.3. Five Forces Model

Porter explains that there are five forces that determine industry attractiveness and long-run industry profitability. These five "competitive forces" are:

- The threat of entry of new competitors (new entrants)
- The threat of substitutes
- The bargaining power of buyers
- The bargaining power of suppliers
- The degree of rivalry between existing competitors.

**Threat of New Entrants.** New entrants to an industry can raise the level of competition, thereby reducing its attractiveness. The threat of new entrants largely depends on the barriers to entry. High entry barriers exist in some industries (e.g. shipbuilding) whereas other industries are very easy to enter (e.g. estate agency, restaurants). Key barriers to entry include:

- Economies of scale
- Capital / investment requirements
- Customer switching costs
- Access to industry distribution channels
- The likelihood of retaliation from existing industry players.

**Threat of Substitutes.** The presence of substitute products can lower industry attractiveness and profitability because they limit price levels. The threat of substitute products depends on:

- Buyers' willingness to substitute
- The relative price and performance of substitutes
- The costs of switching to substitutes.

**Bargaining Power of Suppliers** (Suppliers are the businesses that supply materials & other products into the industry). The cost of items bought from suppliers (e.g. raw materials, components) can have a significant impact on a company's profitability. If suppliers have high bargaining power over a company, then in theory the company's industry is less attractive. The bargaining power of suppliers will be high when:

- There are many buyers and few dominant suppliers
- There are undifferentiated, highly valued products
- Suppliers threaten to integrate forward into the industry (e.g. brand manufacturers threatening to set up their own retail outlets)
- Buyers do not threaten to integrate backwards into supply
- The industry is not a key customer group to the suppliers.

**Bargaining Power of Buyers.** Buyers are the people / organizations who create demand in an industry/ The bargaining power of buyers is greater when:

- There are few dominant buyers and many sellers in the industry
- Products are standardized
- Buyers threaten to integrate backward into the industry
- Suppliers do not threaten to integrate forward into the buyer's industry
- The industry is not a key supplying group for buyers.

**Intensity of Rivalry.** The intensity of rivalry between competitors in an industry will depend on:

- The structure of competition - for example, rivalry is more intense where there are many small or equally sized competitors; rivalry is less when an industry has a clear market leader
- The structure of industry costs - for example, industries with **high fixed costs** encourage competitors to fill unused capacity by price cutting
- Degree of differentiation - industries where products are commodities (e.g. steel, coal) have greater rivalry; industries where competitors can differentiate their products have less rivalry
- Switching costs - rivalry is reduced where buyers have high switching costs - i.e. there is a significant cost associated with the decision to buy a product from an alternative supplier
- Strategic objectives - when competitors are pursuing aggressive growth strategies, rivalry is more intense. Where competitors are "milking" profits in a mature industry, the degree of rivalry is less
- Exit barriers - when barriers to leaving an industry are high (e.g. the cost of closing down factories) - then competitors tend to exhibit greater rivalry.

**7. The Key Distinction - Internal and External Issues**

**Strengths and weaknesses are internal factors.** For example, a strength could be your specialist marketing expertise. A weakness could be the lack of a new product.

**Opportunities and threats are external factors.** For example, an opportunity could be a developing distribution channel such as the Internet, or changing consumer lifestyles that potentially increase demand for a company's products. A threat could be a new competitor in an important existing market or a technological change that makes existing products potentially obsolete.

It is worth pointing out that SWOT analysis can be very subjective - two people rarely come-up with the same version of a SWOT analysis even when given the same information about the same business and its environment. Accordingly, SWOT analysis is best used as a guide and not a prescription. Adding and weighting criteria to each factor increases the validity of the analysis.

**Areas to Consider**

Some of the key areas to consider when identifying and evaluating Strengths, Weaknesses, Opportunities and Threats are listed in the example SWOT analysis below:

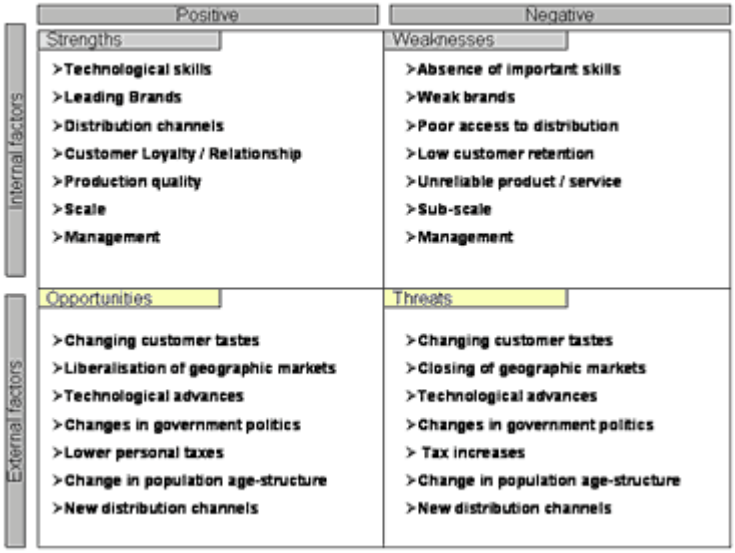



Fig.4. Example SWOT-analysis

## 8. Strategy - competitive advantage

**A Competitive Advantage** is an advantage over competitors gained by offering consumers greater value, either by means of lower prices or by providing greater benefits and service that justifies higher prices.

Following on from his work analyzing the competitive forces in an industry, Michael Porter suggested four "generic" business strategies that could be adopted in order to gain competitive advantage. The four strategies relate to the extent to which the scope of a businesses' activities are narrow versus broad and the extent to which a business seeks to differentiate its products. The four strategies are summarized in the figure below:

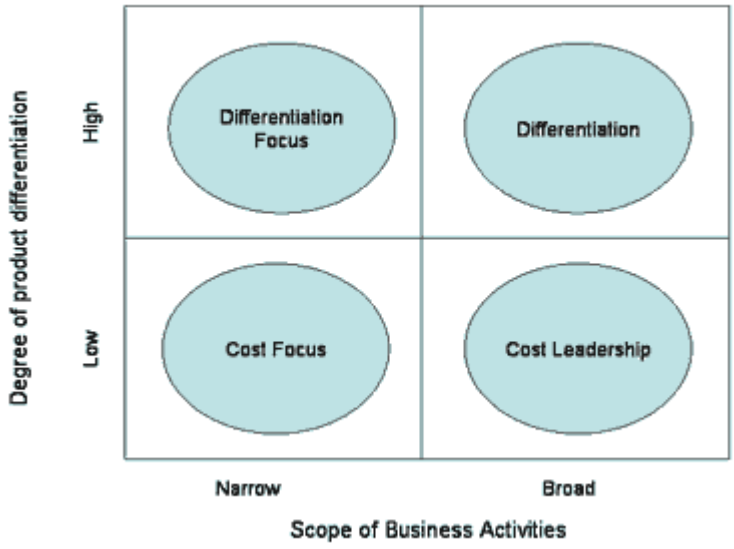



Fig.5. Four strategies

The **differentiation** and **cost leadership** strategies seek competitive advantage in a broad range of market or industry segments. By contrast, the **differentiation focus** and **cost focus** strategies are adopted in a narrow market or industry.

**a) Strategy – Differentiation.** This strategy involves selecting one or more criteria used by buyers in a market - and then positioning the business uniquely to meet those criteria. This strategy is usually associated with charging a **premium price** for the product - often to reflect the higher production costs and extra value-added features provided for the consumer. Differentiation is about charging a premium price that more than covers the additional production costs, and about giving customers clear reasons to prefer the product over other products.

**b) Strategy - Cost Leadership.** With this strategy, the objective is to become the lowest-cost producer in the industry. Many (perhaps all) market segments in the industry are supplied with the emphasis placed minimizing costs. If the achieved selling price can at least equal (or near) the average for the market, then the lowest-cost producer will (in theory) enjoy the best profits. This strategy is usually associated with large-scale businesses offering "standard" products with relatively little differentiation that are perfectly acceptable to the majority of customers. Occasionally, a low-cost leader will also discount its product to maximize sales, particularly if it has a significant cost advantage over the competition and, in doing so, it can further increase its market share.

**c) Strategy - Differentiation Focus.** In the differentiation focus strategy, a business aims to differentiate within just one or a small number of target market segments. The special customer needs of the segment mean that there are opportunities to provide products that are clearly different from competitors who may be targeting a broader group of customers. The important issue for any business adopting this strategy is to ensure that customers really do have different needs and wants - in other words that there is a **valid basis for differentiation** - and that existing competitor products are not meeting those needs and wants.

**d) Strategy - Cost Focus.** Here a business seeks a lower-cost advantage in just on or a small number of market segments. The product will be basic - perhaps a similar product to the higher-priced and featured market leader, but acceptable to sufficient consumers. Such products are often called "me-too's". Examples of Cost Focus: Many smaller retailers featuring own-label or discounted label products.

**e) Strategic planning - setting objectives.** Objectives set out what the business is trying to achieve. Objectives can be set at two levels:

- **Corporate level.** These are objectives that concern the business or organization as a whole. Examples of "corporate objectives might include:
  - We aim for a return on investment of at least 15%
  - We aim to achieve an operating profit of over £10 million on sales of at least £100 million.
- **Functional level.** e.g. specific objectives for marketing activities. Examples of functional marketing objectives" might include:

- We aim to build customer database of at least 250,000 households within the next 12 months
- We aim to achieve a market share of 10%
- We aim to achieve 75% customer awareness of our brand in our target markets

Both corporate and functional objectives need to conform to the commonly used **SMART** criteria. The SMART criteria (an important concept which you should try to remember and apply in exams) are summarized below:

**Specific** - the objective should state exactly what is to be achieved.

**Measurable** - an objective should be capable of measurement – so that it is possible to determine whether (or how far) it has been achieved

**Achievable** - the objective should be realistic given the circumstances in which it is set and the resources available to the business.

**Relevant** - objectives should be relevant to the people responsible for achieving them

**Time Bound** - objectives should be set with a time-frame in mind. These deadlines also need to be realistic.

## New words and expressions

**Bargaining Power of Suppliers,** **corporate and functional levels,**
**cost focus,** **cost leadership,**
**differentiation,** **intensity of rivalry,**
**long-term strategy,** **strategic planning and analysis,**
**strategy (corporate strategy, business unit strategy, operational strategy).**

## Home assignment

Read the text. Give your examples of SWOT and PEST-analysis for some SME.

**Lesson 3-2. Effective Project Planning and Startup the Project Plan**

## 1. Introduction

Effective Project Planning and Startup The Project Plan is the Cornerstone of a Successful Project.

In a recent study with 327 teams, project planning was the second most critical activity to the project's success. The project plan (sometimes called the project prospectus at the early stages of a project) is the definition document for your project. You use it to organize the project and communicate project information to others. When a project begins, the project plan may be only 5 to 10 pages, and targets the project sponsors and newly formed team. At this early stage, it serves as a document of understanding, and is key to ensuring that all sponsors and team members are working together with the same objectives and scope. As the project plan moves forward, detailed work plans are added, resulting in project plans ranging from 10 to over 100 pages. The project plan then guides the project, and is a critical tool for project management. The project plan:

- serves as a document of understanding and negotiation with stakeholders,
- is key to ensuring that all sponsors and team members are working together, with the same objectives and scope,
- guides the project,
- is a critical tool for project management.

**Customers** of the Project Plan are:

- the users of the processes and systems,
- those people who can approve the budget,
- your project team Suppliers to the Document,
- the team leader or facilitator (typically the author),
- the project stakeholders,
- senior managers or business leaders.

When writing the project plan, you need to do the following:

- Describe the project and define the project scope (what is the project about; what is included and not included)
- Establish project objectives and conditions of satisfaction (why is the project being done; how will you measure success)
- Develop the project approach (how will the project be accomplished - this section starts small with an outline of the methodology, and grows as detailed work plans are added)
- Describe the required team structure (who will do the work)
- Establish a project budget for the design phase (how much will it cost).

**To get started**, answer the following questions about your project:

- The customers of our project plan include: _____
- The contributors to our project plan include: _____
- The author of our project plan will be: _____
- The completion date for our project plan is: _____
- Before we circulate the plan widely, it should be reviewed by: _____ .

Adjust the tone of the plan for your audience. Most importantly, involve your stakeholders by having them review drafts of the plan. Share draft copies of the project plan with team members and stakeholders, and gather their input. Don't wait until every section is complete before sharing the content, and your thinking, with others on your team and with stakeholders. The project plan will be a critical negotiation and communication tool for the project.

**2. Most important startup activities** (to consider in your project approach)

This information for this section comes from the Best Practices in Business Process Reengineering and Process Design benchmarking report. The study includes the findings of 327 participants from 53 countries. The most common theme from 327 benchmarking study participants when asked about the most important startup activity was creating awareness for the "need for change." This acknowledgment of the need for change had to exist within the team, executive leadership, affected employees and pertinent stakeholders in the change. Creating and illustrating the need for change was the number one startup activity. This change management task involved analyzing current data and processes within the organization, researching what others were doing and effectively communicating the business issues and need for change to the critical parties.

The top-five activities that teams carried out were:

1. Communicating the need to change and securing support from top management, including: forming a steering committee, selecting an executive sponsor, gaining buy-in from regional and divisional managers, securing project budget.
2. Establishing the scope and boundaries of the project to limit commitments and prevent scope creep in the future.

3. Clearly stating the objectives and outcomes of the project and ensuring that they were communicated to and shared by all critical parties.

4. Understanding and documenting the current process at a high level and assessing the needs and requirements of a solution.

5. Assembling a competent team by conducting team building activities, selecting knowledgeable and skilled members, defining team roles and expectations, and recruiting cross-functional members.

**3. Initial Planning & Project Write-up**

After you have talked over possible project ideas with your leaders and chosen the right one for you, it is now time to begin the detail planning and initial write-up which will be submitted to your boss for approval. Remember, you cannot begin actual work on the project until it is approved by the boss, but there is a lot of planning to be done before you get that far.

The project plan may be typed on a typewriter or computer, or may be hand written, but it must be very neat. You should use your best grammar. The plan should tell someone else everything they would need to know to carryout your project without you present. You should include the following information as shown in the workbook.

**Hint**: Make an outline with the following headings, then work your way through each area and discuss each topic as it relates to your project. Leave out the headings which do not apply to your project. As you decide how much detail to include, try making a goal that in your absence, a colleague of yours could successfully work the entire project, doing only what was written in the original Project Plan. Of course you will not really be that detailed, but it will get you thinking what you would want to be see if you had to do someone else's project based on just what he included in the plan. In the end, just do your best.

**A. - Project description**

Briefly (approximately one to two paragraphs) describe the project. This should not include any details, those will come later. Address this section as though you were telling a friend what you were going to do. Think of this as an executive summary of the overall project. All of the details will be covered later.

**B. - Who will benefit**

Name the group or organization who will benefit from your project and how your project will benefit them. Remember, the project cannot benefit the society in general (except in the most indirect way). Do not describe the project again, just focus on the benefit of the project. You should also work with colleagues from other departments of your company in planning the project. See the section below for some hints on working with colleagues.

**Hint - Coordination with colleagues:** Discuss your coordination with colleagues from other departments which is benefiting from your project or be involved in its implementation. Be sure to include the name, position within the company (e.g. Personnel Director, Community Relations Coordinator, etc.), and phone number of your point of contact. Discuss your coordination meetings with the colleagues to include dates you have met or talked on the phone, who was present, and exactly what they agreed to provide to you and what you agreed to do for them.

Finances are of particular interest. Be sure both you and your colleagues understand all financial obligations, and preferably stated in writing. Are they going to "fund your project" (which you might assume means they will pay for everything) or "pay up to $100 toward your expenses"? No one should try to cheat you, but a misunderstanding can create hard feelings or cost you more than you had planned.

Another area where you should ensure complete understanding is in the materials to be provided. When your colleagues from other departments say they will provide the necessary materials, make sure you both understand exactly what is to be provided (see the materials section below). Find out if the materials will delivered to your work site or if you must pick them up. If you are going to have to go get materials, find out exactly where (i.e. address) and the name and phone number of the person you need to talk to when you get there. Do you need to call ahead and setup an appointment to pickup the materials? Dealing with government agencies can be particularly frustrating if you do not ensure all details are understood by both parties. Making assumptions is dangerous!

**C. - Planning Details**

This is the heart of the project plan and the area which will require the most work. The plan should include all details needed by someone else to carryout the project as though you were not around. The plan will include the sections discussed below, if appropriate. All sections are not applicable to all projects, so may be omitted if not needed.

***Present Condition.*** Describe the current condition or situation that you are going to change. Do not repeat the benefit of the project, but focus on creating a word picture of how things are now. This is a good place to include pictures (either photographs or drawings) of the project area. Remember, "the District Advancement Committee does not know what your church or school or park looks like, so they cannot understand why your project is important unless you show and tell them".

***Plans / Drawings / Designs.*** If your project is to build something, you will need detail plans or drawings. These are like blue prints and should show all dimensions, paint schemes, floor plans, layouts, or other detail that can be drawn. Plans or drawings are usually done on graph paper which has guidelines, but blank paper is acceptable as long as you are neat. Photographs may also be of value here for some projects. If you have made a design (e.g. emblem, logo, etc.) include it in this section. All plans, drawings, or figures should be labeled with a Figure Number and a Title (e.g. "Figure 1, Playground looking east"). Refer to them in the appropriate sections of the text.

***Materials.*** Materials are those things which become part of the finished product. Examples are lumber, paint, nails, concrete, etc. This is truly a shopping list, so include material specifications (exact size, quality, brand, finish, etc.), number/amount of each item, and cost. Don't just say "lumber", you need to describe exactly what pieces of lumber. If items are to be donated, state so. This section is best presented in the form of a separate list or table attached to extra pages in the workbook. Tables should include a Table Number and Title (e.g. "Table 1, Materials & Supplies") and be referred to in the appropriate section of the text.

***Supplies.*** Supplies are those expendable things which do not become part of the finished product, but that are used to complete it. Examples of supplies are sandpaper, trash bags, posters, gasoline, pens, markers, paper, paint rollers, drop cloths, etc. Provide a list of all supplies you will need and where you will get them. Since supplies cannot normally be reused, you need to either buy them or have them donated. You cannot 'borrow' something which you cannot return. You may choose to combine the materials and supplies into one list (see above); but label it as such.

***Tools.*** Tools are those items used to aid in making the work easier, or even make it possible to do at all. Tools are not used up and should be saved and used again and again. Examples of tools are hammers, shovels, tractors, or saws. Provide a list of all tools required to work the project, don't take for granted that required equipment will just appear when you need it. Be very specific (e.g. number of hammers, type of shovels, type/size of paint brushes, etc.). Tell how those tools will be obtained. If you must purchase tools, include them in the financial plan. You should be able to borrow most tools from the people who are working on the project or from someone else. Try not to spend much money on tools since they are expensive but not part of the finished product. If you must buy tools, discuss what is going to be done with them after your

project is complete. Are you going to keep them, give them to the troop or other organization, or maybe to the organization who is funding the project?

The Tools table may look something like this:

**Table 3 - Tools**

| Tool | Quantity | Source |
|---|---|---|
| Claw hammers | 6 minimum | Workers to bring |
| Air Compressor | 1 | Mr. James' company will loan |
| Garden rakes | 4 minimum | 2 from church, 2 from Mr. Hightower |
| Circular power saw (7 in) | 1 | My dad |
| Extension cord, grounded / 3 prong, 50' minimum | 2 | 1 from Mr. Haygood, 1 from church |
| Camera, 35mm automatic (to document work) | 1 | My mother |
| Cooler, 5 gallon (for drinks) | 1 | Scout Troop |
| etc. | . | . |

***Schedule.*** A good schedule is a necessity for any successful plan. It shows when everything is done and in what order each step happens. You must make your best estimate of how long tasks will take and in what order they will be done. Your schedule may be in the form of a Gantt Chart (bar chart), a calendar with tasks entered on the appropriate days, or just a list of tasks and the date when they will be done. Include project planning and approval on your schedule. No project follows the planned schedule exactly, but is helps make things happen logically. When you complete your project and do the final write-up, you will discuss how well the project followed the planned schedule and why you think it deviated from it.

***Step-by-step instructions***. In addition to the schedule which shows the dates when you think tasks will be worked, you will also need detailed instructions. These instructions should read like a recipe in a cookbook. These tell the workers exactly what to do. Include a list of every task you can think of, what order they will be done, and who will do them. Include the clean-up of the work site in your plan.

A sample detailed workday plan may look something like this:

8:00 My dad and I arrive at work site and begin preparation.

8:15 Workers and other leaders scheduled to arrive.
Donuts & juice/coffee provided for workers as they arrive.

8:30 Brief 3 team leaders on their duties.

8:45 Get all workers together and tell them what we are going to do. Assign workers to one of 3 teams.

9:00 Team 1 begins clearing ground.
Team 2 begins cutting lumber according to plans.

Team 3 begins clearing brush and moving dirt to designated area.

10:00 Teams 1 & 2 begin constructing the thing-a-ma-gig according to plans.

etc., etc.

12:00 Lunch

12:45 Teams 1 & 2 construct the thing-a-ma-gig according to plans.
Team 3 finishes moving all dirt and brush to the designated areas.

etc., etc.

3:00 Teams 1, 2, and 3 paint the thing-a-ma-gig with one coat (note: 2nd coat will be applied next week)

4:00 All workers begin cleanup and put trash bags in Mr. Haygood's truck.

4:30 All workers go home
Mr. Haygood takes trash to dumpster

***Financial plan.*** Every project will cost something and you need to discuss those costs in your plan. Provide a list of all materials, tools, supplies, etc. with a cost of each. This information may be part of your list of materials/supplies. If items are loaned or donated, state so. Remember to include any fees (e.g. city dump fees) in your cost estimate.

Once you have determined how much the project is going to cost, you must find the money to pay for it. You may consider several sources for funding, including the organization for whom you are doing the project, donations from others, from your allowance, from your parents, or any other legitimate source. While your project MAY NOT BE A FUNDRAISER, you may conduct fundraising activities, if necessary, to finance the supplies and materials needed for your project. Obtaining the funds to do the project is your responsibility, do not assume that someone will cover cost until you have asked them.

A major part in any project, whether for home, community, or a business, is funding. If you cannot come up with all the money you need, look at reducing the cost to get within your budget. You may even find that the project is too expensive and you will have to choose another one.

After the source of your funding is established, you should also consider how the money is to be handled. As money is brought in from fundraising activities, where will it be held for safe keeping? Exactly how will supplies and materials be paid for? It is strongly suggested [by this author] that you do not put your parents or yourself in the position of holding any substantial amount of money. Discuss this issue with the organization which is providing financial support. Consider letting the sponsoring organization's treasure manage the funds. Your troop treasure may also be willing to help. Whatever you decide, ensure you have a complete paper trail for all financial transactions and include a summary in your final report.

One last financial point to consider - check if the organization which your project must benefit has an exemption from state sales taxes. If so, find out how to take advantage of this savings before you go to buy your materials. This may help you stay within your budget. If they

are not tax exempt, then do not forget to include the sales tax (normally 6 to 8%) in your budget plan.

***Written /Printed Information.*** If you are going to use handouts, posters, letters, or other written materials as part of your project, include a copy of those in the plan. These should be included as attachments to the workbook. These attachments should have a Figure Number and Title (e.g. "Figure 6, Sample handout to the troop") and be referenced in the appropriate section of the text.

***Helpers/Workers.*** You may recruit your workers from your school, your friends, or anywhere you can find willing volunteers who you feel will follow your leadership. Your workers may be youth or adults, but a word of caution -- adults will be more likely to 'take charge', thinking they are helping you. However, their leadership may just conflict with your chance to demonstrate leadership (which is the purpose of the project). If you going to use adult workers, make sure they understand that you have to be the leader.

In this section, discuss who will be doing the work. You do not need to state names (which you most likely will not know yet), just the number of people, what organization they are part of, and what special skills will be required. For example, are you going to need a carpenter? Describe how you are going to organize the workers to get the work done efficiently. Will they be divided into teams and, if so, who will lead the teams? What tasks will each team be doing? How will you use adult leaders? Discuss how you will ensure the safety of the workers. Remember, you do not have to DO any of the physical work yourself; you are responsible for LEADING others in carrying out the project and ensuring that everything is done the way you want it (i.e. show leadership).

**Hint -- Recruiting Workers.** While you do not need a list of workers by name when you turn in your initial project plan, you should make a list of potential workers no later than a couple of weeks before your workday. You should then contact each one and get a commitment from them that they will be there on work day. If they hedge by saying, "I will try to be there," remind them about how important this is and how much you really need them. Try to get them to say, "Sure, I will be there." Do not just make an announcement at a couple of troop meetings and assume that everyone you need will show up. Also, it helps if you give each potential worker a handout telling them the date, time, and location for the project. Include a map to the work site, if it is not well known. You should also let your crew know if you are serving lunch or if you expect them to bring a sack lunch. Try to give them an idea about when you expect to finish, too. The more people understand about what is expected, the more likely they are to participate. The final task in getting your workers to show up is to call each one a couple of days before the work date and remind them. Tell them how much you appreciate their help and how you won't be successful without them. If someone said they would help and they do not show up on the work day, you may consider calling them and seeing if they just forgot. You may feel like you are pressuring people - and you are. As the leader, it is your responsibility to make things happen and you need help to get the job done.

***Work Site.*** Where will the work be done? If you are going to build something, are you going to build it at the location where it will be used or somewhere else then moved? Remember, you must get permission to use any work site from the responsible person/owner. If the location where you are going to work requires special facilities or tools, state so. Think about how the weather will effect your work site.

***Transportation.*** Moving people, materials, supplies, tools to/from a work site will most likely be required. Discuss what needs to be moved, what vehicles you will need, where you will get those vehicles, and who will drive. Policy places limitations on drivers under 21 years old; ensure you are aware of these limits and work within them. Remember that all passengers must be seated with a seat belt on whenever a vehicle is in motion. NO ONE, child or adult, should ever ride in the bed of a moving truck under any circumstance! All of this is your responsibility.

**D. Initial Project Approval**

There are several approvals required for your project along the way. The first is the approval from your unit project advisor that your idea will qualify as a valid project. You should get this before spending too much time writing up the detail plan. After your advisor has helped you get the written plan in order and ready to submit, you will then need several signatures in the Project Workbook. A responsible representative from the organization you are doing the project for is the first signature required. It is also a good idea to get a letter from the organization if possible. Next, the project advisor signs. The project is now ready to turn in to the Committee for approval to proceed. Note: you should keep a Xerox copy of the project, exactly as turned in to the District, in case it is lost during the approval cycle.

It is very important that you do not DO any of the project, except planning, until the Committee has signed it. Once they have approved the project plan, it will be returned to you. After you have the approved version of your project, THEN you can begin to DO the project!

***Working the Project.*** Now that the hard part is over, you can begin the fun part - working the project! If you have prepared a good plan (which you will have or it will not be approved), all you have to do is follow the plan and make the project happen. Do what you said you were going to do.

It is important that you keep very good notes about everything that is done. Keep lists of all work done, who does the work, and how much time they each spent. For your final report, you will need to discuss how well the plan worked and all areas where you were not able to follow the plan, so keep good track of this information as you go along. Take pictures of each stage of the work. These will be included in the final report and will be a nice souvenir of an important milestone in your life. Keep track of all materials, supplies, tools, etc. used, paying particular attention to any differences from you original plan. Save all receipts.

***Leadership.*** The real purpose of your Project is to give you an opportunity to "demonstrate leadership of others." This is not to say that service to the community is not important, just that leadership is equally important.

So how do you "demonstrate leadership of others?" First, you need to establish yourself as the man in charge, the one who others look to for guidance. This means you must take the initiative to chose your project, coordinate it with the appropriate agency, and prepare the detail plan on how to accomplish the goal. Do not' wait for others to do your job. This makes you the

expert – the man with the answers. Others will come to you to learn what they need to do to complete their task.

The leader coordinates all the activities of others to make sure the final goal is reached. He considers everyone's talents and decides which tasks each member is given, and then makes sure they understand their assignment. The leader takes care of his team. He ensures they are safe and have sufficient food and water to remain healthy and productive. He makes sure they have the proper training and tools to do the job.

The leader is the problem solver. No matter how well a project is planned, there will be things that do not go according to plan. When problems arise, the project leader must consider all available information and make a decision on how to resolve that problem. If it is not safe or practical to force the project to follow the plan, he may need to revise the plan, or even redefine the final goals. It is ok if your project does not reach all the original goals, but you need to be able to explain why and how you solved the problem.

A good leader will consider advice and suggestions from others, but in the end, the leader must make the final decisions. Beware of a common problem which can easily hamper your chance to lead. During projects where technical skill is required, other people often tend take over the leadership role. Your advisor should only give you guidance and suggestions, but he should not give direct instructions to your work crew. That would deny you your leadership opportunity.

**Hint**: You and your advisor should talk this over and agree on a signal which you will politely give him if you see him taking too much control of your workers. For example you may agree to say something like, "Mr. Coffman, would you like something to drink?" He would get the point and agree that he was thirsty and go "get a drink." No one else would know what you were doing, but later you and Mr. Coffman can laugh about how "thirsty" he was on that work day.

The leader gets the job done and keeps the group together. Getting the job done is fairly easy to understand. Keeping the group together means you help the group enjoy the activity, feel appreciated for their efforts, and earn a sense of pride in the accomplishments of the group. A leader continually encourages his workers and gives them positive feedback on what they do well. He helps his workers understand when they are doing something that does not help the group accomplish the goal and he gives them guidance on how to do the right thing. Often when workers are not doing what the leader wants, it is because the leader did not do a very good job of explaining the task to them.

Leadership is a very rewarding activity. As the leader, you should feel a sense of pride for what your team accomplished under your guidance. A well-led activity is also rewarding for those who follow. In the end, the goal is reached and the team feels good about their collective accomplishment. The leadership skills you have learned and demonstrated in completing your Project will serve you throughout your life.

**E. Final Write-up**

After the actual work on the project is completed, you are ready for the last phase of your project - the final report. This is the section where you describe what actually happened as you carried out the plan.

As with any project, it is important to review what was done and see what lessons were learned, as well as providing a historic record. In this case, you also need to write a final report because your project is not complete without it! You should use the project plan as guide for preparing the final report. Briefly describe what was done and how you deviated from the plan. Go through each section of the plan and write a summary of the results versus the plan. For example, discuss if you had all of the materials you needed or if you had a lot left over. Summarize the actual costs, tools used (and tools needed that you did not have), or anything else of interest.

Provide a record of all the time worked by you and your colleagues. This can be done in a list or table showing names, dates, hours worked, and tasks performed by each. Since the objective of the project is to demonstrate leadership of others, you should discuss your leadership roll. Give examples of how you were able to lead the colleagues. Did you have any problem with getting them to come to work or to stay focused on the assigned tasks? Leading people is a difficult task and you most likely learned something about this. The final reviewers want to read about what you learned about leading people.

Hopefully, you took many photographs during each phase of the project. Include a section in your report for representative photographs. A photo of you presenting the finished product to the organization for which you did the work helps show off the value of the project. Of course, the photographs should be labeled.

**F. Final Project Approvals**

Only a couple of signatures are required on your final report, the most important of which is yours. If you are proud of your effort and pleased with the write-up, then sign it on the last page. You also need the signature of your unit project advisor. The representative of the institution benefiting from your project must also sign your workbook after you complete the work. Remember to keep a Xerox copy of the final write-up when you submit it, just in case it is lost.

**Home assignment**

Read the text. Give your examples of the Planning details and the Work plan for a small project.

## Lesson 3-3. Helpful Charts as Quality Tools

### 1. Pie Charts

Pie charts are used to show classes or groups of data in proportion to the whole data set. An example of a pie chart is presented in fig.1.

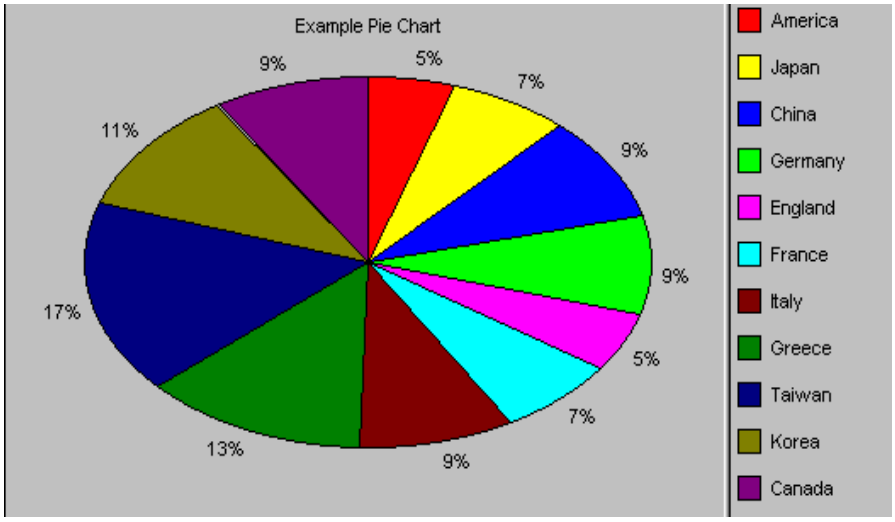



Fig.1. A pie chart

The entire pie represents all the data, while each slice represents a different class or group within the whole. For the pie chart, the following statistics are calculated: **Mean (**the average of all the data points in the series), **Maximum (**the maximum value (biggest slice) in the series), **Minimum (**the minimum value (smallest slice) in the series), **Sample Size (**the number of values (slices) in the series), **Range (**the maximum value minus the minimum value), **Standard Deviation (**Indicates how widely data is spread around the mean).

Using different types of software (MS Excel, for example) one can create 2D or 3D pie charts. Flash technologies allow to create dynamic pie charts.

### 2. Bar Chart

A bar chart is used to graphically summarize and display the differences between groups of data (see example in fig.2).

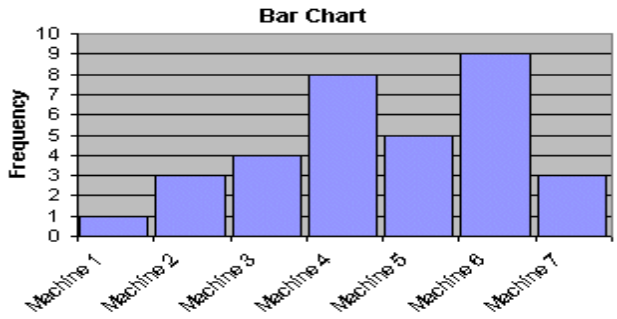



Fig.2 A bar chart

A bar chart can be constructed by segmenting the range of the data into groups (also called segments, bins or classes). For example, if your data ranges from machine to machine, you could have a group of data from machine 1, a second group of data from machine 2, a third group of data from machine 3, and so on. The vertical axis of the bar chart is labeled Frequency (the number of counts for each bin), and the horizontal axis of the bar chart is labeled with the group names of your response variables. You then determine the number of data points that reside within each bin and construct the bar chart. The groups are defined by the user.

### 3. Histogram

A Histogram is another kind of specialized vertical bar graph (see fig.3). Histograms are employed to illustrate frequency distributions which are keys to understanding process stability. A Histogram reveals the amount of variation a process has within it. In a classroom this might be the number of As, Bs, Cs, Ds, and Es given to students who shared the same instruction process. A histogram is used to graphically summarize and display the distribution of a process data set.

A histogram can be constructed by segmenting the range of the data into equal sized bins (also called segments, groups or classes). For example, if your data ranges from 1.1 to 1.8, you could have equal bins of 0.1 consisting of 1 to 1.1, 1.2 to 1.3, 1.3 to 1.4, and so on.

The vertical axis of the histogram is labeled Frequency (the number of counts for each bin), and the horizontal axis of the histogram is labeled with the range of your response variable.

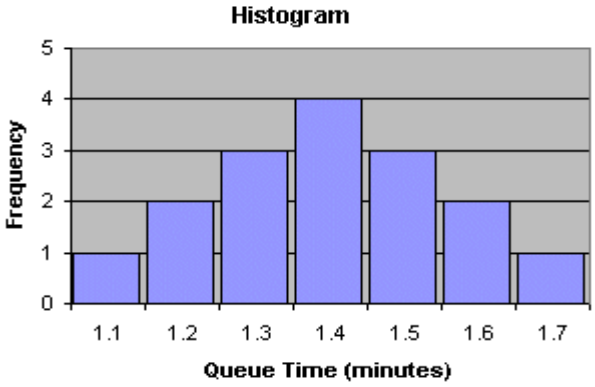



Fig.3. A histogram

You then determine the number of data points that reside within each bin and construct the histogram. The bins size can be defined by the user, by some common rule, or by software methods (such as Minitab).

Questions the histogram answers:

- What is the most common system response?
- What distribution (center, variation and shape) does the data have?
- Does the data look symmetric or is it skewed to the left or right?

### 4. Radar Charts

Radar charts are useful when you want to look at several different factors all related to one item (see example in fig.4).

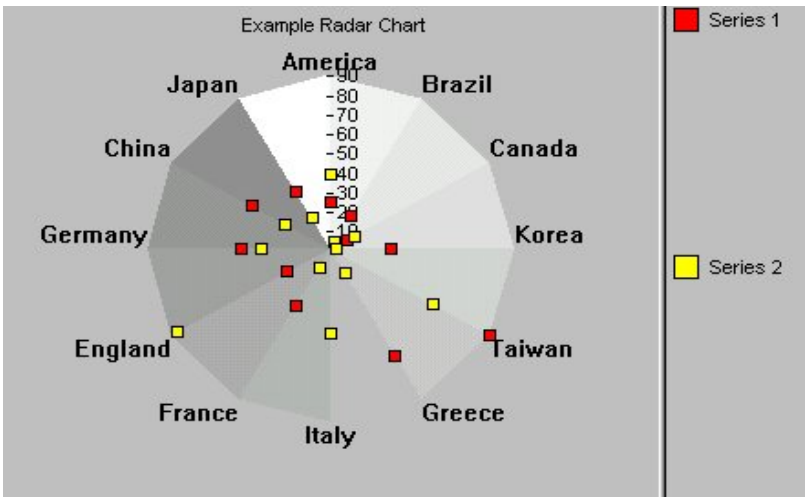



Fig.4. A radar chart

Radar charts have multiple axes along which data can be plotted. In a radar chart, a point close to the center on any axis indicates a low value. A point near the edge is a high value. When you're interpreting a radar chart, check each axis as well as the overall shape to see how well it fits your goals.

**Radar chart statistics:** Mean, Maximum, Minimum, Sample Size, Sample Size, Range, Standard Deviation.

## 5. Scatter Plots

Scatter Plots (also called scatter diagrams) are used to investigate the possible relationship between two variables that both relate to the same "event." A straight line of best fit (using the least squares method) is often included.

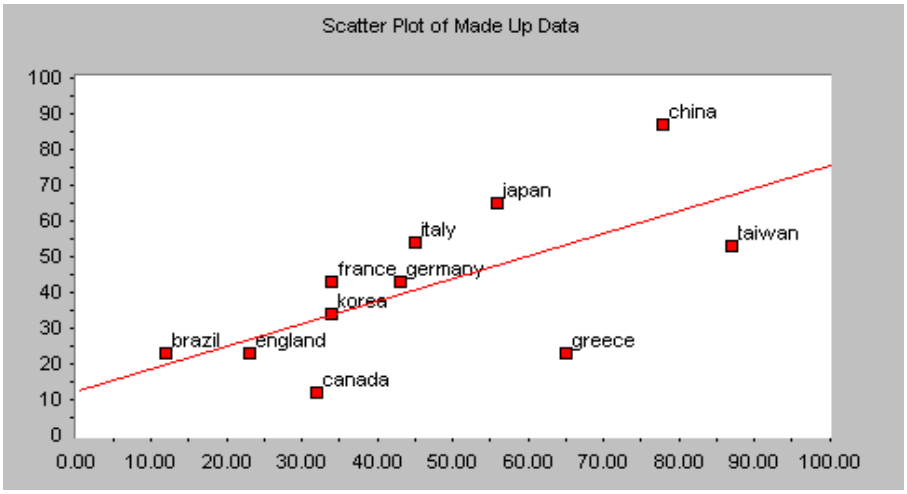



Fig.5. A scatter plot

Things to look for:

- If the points cluster in a band running from lower left to upper right, there is a positive correlation (if x increases, y increases).
- If the points cluster in a band from upper left to lower right, there is a negative correlation (if x increases, y decreases).
- Imagine drawing a straight line or curve through the data so that it "fits" as well as possible. The more the points cluster closely around the imaginary line of best fit, the stronger the relationship that exists between the two variables.
- If it is hard to see where you would draw a line, and if the points show no significant clustering, there is probably no correlation.

**Scatter Plot statistics:** Mean X and Y, Maximum X and Y, Sample Size, X Range and Y Range, Standard Deviations for X and Y values (Indicates how widely data is spread around the mean), Line of Best Fit – Slope (The slope of the line which fits the data most closely (generally using the least squares method), Line of Best Fit - Y Intercept (The point at which the line of best fit crosses the Y axis**).**

### 6. Pareto Chart

A Pareto chart is a type of vertical bar graph that shows which problems to solve in what order (see example in fig.6). It is used to display the relative importance of problems or conditions (the differences between groups of data) and to determine priorities. The Pareto is used to sort out the "vital few" from the "trivial many." Generally, Pareto charts are used to illustrate frequency data by category [i.e., how often different problems occur].

A Pareto Chart is “a series of bars whose heights reflect the frequency or impact of problems”. The bars are arranged in descending order of height from left to right.

A Pareto chart is used for:

1. Focusing on critical issues by ranking them in terms of importance and frequency (example: Which course causes the most difficulty for students? Which problem with Product X is most significant to our customers?)
2. Prioritizing problems or causes to efficiently initiate problem solving (example: Which discipline problems should be tackled first? or, What is the most frequent complaint by parents regarding the school? Solution of what production problem will improve quality most?)
3. Analyzing problems or causes by different groupings of data (e.g., by program, by teacher, by school building; by machine, by team)
4. Analyzing the before and after impact of changes made in a process (example: What is the most common complaint of parents before and after the new principal was hired?; has the initiation of a quality improvement program reduced the number of defectives?)

A Pareto chart can be constructed by segmenting the range of the data into groups (also called segments, bins or categories). For example, if your business was investigating the delay associated with processing credit card applications, you could group the data into the following categories:

- No signature
- Residential address not valid

- Non-legible handwriting
- Already a customer
- Other

The left-side vertical axis of the Pareto chart is labeled Frequency (the number of counts for each category), the right-side vertical axis of the Pareto chart is the cumulative percentage, and the horizontal axis of the Pareto chart is labeled with the group names of your response variables. You then determine the number of data points that reside within each group and construct the Pareto chart, but unlike the bar chart, the Pareto chart is ordered in descending frequency magnitude. The groups are defined by the user.

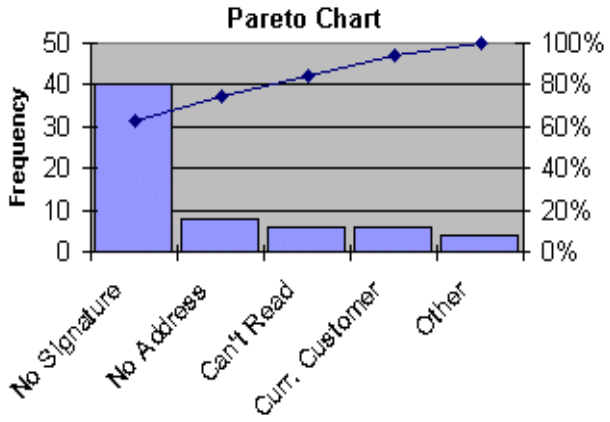



Fig.6. Sample Pareto chart depiction

Steps in constructing a Pareto chart with a step-by-step example:

1. Determine the categories of problems or causes to be compared. Begin by organizing the problems or causes into a narrowed down list of categories (usually 8 or less).
2. Select a Standard Unit of Measurement and the Time Period to be studied. It could be a measure of how often something occurs (defects, errors, cost overruns, etc.); frequencies of reasons cited in surveys as the cause of a certain problem; or a specific measurement of volume or size. The time period to be studied should be a reasonable length of time to collect the data.
3. Collect and summarize the Data. Create a three-column table with the headings of "error or problem category", "frequency", and "percent of total". In the "error or problem category" column list the categories of problems or causes previously identified. In the "frequency" column write in the totals for each of the categories over the designated period of time. In the "percent of total" column, divide each number in the "frequency" column by the total number of measurements. This will provide the percentage of the total.

| **Error Category** | **Frequency** | **Percent of Total** |
|---|---|---|
| Punctuation | 22 | 44% |
| Grammar | 15 | 30% |
| Spelling | 10 | 20% |
| Typing | 3 | 6% |
| TOTAL | 50 | 100% |

4. Create the framework for the horizontal and vertical axes of the Pareto chart. The horizontal axis will be the categories of problems or causes in descending order with the most frequently occurring category on the far left (or at the beginning of the horizontal line). There will be two vertical axes-one on the far left and one on the far right. The vertical axis on the far left point will indicate the frequency for each of the categories. Scale it so the value at the top of the axis is slightly higher than the highest frequency number. The vertical axis on the far right will represent the percentage scale and should be scaled so that the point for the number of occurrences on the left matches with the corresponding percentage on the right.
5. Plot the bars on the Pareto chart. Using a bar graph format, draw the corresponding bars in decreasing height from left to right using the frequency scale on the left vertical axis. To plot the cumulative percentage line, place a dot above each bar at a height corresponding to the scale on the right vertical axis. Then connect these dots from left to right, ending with the 100% point at the top of the right vertical axis.
6. Interpret the Pareto chart. Use common sense-just because a certain problem occurs most often doesn't necessarily mean it demands your greatest attention. Investigate all angles to help solve the problems-What makes the biggest difference? What will it cost to correct the problems? What will it cost if we don't correct this problem?

Questions the Pareto chart answers:

- What are the largest issues facing our team or business?
- What 20% of sources are causing 80% of the problems (80/20 Rule)?
- Where should we focus our efforts to achieve the greatest improvements?

**7. Run Charts**

Run charts rank among the simplest of statistical tools. A run chart (often known as a line graph outside the quality management field) is a line graph that shows data points plotted in the order in which they occur (see fig 7). They display process performance over time and are used to monitor a process over time and to show trends and shifts in a process over time, variation over time, or to identify decline or improvement in a process over time. They can be used to examine both variables and attribute data. Upward and downward trends, cycles, and large aberrations may be spotted and investigated further. In a run chart, events, shown on the *y* axis, are graphed against a time period on the *x* axis. For example, a run chart in a hospital might plot the number of patient transfer delays against the time of day or day of the week. The results might show that there are more delays at noon than at 3 p.m. Investigating of this phenomenon could unearth potential for improvement. Run charts can also be used to track improvements that have been put into place, checking to determine their success. Also, an average line can be added to a run chart to clarify movement of the data away from the average.

Alternatives with run charts:

1. An average line, representing the average of all the y values recorded, can easily be added to a run chart to clarify movement of the data away from the average. An average line runs parallel to the x axis.

2. Several variables may be tracked on a single chart, with each variable having its own line. The chart is then called a multiple run chart.
3. Run charts can also be used to track improvements that have been put into place, checking their success.

**Steps in Constructing a Run Chart:**

1. Draw and label the vertical (y) axis using the measurement units you are tracking (e.g., numbers of defectives, mean diameter, number of graduates, percent defective, etc.)
2. Draw and label the horizontal (x) axis to reflect the sequence in which the data points are collected (e.g., week 1, week 2, ... or 8AM, 9AM, 10AM, etc.)
3. Plot the data points on the chart in the order in which they became available and connect the points with lines between them.
4. Calculate the average from the data, and draw a horizontal line across the chart at the level of the average.
5. Interpret the chart and decide what action to take. Are trends present? Would the chart look different if everything were perfect? The key is to look for trends, and not focus on individual points.

**Example:** Average Math Entrance Exam Scores by Year

| Year | Score | Year | Score | Year | Score |
|---|---|---|---|---|---|
| 1975 | 139 | 1982 | 110 | 1989 | 50 |
| 1976 | 130 | 1983 | 68 | 1990 | 81 |
| 1977 | 61 | 1984 | 78 | 1991 | 105 |
| 1978 | 164 | 1985 | 57 | 1992 | 65 |
| 1979 | 129 | 1986 | 77 | 1993 | 97 |
| 1980 | 100 | 1987 | 38 | 1995 | 96 |
| 1981 | 108 | 1988 | 53 | 1996 | 93 |

Run - Chart:

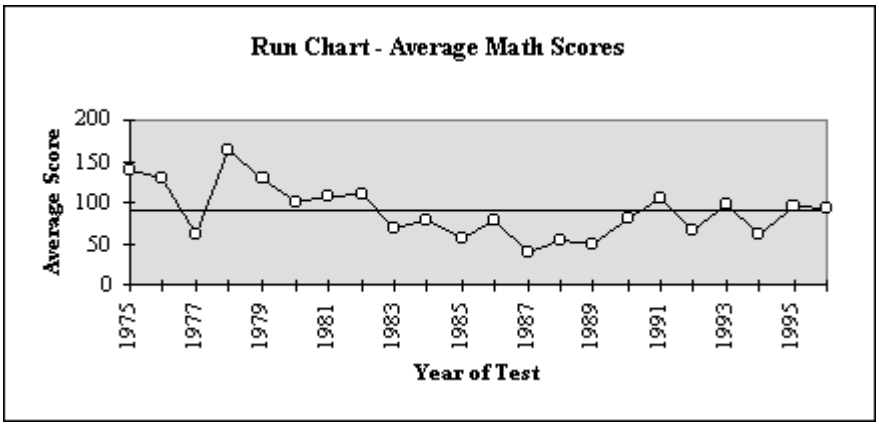



Fig.7 A Run chart

It should be obvious from this chart, that average math scores in the eighties dropped from those in the seventies, and now, in the nineties have rebounded somewhat but are still lower than they were in the seventies.

**Questions to ask about a run chart:**

1. Is the average line where it should be to meet customer requirements?
2. Is there a significant trend or pattern that should be investigated?

**Two ways to misinterpret run charts:**

1. You conclude that some trend or cycle exists, when in fact you are just seeing normal process variation (and **every** process will show some variation).
2. You do not recognize a trend or cycle when it **does** exist.

Both of these mistakes are common, but people are generally less aware that they are making the first type, and are tampering with a process which is really behaving normally. To avoid mistakes, use the following rules of thumb for run chart interpretation:

1. Look at data for a long enough period of time, so that a "usual" range of variation is evident.
2. Is the recent data within the usual range of variation?
3. Is there a daily pattern? Weekly? Monthly? Yearly?

**Using run charts to detect "special causes" of variation:**

If you have 25 points or more in your data series, you can use run charts to detect special causes - something beyond the usual variability of the process -acting on the process.

1. Shifts: If you see eight or more consecutive points on one side of the center line, that indicates that a special cause has influenced the process. Points on the center line don't count; they neither break the string, nor add to it.
2. Trends: Six consecutive jumps in the same direction indicate that a special cause is acting on the process to cause a trend. Flat line segments don't count, either to break a trend, or to count towards it.
3. Pattern: If you see a pattern that recurs eight or more times in a row, it is a good idea to look for a special cause.

For more robust monitoring of a process, and better information about when your process is showing variation beyond what is expected, try using a control chart. It will detect special causes more quickly, and with more accuracy.

**Run chart statistics.**

For each line in the run chart, the following statistics are calculated:

- **Mean** - the average of all the data points in the series,
- **Maximum -** the maximum value in the series,
- **Minimum -** the minimum value in the series,
- **Sample Size -** the number of values in the series,
- **Range -** the maximum value minus the minimum value,
- **Standard Deviation -** Indicates how widely data is spread around the mean.

## 8. Control Chart

The use of control charts generally goes under the heading of Statistical Process Control or SPC. Statistical Quality Control or SQC is also used. Again, the idea is to measure variation in a

process. A process under control is repeatable with 99.9% dependability. Remember, repeatable means stable, not necessarily good. A process may be under control high or low.

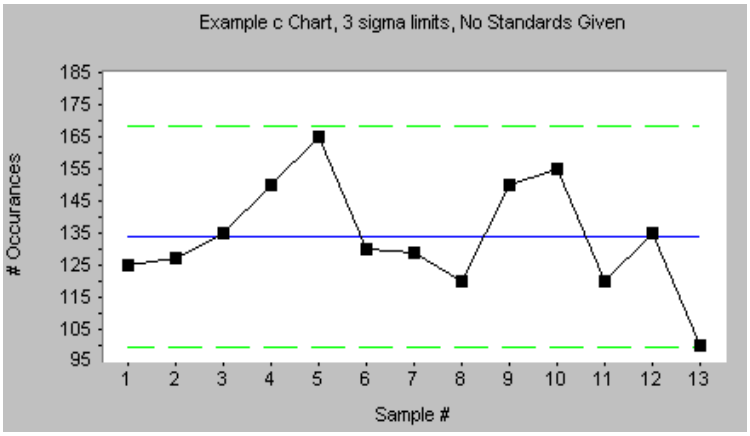



Fig.8. A Control chart

Every process varies. If you write your name ten times, your signatures will all be similar, but no two signatures will be exactly alike. There is an inherent variation, but it varies between predictable limits. If, as you are signing your name, someone bumps your elbow, you get an unusual variation due to what is called a "special cause". If you are cutting diamonds, and someone bumps your elbow, the special cause can be expensive. For many, many processes, it is important to notice special causes of variation as soon as they occur.

There's also "common cause" variation. Consider a baseball pitcher. If he has good control, most of his pitches are going to be where he wants them. There will be some variation, but not too much. If he is "wild", his pitches aren't going where he wants them; there's more variation. There may not be any special causes - no wind, no change in the ball - just more "common cause" variation. The result: more walks are issued, and there are unintended fat pitches out over the plate where batters can hit them. In baseball, control wins ballgames. Likewise, in most processes, reducing common cause variation saves money.

Happily, there are easy-to-use charts which make it easy see both special and common cause variation in a process. They are called control charts, or sometimes Shewhart charts, after their inventor, Walter Shewhart, of Bell Labs. There are many different subspecies of control charts which can be applied to the different types of process data which are typically available.

All control charts have three basic components:

- a centerline, usually the mathematical average of all the samples plotted.
- upper and lower statistical control limits that define the constraints of common cause variations.
- performance data plotted over time.

**Things to look for.**

The point of making control charts is to look at variation, seeking special causes and tracking common causes. Special causes can be spotted using several tests:

- 1 data point falling outside the control limits
- 6 or more points in a row steadily increasing or decreasing
- 8 or more points in a row on one side of the centerline
- 14 or more points alternating up and down

In those charts that pair two charts together, you will want to look for these anomalies in both charts.

The simplest interpretation of the control chart is to use only the first test listed. The others may indeed be useful (and there are more not listed here), but be mindful that, as you apply more tests, your chances of making Type I errors, i.e. getting false positives, go up significantly.

**Types of errors.**

Control limits on a control chart are commonly drawn at 3s from the center line because 3-sigma limits are a good balance point between two types of errors:

- Type I or alpha errors occur when a point falls outside the control limits even though no special cause is operating. The result is a witch-hunt for special causes and adjustment of things here and there. The tampering usually distorts a stable process as well as wasting time and energy.
- Type II or beta errors occur when you miss a special cause because the chart isn't sensitive enough to detect it. In this case, you will go along unaware that the problem exists and thus unable to root it out.

All process control is vulnerable to these two types of errors. The reason that 3-sigma control limits balance the risk of error is that, for normally distributed data, data points will fall inside 3-sigma limits 99.7% of the time when a process is in control. This makes the witch hunts infrequent but still makes it likely that unusual causes of variation will be detected.

How should you respond to special cause variation that is picked up by your control chart?

***Responding to Variation: Special Causes.***

When a process is being affected by special causes of variation, it is called "unstable", or "out of control". Removing special causes when they are harmful (which is most of the time) or integrating them when they are beneficial (which is rare) is an important part of process improvement.

It is easiest to deal with special causes if they are spotted early and the data used to identify them is timely. Tracking down special causes relies heavily on people's memories of what made that occurrence different from all the others. People may quickly forget any unusual circumstances that may have triggered the unusual variation.

When you spot a special cause:

1. The first thing to do is control any damage or problems with an immediate, short-term fix. Be careful not to view this fix as a permanent solution or the process will never be improved.
2. Once a quick fix is in place, search for the cause. Ask people in the process what was different that time. What was out of the ordinary? It might not have been much – an unexpected emergency, a change in schedules, or new materials. The need for this sort of information is part of the reason for collecting very complete data the first time around, noting details and traceability factors about a sample or recorded event.
3. Once you have discovered the special cause, you can develop a longer-term remedy. Most special causes have a negative impact on the output of the process and need to be removed. Occasionally, a special cause can have a positive impact depending on the nature of the process. If this is the case, finds ways to capture and integrate it into the system.

Avoid these mistakes:

- Changing the process to accommodate the special cause. This usually adds cost and bureaucracy.
- Blaming individuals. Not only does everyone makes mistakes, but also chances are that the problem would have occurred regardless of individuals involved.
- Exhorting workers to simply "do better." People can only do as well as the system allows them to do.

It's important not to stop when you've eliminated special causes of variation. You're only halfway, at that point. The next thing is to reduce common cause variation via systematic process improvement.

***Responding to Variation: Common Causes.***

Just because a process is stable, or in statistical control, does not mean that its results are satisfactory. A process may be very consistent, day in and day out making items that are nowhere near specification limits. Or, as the Japanese have done so successfully, variation can be systematically reduced, even in stable processes, enabling a gradual tightening of specification limits, and an overall increase in product quality at lower cost.

Improving a stable process is somewhat more difficult than improving an unstable process because, by definition, a stable process has no special causes of variation that jump out at you, asking to be investigated. Instead, you are faced with the task of looking at all data about the process, not simply what made one point different from the others.

Common causes of variation often lie hidden within the system, and are sometimes assumed to be unavoidable. Yet it is very possible, and often very rewarding, to improve processes and reduce common cause variation. Experience had shown that, amongst the people in and around the process, there are enough ideas for improvements to make a significant impact, even on a sound process.

There are many different ways to search for and remove common causes. Probably the most well-known is **experimentation**, but you can also use **stratification**. Either of these methods may be helped by **disaggregation of data**. For more on these, choose one of the following:

**Experimentation.**

Experimenting allows you to test a theory or hunch when you have little or no data available. The best guideline for experimentation with a process is the Plan-Do-Check-Act cycle. The PDCA cycle, described by Walter Shewhart and W. Edwards Deming, is essentially an iteration of the scientific method. The scientific method goes way back…Francis Bacon described it in the 1620's, but its roots reach all the way back to the Greek philosophers.

The PDCA cycle stresses experimentation and observation as the means of discovering truth:

- In the **P**lanning stage, the problem is recognized and analyzed, and possible solutions formulated.
- In the **D**oing stage, the most likely or effective solution is implemented in a test site.
- The **C**heck is used to compare results of the test solution and the original method to see if there are real improvements.
- **A**cting involves replacing the old method with the successful solution.

You can then return to the beginning of the cycle to explore other possible problems and strive for new levels of improvement.

The search for common causes is just one of the many arenas in which the PDCA cycle can be used. Most generally, it is used to guide overall process improvement, of which searching for common causes might be but a small part.

The PDCA cycle calls for creative thinking and analytic thinking, both essential to process improvement. Creative or divergent thinking encourages many ideas to be considered and new possibilities to be uncovered. Creativity is an important factor because it can break through paradigms and see beyond the current way of thinking about a process. But creativity must be tempered by analysis or convergent thinking that brings the scattered pieces back together in a workable form.

**Stratification.**

Sometimes experimentation is not necessary, and common causes can be found using stratification of data. Stratifying data is essentially the separation of data into categories: what characteristics are shared or not shared? It often needs to be done iteratively – you stratify at one level, then within one of those categories you stratify again, and so on. If you start at the most general level of the information you have, only the most superficial answer may appear. If you stratify the data at different levels, you may begin to see links. It's like an address on a letter. At the most general level, an address leads you to a country, then to a state, then a ZIP code or city, then to street, then a particular house on the street, and finally to a particular person in the house.

By sorting data into multiple levels of groups with shared characteristics, you can better pinpoint the root cause of a problem. For example, in one 6th grade class, there seems to be a lot of students failing their spelling tests. As you look at the data, you notice that many more students fail the test given on Tuesday than the one given on Friday. When you investigate the Tuesday tests, you notice that most of the failures belong to kids involved with the basketball team. You then learn from the basketball coach that the team holds practice in the evenings on Monday, but immediately after school on Wednesday and Thursday. This means that, most likely, the high number of failures on Tuesdays is due to late practice the night before, leaving the kids less time to study. If you had not stratified the data, becoming more specific at each step, first by days of the week and then by basketball players and non-basketball players, you would never have discovered the common cause in this process.

Stratification can be made easier by using Pareto charts, bar charts, or pie charts, all charts that can display counts of things in different categories. Even the cause & effect diagram could be used to build a tree of branching characteristics, each one being stratified further and further until root causes are reached. In stratification, the characteristic used to separate the data is the "stratification variable." Categories can be composed of a single variable or can combine more than one variable as long as they refer to different characteristics. For example, a category could be "college students who have had their driver's license revoked for underage drinking." This category combine several variables: Are they a college student? Have they had their license revoked? For underage drinking?

Two common mistakes are made when stratifying data. First, it is easy to conclude too much from the stratification. Don't take small differences between category totals too seriously. Look for big differences instead, and try stratifying the data using different stratification variables. Secondly, people tend to jump to the conclusion that an irregularly patterned category is the cause of the problem. The category may provide us a clue as to where to look for the cause rather than being the cause itself.

**Disaggregation**

Either experimentation or stratification can sometimes be helped by disaggregating the process and viewing its components individually. Sometimes a problem in one part of the process gets covered up by another part of the process. By studying the components separately, a problem that exists in one but is covered up in the whole can rise to the surface.

Disaggregation is not about optimizing each piece at the expense of others. In disaggregation, the parts of the process that are being viewed separately must still be aligned toward the same shared goal and focused on serving the next step in the process. Disaggregation is more about bringing pieces into view rather than actually separating them, or seeing the forest ***and*** the trees. Searching for common causes through disaggregation relies heavily on regular meetings between managers of the different parts of the process so that the pieces can be discussed in the context of the whole system.

If your process is in control, is that good enough? No. You have to start by removing special causes, so that you have a stable process to work with. But then comes the real fun, and often the most substantial benefits: it is time to improve the process, so that even common cause variation is reduced.

## 9. Relations Diagram (or Interrelationship Digraph)

Relations Diagrams are drawn to show all the different relationships between factors, areas, or processes. Why are they worthwhile? Because they make it easy to pick out the factors in a situation which are the ones which are driving many of the other symptoms or factors. For example, a relations diagram of urban poverty might start out something like this:

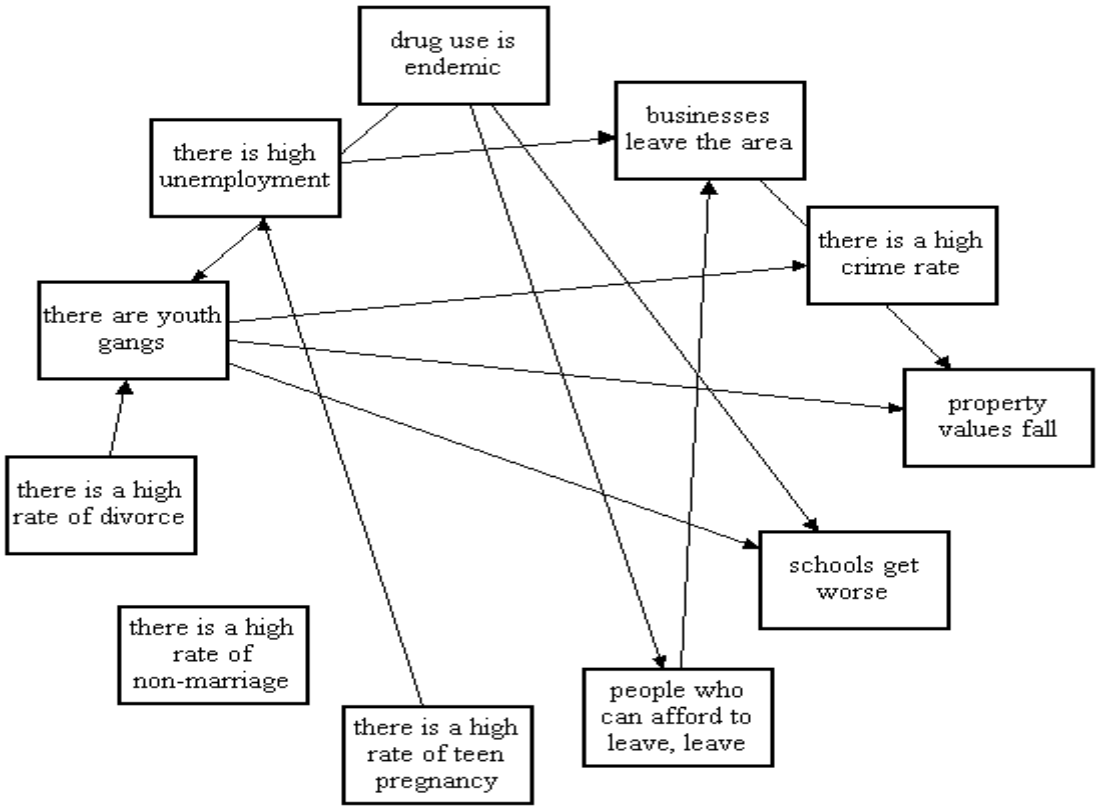



Fig.9. A Relations diagram

Instead of one item following another in a logical sequence, each item is connected to many other pieces, showing that they have an impact on each one. Once all the relevant connections between items have been drawn, the connections are counted. Those with the most connections will usually be the most important factors to focus on.

While the relations diagram is one of the 7 New QC Tools described in the Japanese classic "Management for Quality Improvement", it is less frequently used than some of its stablemates. However, in a fairly tangled situation, it is a powerful means of forcing a group to map out the interactions between factors, and usually helps bring the most important issues into focus.

**To create a Relations Diagram:**

1. Agree on the issue or question.
2. Add a symbol to the diagram for every element involved in the issue.
3. Compare each element to all others. Use an "influence" arrow to connect related elements.
4. The arrows should be drawn from the element that influences to the one influenced.
5. If two elements influence each other, the arrow should be drawn to reflect the stronger influence.
6. Count the arrows.
7. The elements with the most outgoing arrows will be root causes or drivers.
8. The ones with the most incoming arrows will be key outcomes or results.

**10. Cause and Effect Diagram**

The cause-and-effect diagram is also called the Ishikawa diagram (after its creator, Kaoru Ishikawa of Japan), or the fishbone diagram (due to its shape). The cause & effect diagram is the brainchild of Kaoru Ishikawa, who pioneered quality management processes in the Kawasaki shipyards, and in the process became one of the founding fathers of modern management.

It was created so that all possible causes of a result could be listed in such a way as to allow a user to graphically show these possible causes. From this diagram, the user can define the most likely causes of a result.

This diagram was adopted by Dr. W. Edwards Deming as a helpful tool in improving quality. Dr. Deming has taught Total Quality Management in Japan since World War II. He has also helped develop statistical tools to be used for the census and taught the military his methods of quality management. Both Ishikawa and Deming use this diagram as one of the first tools in the quality management process.

The cause and effect diagram is used to explore all the potential or real causes (or inputs) that result in a single effect (or output). The diagram is a visual tool used to logically organize possible causes for a specific problem or effect by graphically displaying them in increasing detail. It helps to identify root causes and ensures common understanding of the causes. Causes are arranged according to their level of importance or detail, resulting in a depiction of relationships and hierarchy of events. This can help you search for root causes, identify areas where there may be problems, and compare the relative importance of different causes.

Cause and Effect relationships govern everything that happens and as such are the path to effective problem solving. By knowing the causes, we can find some that are within our control and then change or modify them to meet our goals and objectives. By understanding the nature of the cause and effect principle, we can build a diagram to help us solve everyday problems every time.

Also known as the **"fishbone**" because of its shape, or the **"Ishikawa diagram**," after its originator, cause-and-effect diagrams are used in structured brainstorming sessions to identify, explore, and display the possible causes of a specific problem or condition. In other words, it provides a pictorial display of a list in which you identify and organize possible causes of problems, or factors needed to ensure success of some effort. The problem or condition is written in the "fishhead" and always stated as a question. Major causes are the primary drivers. Contributing factors within a major cause are listed as the small "bones" attached to the large "bones." Each major cause can be recreated as a second "fishbone" to examine the situation in depth.

**A Cause and Effect Diagram is used for:**

1. Identifying potential causes of a problem or issue in an orderly way (example: Why has membership in the band decreased?; why isn't the phone being answered on time?; why is the production process suddenly producing so many defects?)
2. Summarizing major causes under four categories (e.g., People, Machines, Methods, and Materials or Policies, Procedures, People, and Plant)

It is an effective tool that allows people to easily see the relationship between factors to study processes, situations, and for planning.

Causes in a cause & effect diagram are frequently arranged into four major categories. While these categories can be anything, you will often see:

- manpower, methods, materials, and machinery (recommended for manufacturing)
- equipment, policies, procedures, and people (recommended for administration and service).

These guidelines can be helpful but should not be used if they limit the diagram or are inappropriate. The categories you use should suit your needs. At SkyMark, we often create the branches of the cause and effect tree from the titles of the affinity sets in a preceding affinity diagram.

As we have already mentioned earlier, the C&E diagram is also known as the fishbone diagram because it was drawn to resemble the skeleton of a fish, with the main causal categories drawn as "bones" attached to the spine of the fish, as shown below.

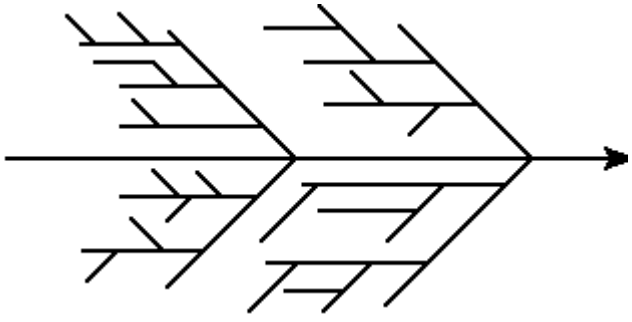


Fig.10. A Cause and Effect Diagram

Cause & effect diagrams can also be drawn as tree diagrams, resembling a tree turned on its side. From a single outcome or trunk, branches extend that represent major categories of inputs or causes that create that single outcome. These large branches then lead to smaller and smaller branches of causes all the way down to twigs at the ends. The tree structure has an advantage over the fishbone-style diagram. As a fishbone diagram becomes more and more complex, it becomes difficult to find and compare items that are the same distance from the effect because they are dispersed over the diagram. With the tree structure, all items on the same causal level are aligned vertically.

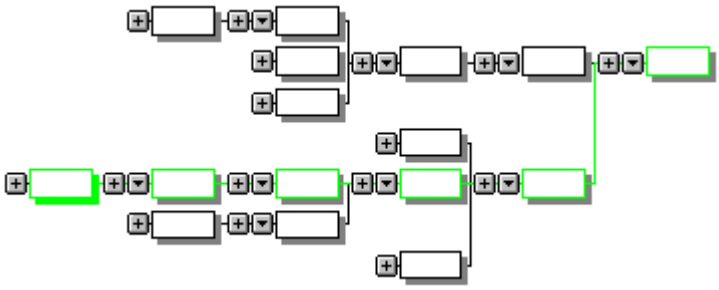


Fig.11 A Tree structure

**To successfully build a cause and effect diagram:**

1. Be sure everyone agrees on the effect or problem statement before beginning.
2. Be succinct.
3. For each node, think what could be its causes. Add them to the tree.
4. Pursue each line of causality back to its root cause.
5. Consider grafting relatively empty branches onto others.
6. Consider splitting up overcrowded branches.
7. Consider which root causes are most likely to merit further investigation.

Other uses for the Cause and Effect tool include the organization diagramming, parts hierarchies, project planning, tree diagrams, and the 5 Why's.

**Steps in constructing a Cause and Effect Diagram:**

1. Prepare a flip chart or an overhead transparency of the following template:
2. Write the issue (problem or process condition) on the right side of the Cause and Effect Diagram.
3. Identify the major cause categories and write them in the four boxes on the Cause and Effect Diagram. You may summarize causes under categories such as:

    -Methods, Machines, Materials, People

    -Places, Procedures, People, Policies,

    -Surroundings, Suppliers, System, Skills

4. Brainstorm potential causes of the problem. As possible causes are provided, decide as a group where to place them on the Cause and Effect Diagram. It is acceptable to list a possible cause under more than one major cause category.
5. Review each major cause category. Circle the most likely causes on the diagram.
6. Review the causes that are circled and ask "Why is this a cause?" Asking "why" will help get to the root cause of the problem.
7. Reach an agreement on the most probable cause(s).

**Example of completed Cause and Effect Diagram:**

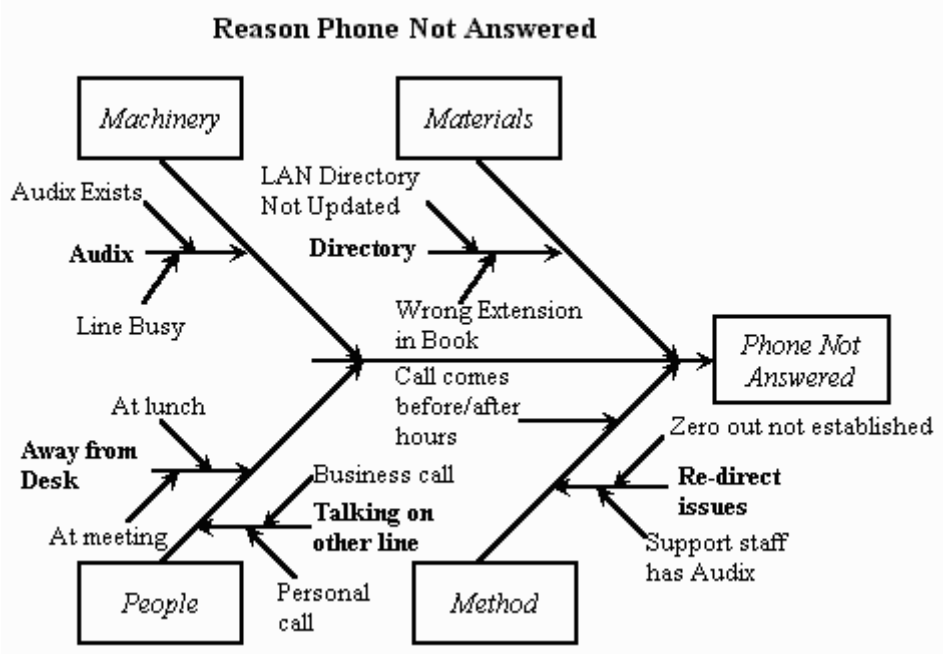



Fig.12 A Cause and Effect Diagram

**Useful software.**

Cause and Effect Diagrams are typically constructed through brainstorming techniques. As a result, they are often drafted by hand on paper. However, two software packages capable of displaying the diagram professionally are AutoCad and CADKEY.

### 11. Flow Chart

A flow chart is a pictorial representation shows all the steps in a process. Often the first step for an improvement team takes is to draw a flowchart of the process under examination. Generally, a process can not be improved unless everyone agrees what the process is. A Flowchart is used for:

1. defining and analyzing processes (example: What is the registration process for entering freshmen students?)
2. building a step-by-step picture of the process for analysis, discussion, or communication purposes (example: Is it possible to shorten the length of time it takes for a student to complete the program?)
3. defining, standardizing, or finding areas for improvement in a process

**Steps for creating a flowchart are:**

1. Familiarize the participants with the flowchart symbols
2. Brainstorm major process tasks. Ask questions such as "*What really happens next in the process?", "Does a decision need to be made before the next step?", or What approvals are required before moving on to the next task?"*
3. Draw the process flowchart using the symbols on a flip chart or overhead transparency. Every process will have a start and an end (shown by elongated circles). All processes will have tasks and most will have decision points (shown by a diamond).

4. Analyze the flowchart for such items as:
    - Time-per-event (reducing cycle time)
    - Process repeats (preventing rework)
    - Duplication of effort (identifying and eliminating duplicated tasks)
    - Unnecessary tasks (eliminating tasks that are in the process for no apparent reason)
    - Value-added versus non-value-added tasks.

**How to Avoid the Four Most Common Mistakes of Sales Process Mapping.**

Process mapping is a well-known technique for creating a common vision and shared language for improving business results. It helped one management training and development firm realize that people within their sales department had been working at cross purposes, and crucial executive-level discussions with customers were not taking place. Based on sales process mapping, the leaders reorganized their sales operations so that job descriptions and performance measures focused more on the customer. In six months, they reversed a five-year slump and earned big bonuses for team members. In another case, sales process mapping helped a large manufacturer's national account teams discover a powerful new way to coordinate with field salespeople, yielding far more new business opportunities than expected.

However, leaders in both large and small sales organizations often make mistakes that undermine the potential of process mapping. A common result, for example, is that salespeople ignore the process and operate "outside the system." Based on work with several dozen clients, I have observed four common mistakes that tend to hinder their success:

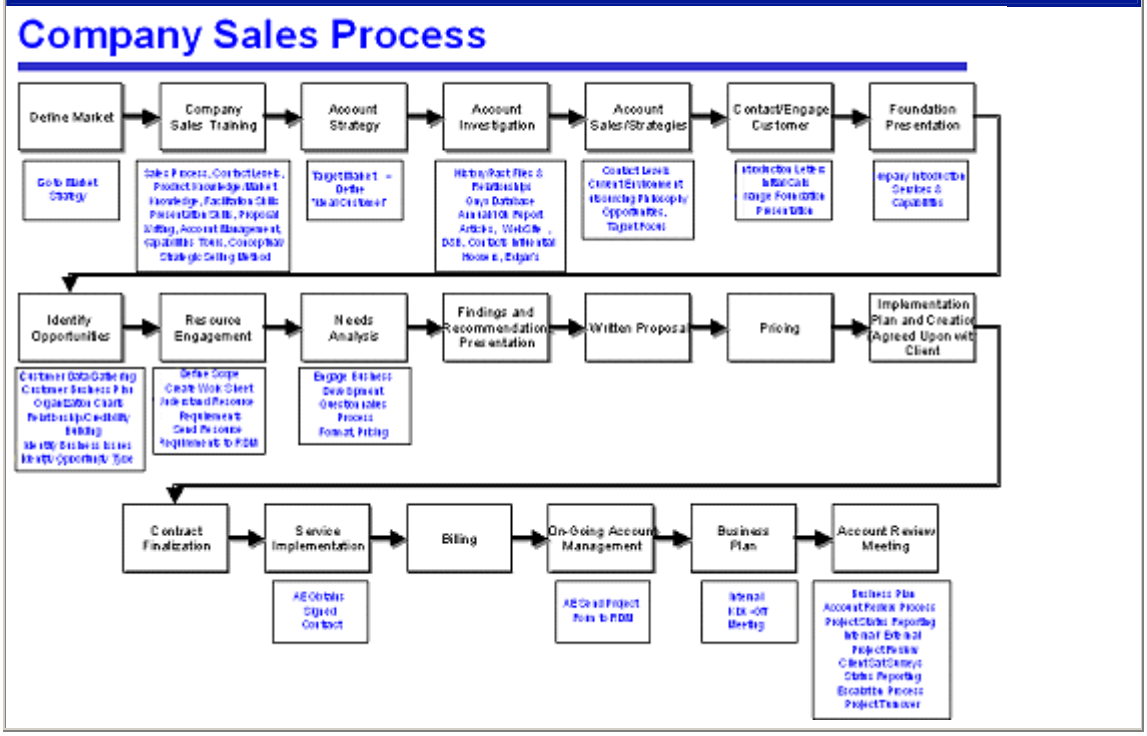
| Process Mapping Mistakes | Principles That Yield Powerful Results |
|---|---|
| □ Map all the details, losing track of the big picture. | □ Foreground goals in organizing your process map. |
| □ Focus on the seller, instead of the customer. | □ Determine how to create value for the customer throughout the process. |
| □ Map the process without showing how the results will be measured. | □ Map tools, skills, and performance metrics along with the process. |
| □ Buy somebody else's "ideal" sales process. | □ Engage your people in process mapping to define problems and solutions. |

This article describes the consequences of these sales process mapping errors, as well as principles to follow in order to avoid them. By following these suggestions, you can derive the most positive results for your own organization.

**Mistake #1: Map all the trees, but miss the forest.** An enthusiastic VP of Sales for a technical services company spent considerable time developing a process map for his organization. The map he developed (Figure 1) is typical of a first attempt to map a sales process. Analytically trained individuals (such as Six Sigma Black Belts or IT Systems Analysts)

often create similar maps, many pages festooned with decision diamonds and other complicated details.

**Figure 13: Too many steps make this process map hard to use.**

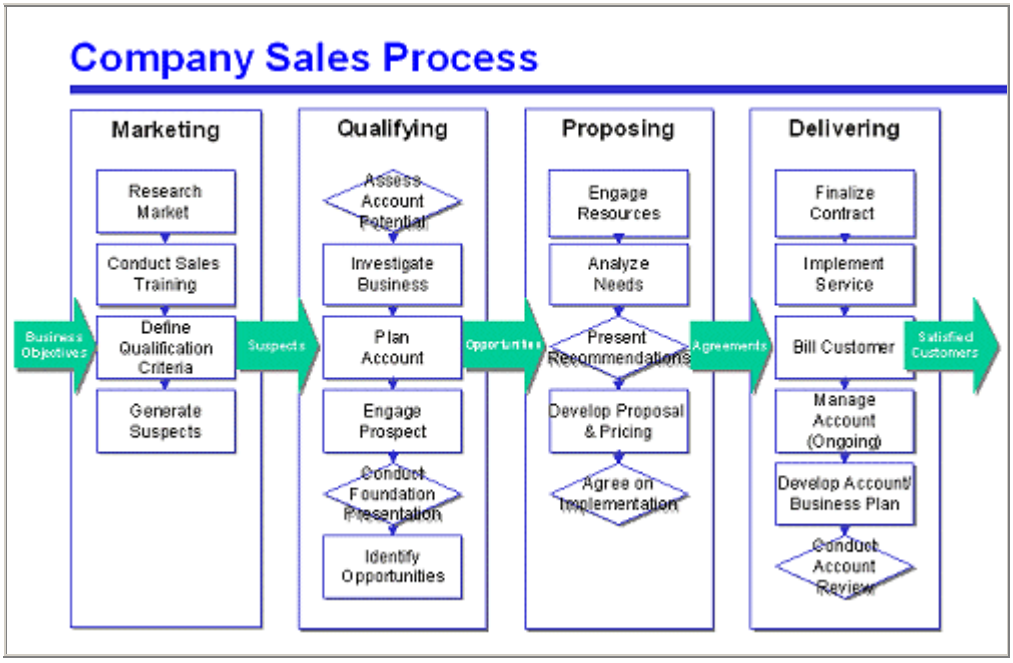



This VP created a comprehensive snapshot of people's activities across his sales organization. Unfortunately, his comprehensive process map did not help him train or lead his team. This process map illustrates Mistake #1 in two significant ways:

- The map is too detailed. It captures more information than a person can take in all at once.
- All activities appear to have the same importance, with each activity equally dependent on the previous one. This isn't an accurate reflection of reality.

**Principle #1: Foreground goals in your sales process map.** The figure below shows how this VP's sales process map could be organized around goals. This technique places goals in the foreground, clarifying key issues. For example, even if team members have different ideas about how to qualify new accounts, they can agree that accounts must be qualified. With this goal in the foreground, some variation can be expected in how the goal is achieved. As individuals work toward consensus in the activity steps, they become best practices for achieving the goals.

**Figure 14: Grouping activities according to goals creates focus.**

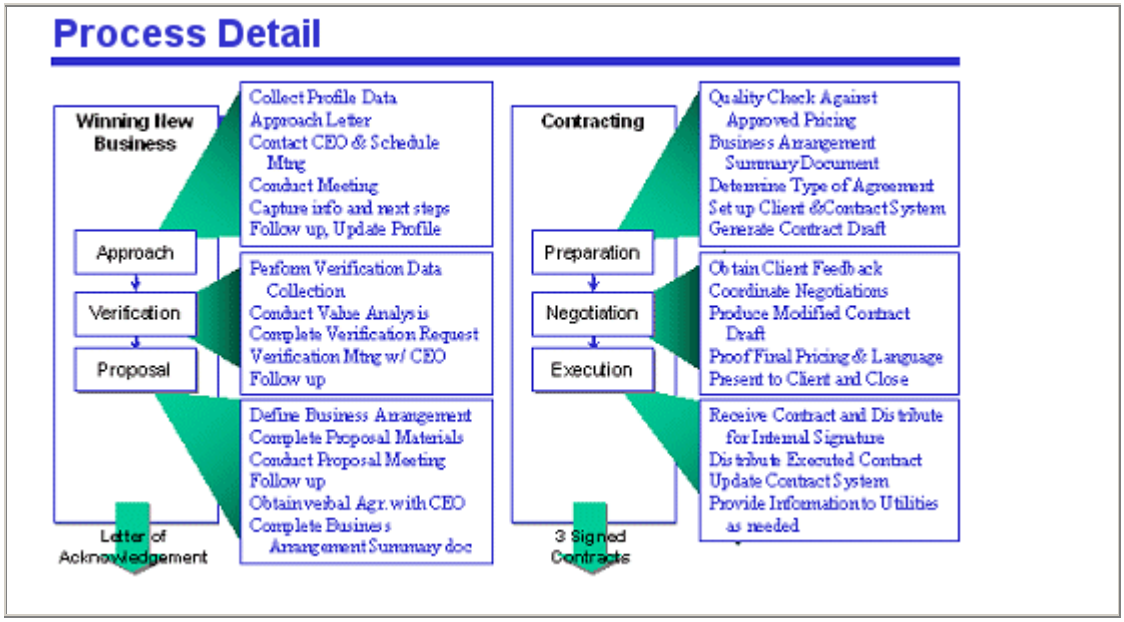



Note that the goals are not the same as departmental boundaries. A single person might be involved in any of the top-level phases. This drives communication and collaboration, making process maps a powerful tool for generating a shared framework for accountability.

Another important feature is decision diamonds showing where the prospect (or the salesperson) might opt out. In real life, prospects can decide to buy from someone else, wait until next year, or call out of the blue and need service tomorrow. Identifying and measuring these decision points acknowledges that the process has a yield, as well as providing critical information for process improvement.

**Mistake #2: Focus on the seller, instead of the customer.** An administrator in a financial services company mapped her company's sales process as her thesis for a master's degree program. She dutifully collected statements from the company's sales executives about what salespeople ought to do (she had never been a salesperson herself) and organized them into a hierarchical format. She achieved a thorough analysis that satisfied her professors. Unfortunately, her hard work did not benefit her organization.

**Figure 15: This process map focuses on seller activities.**




A portion of her company's process map is shown in Figure 15. It is hierarchical, identifying a goal for each phase. Notice that the steps in the Winning New Business phase call for working with the CEO at each step. It would be nice if that happened, wouldn't it? Now, consider the steps within the Contracting phase. Who do these steps create value for? From an internal administrator's perspective, these procedures are important. But what value do they create for the customer? In fact, the benefit to the external customer was not considered at any stage of this process. Is it any wonder customers resisted it? Successful salespeople in this administrator's company routinely operated outside the process, as any successful salesperson would have to do.

**Principle #2: Determine how to create value for the customer.** Sales processes that work create value for the customer. Delegating the process mapping task to an administrator without sales experience or executive insight allowed this company to go through the motions without making a difference. Figure 16 shows what this company's process might look like, recast with a customer focus. Figure 17 defines value to the customer.

**Figure 16: Revised sales process focuses on customer interaction.**

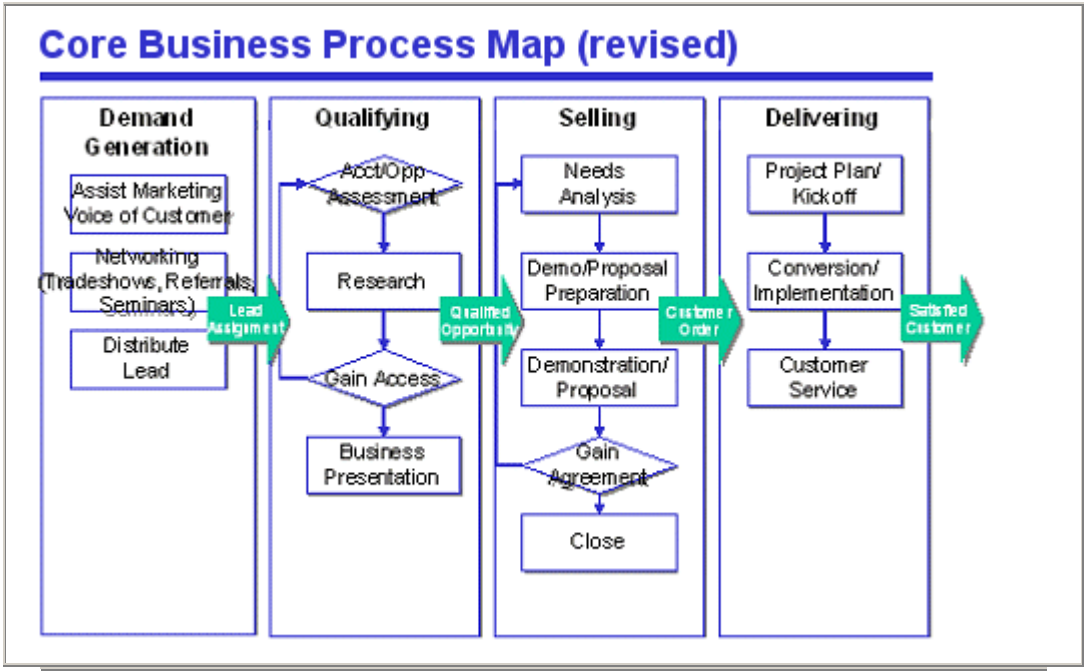
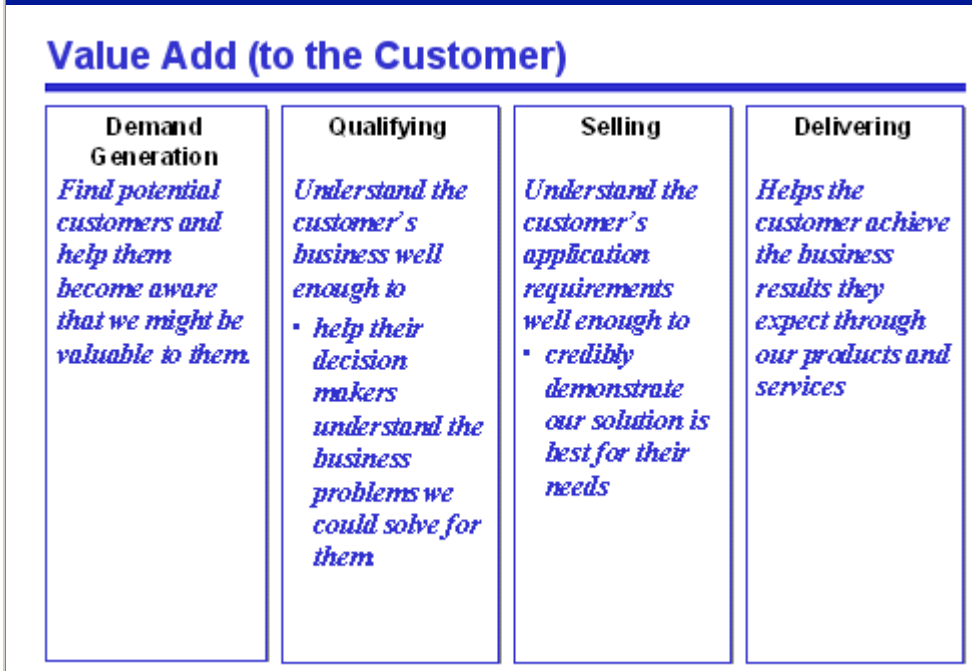



**Figure 17: Value to the customer is identified.**




These diagrams illustrate a lengthier, more complex sales processes often found in business-to-business services. Such an approach is important where substantial talent or time -- such as engineering, IT, legal, or other consulting -- is necessary to develop a solution proposal. These complex sales environments are notorious for their unpredictability and cost. Before committing costly resources to the sales effort, the selling organization must do everything possible to ensure success and avoid wasting those resources. This can be accomplished by reaching decision makers early, so as to verify their needs and priorities. But this usually requires tremendous effort and courage. Often it is never accomplished.

Ultimately, reaching the decision maker in your customer's organization benefits both you and your customer. Without first-hand insight into the decision maker's needs and priorities,

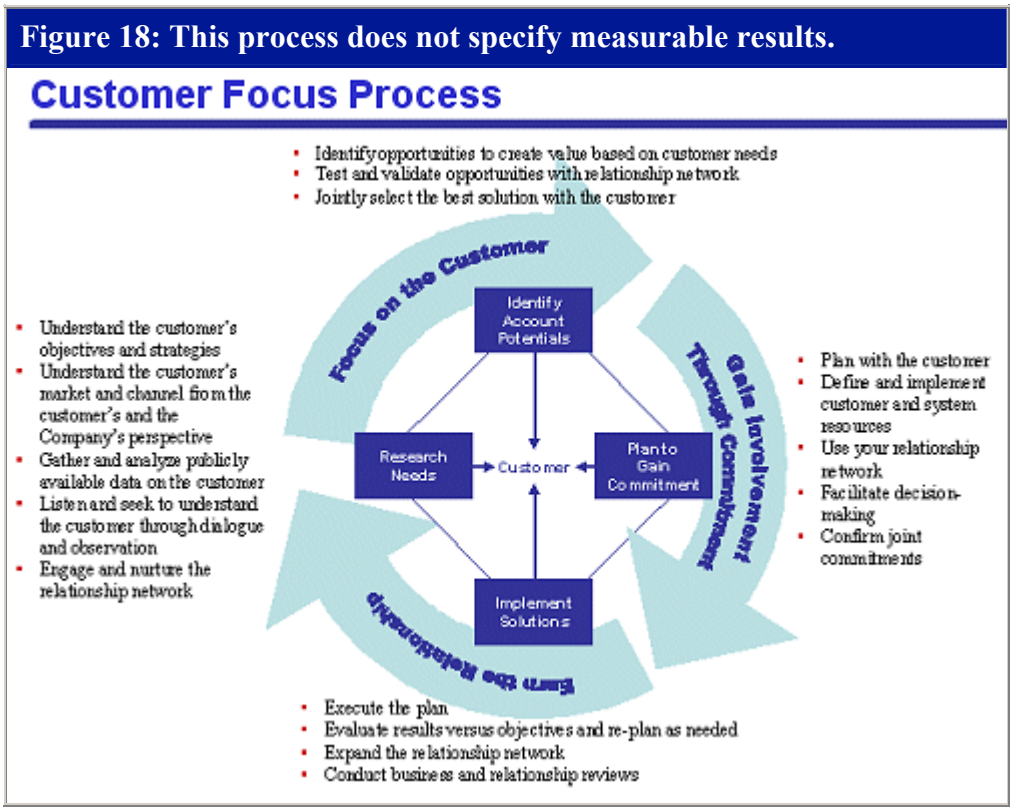
you risk wasting everyone's time. But if you can validate your own understanding of the business value you offer the decision maker, even helping the decision maker generate a consensus if necessary, you create value for everyone. Getting credit for these things is often the key to winning the business.

Through sales process mapping, your team can keep a constant focus on your most mission-critical question: How can you create real value to the customer? If your business requires a contracting/administrative phase (like the financial services company in Figure 3), figure out how that phase can create value for the customer. If you can't, place that phase in service of another goal that does.

Everything you do to find, gain, and keep customers should create clear value for them. If you do, customers -- and the best salespeople -- are sure to follow. You have no more powerful lever for ensuring an ever-growing stream of profitable business. Customer value is the number one defense against changing markets, competition, and technologies.

**Mistake #3: Forget to "show them the money".** The training and development department of a major corporation spent several million dollars to develop a customized sales training program based on the company's cultural values. The program was magnificent from an organizational development perspective. It illustrated the company's conceptual goals clearly, and it built on existing training materials, which provided salespeople with many powerful skills (see Figure 18).

**Figure 18: This process does not specify measurable results.**

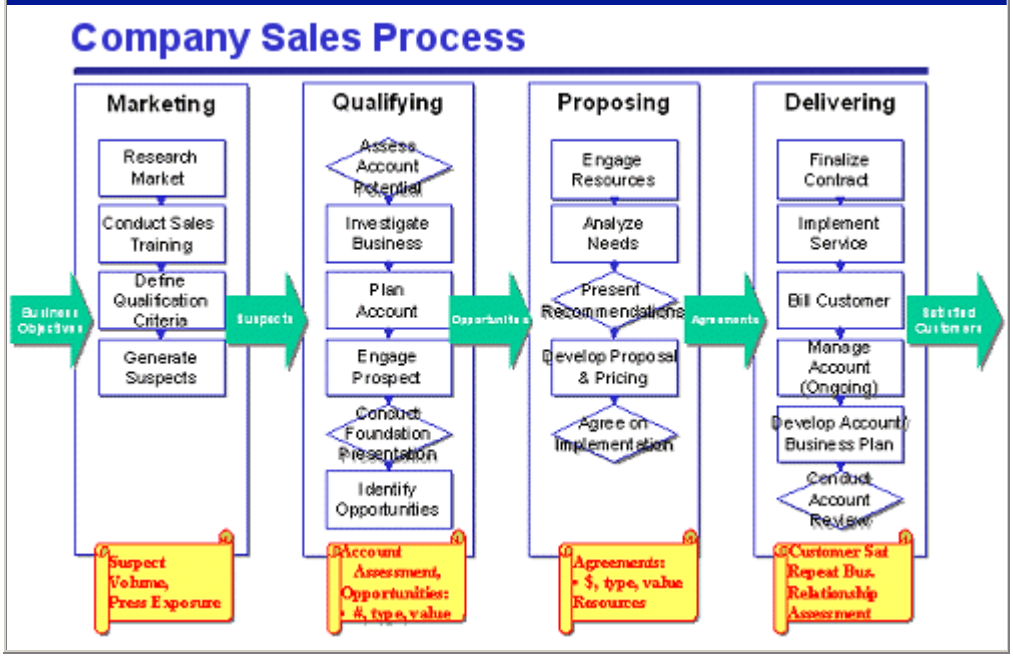



Unfortunately, statements such as "Use the relationship network," "Facilitate decision making," or "Confirm joint commitments" are not useful to salespersons trying to make their numbers. What is the concrete output of each step? How will it be measured? When are orders generated? Where is the process connected to the money?

Lacking measurable steps grounded in real-world sales operations, the training program defined a process in name only. Salespeople learned how the company's world really worked on the job rather than from the course. Although many people agreed the course contained valuable skills, its value could not be proven. The sales organization in this company ultimately created its own measurement system outside the framework of the training program, crippling its effectiveness.

**Principle #3: Integrate tools, skills, and results measurements with the process.** Figure 19 illustrates how a sales process map (the same map that appears in Figure 2) can include metrics. The sales organization's performance is measured by the high-level goals of the process, rather than the detail steps. There are many advantages in this approach to selecting metrics.

**Figure 19: Broad metrics assess each goal-driven phase of the sales process.**

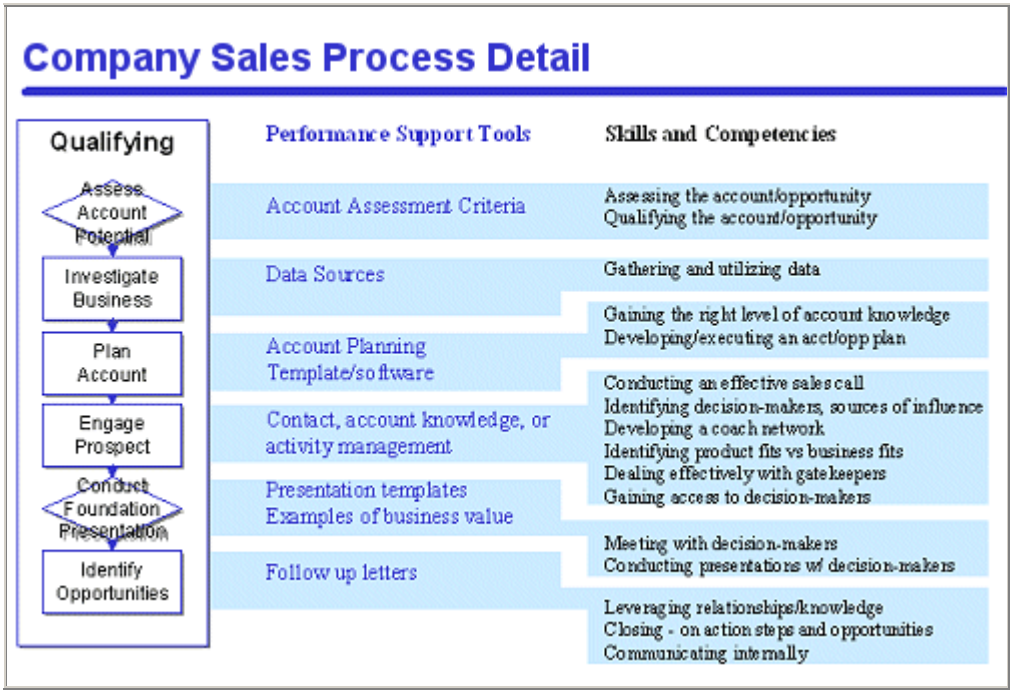



First, as products and services move through their economic life cycles, sellers must change their marketing and qualifying strategies accordingly. Over time, these metrics can provide powerful leading indicators of market shifts, affording sellers precious lead time to respond.

Second, these metrics allow the organization to identify its bottlenecks or weak links, allowing resources to be allocated most effectively. For example, if marketing is not generating enough good prospects, adding salespeople or engaging expensive training services will not help. Instead, the marketing process should be improved so as to create enough prospects.

Third, a mapping approach allows people to participate in setting their own goals by drilling into more detailed analyses and metrics to improve performance. Figure 8 illustrates how a process map can serve as a tool for integrating some support functions within an organization.

**Figure 20: Link performance support, skills, and competencies to the sales process.**




Individuals can use this kind of detail to identify skills they need to work on. An organization can use process detail to integrate software support as well as training. This kind of mapping, a current trend in the training and development community, can yield powerful results.

**Mistake #4: Buy somebody else's "ideal" sales process.** Sales processes often come prepackaged as sales training or Customer Relationship Management (CRM) software. Although these initiatives can be useful to an organization if they are selected and implemented appropriately, they sometimes do great harm.

For example, sales executives purchase sales training in an attempt to create improved sales results. Good sales training does in fact help salespeople become more effective at reaching their goals. But, like everyone else, salespeople are creatures of their environment. If the environment is not changed, behaviors tend to return to their pre-training state. Although this problem is well known, sales executives often do not recognize the impact of mismatches between their own organization's sales environment and the assumptions of a sales training program. Many millions of dollars are wasted each year in training programs that are far less effective than they could be for this reason.

In the case of CRM software, a company is often faced with fitting its business to the software, instead of the other way around. Anxious to collect license fees, software firms generally recommend, "Let's just get the software running vanilla for now; then down the road we can think about modifying it." Down the road, most companies discover many dubious assumptions:

| Assumption | Realities |
|---|---|
| □ CRM systems provide management with information for better "control" of field activities. | □ Why would salespeople provide information to a system that can and will be used against them? |
| □ CRM suppliers know how to make a sales process work. | □ Most CRM systems only track activities; they are poor at helping people sell. |

| | |
|---|---|
| □ The supplier's sales process model is fine for our business. | □ The supplier's sales process model may be inappropriate for our business. |
| □ We can always make system changes later to fit our business better. | □ After the system has lost credibility and support in the organization, who cares? |

Many organizations have found CRM implementations to be extremely frustrating experiences. Why do so many organizations find themselves in this situation? One reason is that executives assume that everyone else already understands how their business works, so someone else (such as the software vendor or an administrator) can map out the details.

However, if people within the organization haven't created a reasonable map of the sales process for themselves, how can they expect an outside supplier's assumptions to be on the mark? In this regard, Dick Lee, author of The Customer Relationship Management Survival Guide, offers a valuable perspective:

> "Customer Relationship Management means implementing customer-centric business strategies, which drives redesigning of functional activities, which demands re-engineering of work processes, which is supported, not driven, by CRM technologies."

CRM software is very powerful. It requires answers to questions such as, "How do we create value for customers?" and "How do we measure the value we create?" If leaders in the organization don't fully account for the answers, the initiative will fail -- not because the CRM product is inadequate but because the organization didn't create an environment in which it could work.

**Principle #4: Engage your people in process mapping to define problems and solutions.** Software and training suppliers can provide valuable tools to support your sales process. But the sales process itself can't be purchased from an outside supplier. It requires the hearts and minds of your people. It is the hearts and minds of your people. It is your customer relationship strategy. The leaders of a sales organization need to generate a common vision and implement it collaboratively. Process mapping is an ideal tool to engage people in creating and achieving this common vision.

**Conclusion.**

The best salespeople in an organization often operate outside the parameters of whatever sales process or CRM system is in place. They get away with it because they provide the organization's supply of oxygen-customers with orders. Thank goodness!

It is time to challenge one of the traditional approaches of leaders who function as cheerleaders for their sales teams, while turning a blind eye toward internal roadblocks and constraints. Process mapping, accomplished through team collaboration, with clear focus on customer value at every stage, is a power tool for blowing away those roadblocks and constraints.

In summary, sales process mapping provides these mission-critical benefits to any customer-facing organization:

- It enables the team to tap into the customer's oxygen pipeline and trace a path to your business.
- It ensures that the team can pull together to create real value, so salespeople don't have to go outside the system to deliver desperately needed oxygen.
- It helps individuals understand and accept organizational changes across functions.
- It provides the framework for measuring performance goals, which people can set for themselves.

These are the reasons why process mapping brings such potential for creating breakthroughs in organizational sales performance.

## New words and expressions

**Mean -** the average of all the data points in the series,
**Maximum -** the maximum value in the series,
**Minimum -** the minimum value in the series,
**Sample Size -** the number of values in the series,
**Range -** the maximum value minus the minimum value,
**Standard Deviation -** indicates how widely data is spread around the mean.
**Pie Chart,**
**Bar Chart,**
**Histogram,**
**Radar Chart,**
**Scatter Plot,**
**Pareto Chart,**
**Run Chart,**
**Control Chart**
**Disaggregation of data**
***Relations Diagram***
**Cause and Effect diagram**
**Flow Chart**
**Customer Relationship Management (CRM)**

## Home assignment

Read the text. Give your examples of charts and diagrams.

**Lesson 3-4. A Simplified TQM Diagnostic Model**

This text is designed for Leaders and Managers who want to:

- Repair, jump-start or diagnose problems in existing TQM initiatives, or
- Design and implement their own less expensive and culturally tuned TQM, or
- Become competent internal consultants to their company's TQM system.

**1. Why learn a simplified TQM diagnostic model?**

This model can help you gain confidence in making TQM decisions:

- Identify necessary elements for a successful quality management approach.
- Know how they fit together to successfully accomplish quality goals.
- Display the most options, thus helping make the right quality management choices.

This model can help you integrate daily TQM tasks with strategic TQM goals:

- Learn skills to balance competitive quality strategic planning with daily operational choices.
- Learn skills to maximize human and organizational resources for daily productivity demands.

This model can help you understand and enjoy team technology in the context of TQM:

- Learn how to avoid strategies that lead to the "program-of-the-month" mentality.
- Learn how to keep management commitment for TQM at its highest level.
- Learn how to avoid employee "end-runs" around management during TQM implementation.

**The guiding principle:**

- Successful Total Quality Management requires both behavioral and cultural change.
- A successful TQM System brings two other management systems together with a behavioral and cultural commitment to customer quality.
- Thus, TQM becomes a system within itself by default or by choice.
- These three management systems must be aligned in a successful TQM initiative:
  - OM (organizational management system),
  - HRM (human resource management systems) and
  - TQM (total quality management).

**Two implementation approaches:**

- Traditional management approach. This is the most common. A TQM is overlayed (some say forced) upon the other two systems. This approach represents the 80% failure of TQM's. In this approach TQM never becomes an accepted reality by either organizational or human resource management. It is usually seen as competition, or "something to be tolerated." The TQM system consumes valuable resources needed by the other systems and rejection begins to occur.
- Integrated management approach. This is the least common. A TQM is blended and balanced with existing cultural initiatives in both organizational and human resource management systems. This represents the 20% success rate of TQM's. Whether both

organizational management and human resource management systems take on a "quality management commitment" or "join a quality management team" is not important. The principles of quality management are attended to as an important third system that blends, integrates, aligns and maximizes the other two systems to beat competition in world class quality performance. This approach can often be divided into two sub-choices, depending upon managerial resources, readiness, acceptance, and competencies.

The need for three integrated and simplified models is determined by the following factors:

- Managers committed to successful implementation of total quality management (TQM) must have both an HRD Model and an OD Model that work together.
- In simplified terms, HRD + OD = TQM. Even though a TQM is an entity within itself, it must see its existence as the catalytic blending of the other two systems. It does not consume the other systems, it empowers them to do what they have wanted to do - attain world class customer quality!
- This can be tricky politically, and is the reason for this Simplified TQM Diagnostic Model. You may access simplified HRD and OD models by clicking on the HRD and OD acrostics.

Basic elements of a simplified TQM model are: [O] Organizational Management, [I] Individual Management and [Q] Quality Management. A simplified TQM model looks as follows (fig.1).

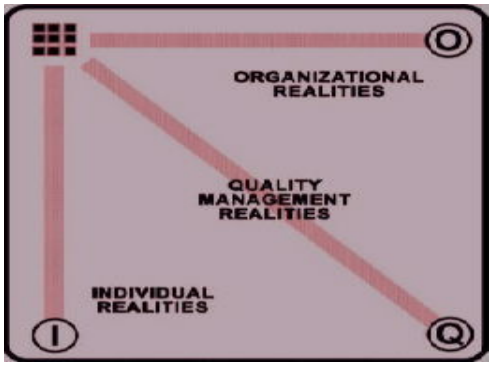



Fig. 1. A simplified TQM model

**a) Organization [O].**

The Importance of Organizational Structure in TQM is determined by the following factors:

- Most TQM failures involve an overemphasis on organizational changes and a neglect of individual realities.
- Total Quality Management, by definition, must involve the TOTAL organization.
- In the initial days of TQM activities the primary focus was upon the organizational realities. These were good, necessary, and actually laid a solid foundation for future "balanced" TQM activity.
- Initial programs were not total, for they did not accurately account for individual and team-process realities essential in successful TQM initiatives.

Let us consider now the Elements of ORGANIZATION in a balanced TQM. All organizational TQM elements fall into one or more of three categories:

- **O1 - Organizational Structure** (Purpose, Planning, Profits, People, Physical Plant, etc.)

- **O2 - Product or Service Structure** (Production, Processes)
- **O3 - Marketing Structure** (Presence, Presentation)

**Examples:**

- SPC would fall into organization category O2 since it deals with the measure and control of quality in the product or service process.
- Selection of individuals with the capacity to manage and produce falls into organization category O1 since it deals with the staffing of quality people.
- The distribution system falls into organization category O3 since it involves the quality relationships with the customers in the marketplace.
- Understanding how money is made is a function of all three categories (O1, O2, O3) since it requires a balance of organization, product and marketing structures.

Organizational Development (OD) is one of two major models that managers must understand to perform total quality management**. (HRD + OD = TQM ).**

**Organizational Development Model.**

- The nine elements of this OD MODEL are organized into three sets of relationships.
- Each set defines relationships that must be understood, developed and maintained to maximize profitability.
- Each OD element asks a basic question about an organization. Leaders determine the organizational design by the answers they choose for each of the nine questions.

The OD model Elements and Sets are the following:

**ORGANIZATION (Relationships: Workforce, Leadership, Ownership):**

- Purpose**:** Why are we here?
- Patterns**:** How are we put together?
- Plans**:** How do we document and display?
- People**:** How do our people fit?
- Profits**:** How do we meet cash and capital needs?
- Place**:** Do we have adequate physical resources?

**WORK FLOW (Relationships: Supplier, Interpersonal, Customer):**

- Products**:** What value do we create?
- Process**:** How do we make next steps happen?

**MARKETS (Relationships: Government, Markets, Community):**

- Positioning**:** Are we where our product or service sells?

High Quality Organizational Performance is the result of Profitability and Productivity through People**.**

**b) Individuals [I].**

The importance of Individuals in TQM is caused by:

- Most TQM failures result from the under-consideration of individual factors (forced participation, treats to management control, no working human resources development model (HRD), or other people problems).
- Early developers of Total Quality Management systems soon learned that individuals were key to successful attainment of quality goals. Customers were identified not only external to the system, but also internally.

- The quality of relationships became a major focus and communication skills began to develop.
- Individual performance measurement, 360 degree feedback, real-time information access, conflict resolution, cultural development and a host of other individual elements were addressed to bring greater balance with the organization elements in TQM programs.

Diagnostic groupings of Individuals in a balanced TQM can be described as follows. All individuals important to TQM implementation fall into one or more of three categories:

- **I1 - Leadership** - (Measurable levels of capacities, skills and motivation)
- **I2 - Workforce** - (Measurable levels of capacities, skills and motivation)
- **I3 - Company** - (Measurable levels of capacities, skills and motivation)

Let us now consider a Simplified Human Resources Development (HRD) Model utilizing these three groupings of individuals. Just how important is HRD?

- It is easier to say "People are our greatest asset!" than it is to put that belief into "measurable action!"
- There is no doubt that in many industries the next major competitive edge will be in maximizing people resources.
- Companies that learn to continuously "develop human resources" not only stand a greater chance to survive in the next century, but will also be more profitable.
- This page is dedicated to helping leaders put their beliefs about the importance of developing their human resources into action (better decisions, people friendly organizational designs, adequate resources, etc.).

Professional human resources management (HRD) must blend with organizational management (OD) and quality management (TQM) to produce world class quality products and services.

Here are some of the Training and Development Issues. Being cautious of your T&D assumptions:

- Learning does not assure the skill to perform.
- Skills can be performed with out understanding.
- Understanding does not guarantee the ability train others.
- Consulting requires more than understanding, skills, and teaching ability.

**Definitions.** Training, Development and Education are often used interchangeably, but they are different and meet different needs. Because they are often linked, overlapping, nested, and conducted simultaneously, agreement on their basic differences is important to training and development professionals. These basic definitions can help clarify human resource development tactical and strategic functions. They can be refined or deepened, but they need to be identified as different processes in the continuous maximization of human potential.

**TRAINING:** Attainment of skills necessary to perform tasks.

- **Focus:** Skill
- **Benchmarks:** Behavioral
- **Horizons:** Short to medium term
- **Duration:** Continuous
- **Measures:** Bottom-line

**DEVELOPMENT:** Reaching the maximum personal competency performing assignments.

- **Focus:** Process
- **Benchmarks:** Readiness
- **Horizons:** Medium to long term
- **Duration:** Milestones
- **Measures:** Competency

**EDUCATION:** Completing curriculum-based achievements.

- **Focus:** Conceptual
- **Benchmarks:** Capacity, achievement
- **Horizons:** Career
- **Duration:** Degree, diploma, certificate
- **Measures:** Professionalism

There are three basic elements to evaluation of performance that are helpful in attaining and evaluating human resources development.

**Capacity:**

- Personal abilities necessary to perform tasks and assignments (mental, physical, social, spiritual)

**Skills:**

- Behavioral competencies necessary to perform tasks and assignments (comprehension, tactical, verbal, interpersonal)

**Motivation:**

- Willingness to perform tasks and assignments (intrinsic, extrinsic, life).

**c) Quality Management [Q].**

We will now consider the importance of Blending HRD and OD Models in TQM. The key issues are the following:

- Total Quality Management, from its inception, intuitively recognized the importance of bringing organizations and individuals together through teams and processes. These two elements (teams and processes) brought new emphasis on training and technologies.
- The true heart of TQM is in this central role of blending organizations with its individual performers in competitively meeting customer needs (demands).
- The common element in successful TQM initiatives was their ability to merge the two structures into a TQM. Failed efforts most often were linked to the overlaying of TQM structures on both the organizational and individual structures.
- In most organizations these two structures are embodied in HRD and OD systems. Total Quality Management is actually the blending of organizational and human resource management systems.
- Managers committed to total quality must have both an HRD Model and an OD Model that work together. In simplified terms, HRD + OD = TQM.

For successful TQM implementation, managers must deal successfully with the **Strategic TQM Elements.** These three strategic elements are:

- **C1 - Completeness** (Do you have all the pieces of HRD, OD and TQM identified?)
- **C2 - Congruence** (Do you know how the pieces of HRD, OD and TQM come together into a whole?)

- **C3 - Choices** (Can you orchestrate the pieces of HRD, OD and TQM to attain desired goals?)

For successful TQM implementation, managers must also deal successfully with the **Tactical TQM Elements**. These three tactical elements are:

- **Q1 - Technology** (Linked closely with organizational skills.)
- **Q2 - Training** (Linked closely with human resources development skills.)
- **Q3 - Team** (Linked closely with cultural and process skills.)

What is also important to managing a successful TQM is **Core Skills for Supervisors and Managers**. Supervisors and managers need core skills. They need to have basic understandings about management, processes, and leadership to adequately operate within a Total Quality Management System. The following 16 modules are basic for all supervisors and considered foundational for managers. Companies need to agree to basic content and models in each area for enhanced communication, problem solving and daily business plan implementation.

*Conflict resolution:*

- **Perceptions**: Clarify (Synergism); Increased communication.
- **Values**: Redefine Problem (Consensus); Acceptance of differences.
- **Needs**: Need Identification (Meet Needs).

*Change:*

- **Individual**: "U" Change Curve (Confused, Resist, Accept, Possibility, Embrace)
- **Organizational**: "Bell" Change Curve (Ahead, First-In, In Crowd, Last-In, Behind)
- **Quality**: "S" Change Curve (Start-Up, Operational, Restart/Stagnate/Decline)

*Interpersonal communication:*

- **Foundation**: Genuineness, Non-Possessive Love, Empathy
- **Elements**: Listen, Assert, Relationships (Balancing)
- **Barriers**: Judging, Avoiding, Sending Solutions

*Measurement, Charting and display:*

- **Hard data**: Measures (Tangible); Use (Compare, Action); Charting
- **Soft data**: Measures (Subjective); Use (Social Statistics); Charting
- **Dynamics**: Requirements, Skills, Cycles, Controls, Integrity, Etc.

*Decision making:*

**Conclusions**: Alignment, Measuring Forces, Loyalty, Fair Play.

- **Decisions**: Time Available, Expertise Presence, Acceptance Needed.
- **Responsibility**: Process, Assignments, Accountability, Authority, Display.

*Two sides of delegation:*

- **Forward**: Trust Issue (Some, More, A Lot, Complete).
- **Received**: Initiative Issue (Highest, Major, Involved, Some, None).
- **Land mines**: Errors, FIT, Motivation, Systems.

*Meeting management:*

- **Director**: Start-Ups, Next Steps, Preparation, Documentation, Choice.
- **Coach**: Operations, Network, Cost, Display, Choice.
- **Evaluator**: Advanced (Collaboration, Resourcing, Tracking); Choice

*People styles*

- **Design**: Social Dimensions; Change vs Status-Quo, People vs Task.
- **Needs**: Emotions, Goals, Support, Preferences, Weaknesses.
- **Relationships**: Conflict Resolution, High Performance, Personal Enjoyment.

*Beating company politics*

- **Responsibilities**: Functions, Organizational Charts, Policies, Published Plans
- **Relationships**: Roles, Position Descriptions, Procedures, Assignments
- **Daily tasks**: Daily Activities, Performance Evaluations, Scheduling

*Problem solving*

- **Roots**: ID Roots vs Symptoms, Facts vs Feelings, Research vs Action.
- **Interests**: ID Stakeholders, Commitment, Involvement, Authority.
- **Process**: ID Common Steps: 3 PHASES - Account, Assess, Act

*Policies & Procedures*

- **Policy (Strategic):** Directives: Direction Statements (Where we're going.).
- **Procedures (Tactical):** Instructions: Process Explanation (How we'll get there.).
- **Rules (Structure):** Separate, Assign Low, Current, Distribute, Date, Simple

*Customer and vendor relationships:*

- **Requirements**: Ours vs Theirs, Feedback, Documentation.
- **Partnership**: WIIFM, Loyalty, Proactive, Integrity/Relationship, Links, Team.
- **Realities**: Truth, Competition, Profits, Global Trends, Internal.

*Basics of teambuilding:*

- **Communication**: Maximizing Human Resources, Increased Alignment.
- **Commitment**: Company to Workers, Workers to Company, Company & Workers to Customers.
- **Growths**: Design Rules: Understand Styles, Balance Team, Keep Resourced.

*Time management:*

- **Calendar**: Scheduled Time; Non-discretionary, Only One, Pencil.
- **Do lists**: Non Scheduled Time; Discretionary, Process Daily.
- **Understanding**: Priority, Goals, Proximity, Congruence, Concentration.

*Scheduling & project planning:*

- **Forward**: Know Next Step, Completeness (All Elements), Gant Charts.
- **Backward**: Defend Next Step, Congruence (Elements Fit), PERT Charts.
- **Crisis**: Accomplish Next Step, Choices (Options), Creative Charting.

*Learning & transformation:*

- **Organizational**: Systems Flexibility & Development; Commitment to People.
- **Individual**: Potentials Maximized & Growing; Commitment to Company.
- **Quality**: Teams Enabled & Learning; Organizational & Individual FIT; Commitment to Customers.

*Evaluation:*

- **Capacity**: Possessing Ability
- **Skill**: Possessing Trainining & Education
- **Motivation**: Commitment to Success

**Home assignment**

Read the text. Give your brief description of the basic elements of a simplified TQM diagnostic model.

**Lesson 3-5. Quality management principles**

## Introduction

This document introduces the eight quality management principles on which the quality management system standards of the revised ISO 9000:2000 series are based. These principles can be used by senior management as a framework to guide their organizations towards improved performance. The principles are derived from the collective experience and knowledge of the international experts who participate in ISO Technical Committee ISO/TC 176, *Quality management and quality assurance*, which is responsible for developing and maintaining the ISO 9000 standards.

The eight quality management principles are defined in ISO 9000:2000, *Quality management systems Fundamentals and vocabulary*, and in ISO 9004:2000, *Quality management systems Guidelines for performance improvements*.

This document gives the standardized descriptions of the principles as they appear in ISO 9000:2000 and ISO 9004:2000. In addition, it provides examples of the benefits derived from their use and of actions that managers typically take in applying the principles to improve their organizations' performance.

- Principle 1. Customer focus
- Principle 2. Leadership
- Principle 3. Involvement of people
- Principle 4. Process approach
- Principle 5. System approach to management
- Principle 6. Continual improvement
- Principle 7. Factual approach to decision making
- Principle 8. Mutually beneficial supplier relationships

## Principle 1. Customer focus.

Organizations depend on their customers and therefore should understand current and future customer needs, should meet customer requirements and strive to exceed customer expectations. Key benefits:

- Increased revenue and market share obtained through flexible and fast responses to market opportunities.
- Increased effectiveness in the use of the organization's resources to enhance customer satisfaction.
- Improved customer loyalty leading to repeat business.

Applying the principle of customer focus typically leads to:

- Researching and understanding customer needs and expectations.
- Ensuring that the objectives of the organization are linked to customer needs and expectations.
- Communicating customer needs and expectations throughout the organization.
- Measuring customer satisfaction and acting on the results.
- Systematically managing customer relationships.

- Ensuring a balanced approach between satisfying customers and other interested parties (such as owners, employees, suppliers, financiers, local communities and society as a whole).

**Principle 2. Leadership.**

Leaders establish unity of purpose and direction of the organization. They should create and maintain the internal environment in which people can become fully involved in achieving the organization's objectives.

The key benefits are:

- People will understand and be motivated towards the organization's goals and objectives.
- Activities are evaluated, aligned and implemented in a unified way.
- Miscommunication between levels of an organization will be minimized.

Applying the principle of leadership typically leads to:

- Considering the needs of all interested parties including customers, owners, employees, suppliers, financiers, local communities and society as a whole.
- Establishing a clear vision of the organization's future.
- Setting challenging goals and targets.
- Creating and sustaining shared values, fairness and ethical role models at all levels of the organization.
- Establishing trust and eliminating fear.
- Providing people with the required resources, training and freedom to act with responsibility and accountability.
- Inspiring, encouraging and recognizing people's contributions.

**Principle 3 Involvement of people.**

People at all levels are the essence of an organization and their full involvement enables their abilities to be used for the organization's benefit.

Key benefits:

- Motivated, committed and involved people within the organization.
- Innovation and creativity in furthering the organization's objectives.
- People being accountable for their own performance.
- People eager to participate in and contribute to continual improvement.

Applying the principle of involvement of people typically leads to:

- People understanding the importance of their contribution and role in the organization.
- People identifying constraints to their performance.
- People accepting ownership of problems and their responsibility for solving them.
- People evaluating their performance against their personal goals and objectives.
- People actively seeking opportunities to enhance their competence, knowledge and experience.
- People freely sharing knowledge and experience.
- People openly discussing problems and issues.

**Principle 4 Process approach.**

A desired result is achieved more efficiently when activities and related resources are managed as a process. The key benefits are:

- Lower costs and shorter cycle times through effective use of resources.
- Improved, consistent and predictable results.
- Focused and prioritized improvement opportunities.

Applying the principle of process approach typically leads to:

- Systematically defining the activities necessary to obtain a desired result.
- Establishing clear responsibility and accountability for managing key activities.
- Analyzing and measuring of the capability of key activities.
- Identifying the interfaces of key activities within and between the functions of the organization.
- Focusing on the factors such as resources, methods, and materials that will improve key activities of the organization.
- Evaluating risks, consequences and impacts of activities on customers, suppliers and other interested parties.

**Principle 5. System approach to management.**

Identifying, understanding and managing interrelated processes as a system contributes to the organization's effectiveness and efficiency in achieving its objectives. The key benefits are:

- Integration and alignment of the processes that will best achieve the desired results.
- Ability to focus effort on the key processes.
- Providing confidence to interested parties as to the consistency, effectiveness and efficiency of the organization.

Applying the principle of system approach to management typically leads to:

- Structuring a system to achieve the organization's objectives in the most effective and efficient way.
- Understanding the interdependencies between the processes of the system.
- Structured approaches that harmonize and integrate processes.
- Providing a better understanding of the roles and responsibilities necessary for achieving common objectives and thereby reducing cross-functional barriers.
- Understanding organizational capabilities and establishing resource constraints prior to action.
- Targeting and defining how specific activities within a system should operate.
- Continually improving the system through measurement and evaluation.

**Principle 6. Continual improvement.**

Continual improvement of the organization's overall performance should be a permanent objective of the organization. The key benefits are:

- Performance advantage through improved organizational capabilities.

- Alignment of improvement activities at all levels to an organization's strategic intent.
- Flexibility to react quickly to opportunities.

Applying the principle of continual improvement typically leads to:

- Employing a consistent organization-wide approach to continual improvement of the organization's performance.
- Providing people with training in the methods and tools of continual improvement.
- Making continual improvement of products, processes and systems an objective for every individual in the organization.
- Establishing goals to guide, and measures to track, continual improvement.
- Recognizing and acknowledging improvements.

**Principle 7. Factual approach to decision making.**

Effective decisions are based on the analysis of data and information. The key benefits are:

- Informed decisions.
- An increased ability to demonstrate the effectiveness of past decisions through reference to factual records.
- Increased ability to review, challenge and change opinions and decisions.

Applying the principle of factual approach to decision making typically leads to:

- Ensuring that data and information are sufficiently accurate and reliable.
- Making data accessible to those who need it.
- Analyzing data and information using valid methods.
- Making decisions and taking action based on factual analysis, balanced with experience and intuition.

**Principle 8. Mutually beneficial supplier relationships.**

An organization and its suppliers are interdependent and a mutually beneficial relationship enhances the ability of both to create value. The key benefits are:

- Increased ability to create value for both parties.
- Flexibility and speed of joint responses to changing market or customer needs and expectations.
- Optimization of costs and resources.

Applying the principles of mutually beneficial supplier relationships typically leads to:

- Establishing relationships that balance short-term gains with long-term considerations.
- Pooling of expertise and resources with partners.
- Identifying and selecting key suppliers.
- Clear and open communication.
- Sharing information and future plans.
- Establishing joint development and improvement activities.
- Inspiring, encouraging and recognizing improvements and achievements by suppliers.

**The next step.** This document provides a general perspective on the quality management principles underlying the ISO 9000:2000 series. It gives an overview of these principles and

shows how, collectively, they can form a basis for performance improvement and organizational excellence.

There are many different ways of applying these quality management principles. The nature of the organization and the specific challenges it faces will determine how to implement them. Many organizations will find it beneficial to set up quality management systems based on these principles.

The requirements of quality management systems and supporting guidelines are given in the ISO 9000 - Selection and use. Further information on the ISO 9000 standards is available from ISO's national member institutes or from the ISO Central Secretariat ISO 9000 enquiry service. Sales enquiries should also be directed to the ISO members or to the ISO Central Secretariat sales department.

**New words and expressions**

**Customer focus,**
**System approach to management,**
**Process approach,**
**Continual improvement,**
**Supplier relationships,**
**Customer requirements and expectations,**
**Interested parties,**
**Organizational excellence.**

**Home assignment**

Read the text. Select one or two of the main quality management principles and give your understanding of how to apply them in practice.