

Total Quality Management (TQM) Tools

Total quality management (TQM) tools help organizations to identify, analyze and assess qualitative and quantitative data that is relevant to their business. These tools can identify procedures, ideas, statistics, cause and effect concerns and other issues relevant to their organizations. Each of which can be examined and used to enhance the effectiveness, efficiency, standardization and overall quality of procedures, products or work environment, in accordance with ISO 9000 standards (SQ, 2004).

According to Quality America, Inc. (ReVelle, 2003) the number of TQM tools is close to 100 and come in various forms, such as brainstorming, focus groups, check lists, charts and graphs, diagrams and other analysis tools. In a different vein, manuals and standards are TQM tools as well, as they give direction and best practice guidelines to you and/or your staff.

TQM tools illustrate and aid in the assimilation of complicated information such as:

- identification of your target audience
- assessment of customer needs
- market analysis
- productivity changes
- staff duties and work flow analysis
- financial analysis
- business structure
- positive and negative forces affecting business
- competition analysis
- brainstorming ideas
- various statistics
- statement of purpose
- model creation
- logistics analysis

The list goes on, though essentially TQM tools can be used in any situation, for any number of reasons, and can be extremely effective if used properly.

TQM Tools

The following are some of the most common TQM tools in use today. Each is used for, and identifies, specific information in a specific manner. It should be noted that tools should be used in conjunction with other tools to understand the full scope of the issue being analyzed or illustrated. Simply using one tool may inhibit your understanding of the data provided, or may close you off to further possibilities.

Pie Charts and Bar Graphs

- Used to identify and compare data units as they relate to one issue or the whole, such as budgets, vault space available, extent of funds, etc.

Histograms

- To illustrate and examine various data element in order to make decisions regarding them.
- Effective when comparing statistical, survey, or questionnaire results.

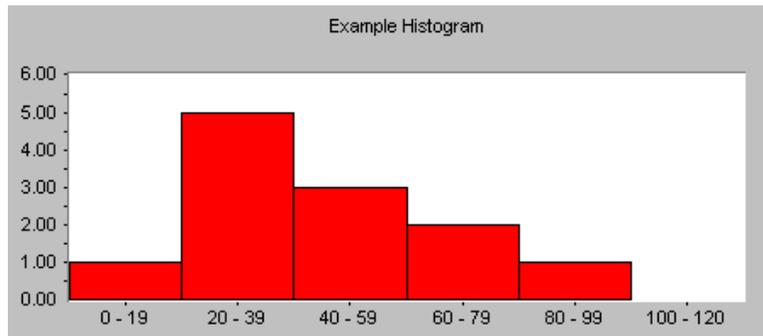


Fig.1

Run Chart

- Follows a process over a specific period of time, such as accrual rates, to track high and low points in its run, and ultimately identify trends, shifts and patterns.

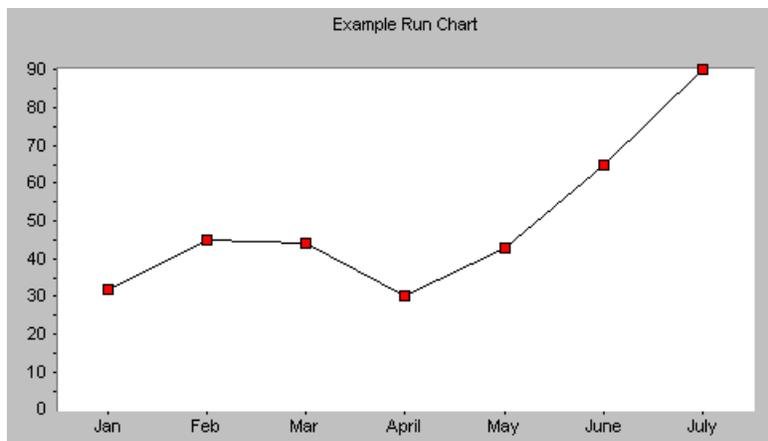


Fig. 2

Pareto Charts / Analysis (designed by Vilfredo Pareto)

- Rates issues according to importance and frequency by prioritizing specific problems or causes in a manner that facilitates problem solving.

- Identify groupings of qualitative data, such as most frequent complaint, most commonly purchased preservation aid, etc. in order to measure which have priority.
- Can be scheduled over select periods of time to track changes. They can also be created in retrospect, as a before and after analysis of a process change.

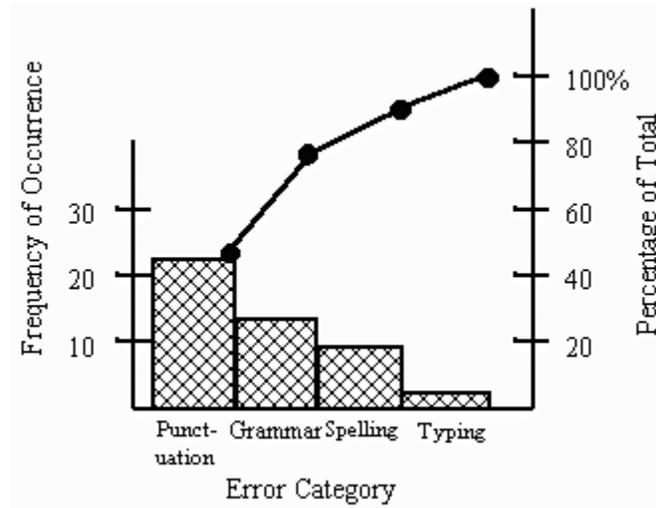


Fig. 3

Force Field Analysis

- To identify driving and restraining forces occurring in a chosen process in order to understand why that particular process functions as it does. For example, identifying the driving and restraining forces of catering predominantly to genealogists.
- To identify restraining forces that need to be eradicated, or driving forces that need to be improved, in order to function at a higher level of efficiency.

Cause and Effect, Ishikawa or Fishbone Diagrams (designed by Kauro Ishikawa)

- Illustrates multiple levels of potential causes (inputs), and ultimate effects (outputs), of problems or issues that may arise in the course of business.
- May be confusing if too many inputs and outputs are identified. An alternative would be a tree diagram, which is much easier to follow.

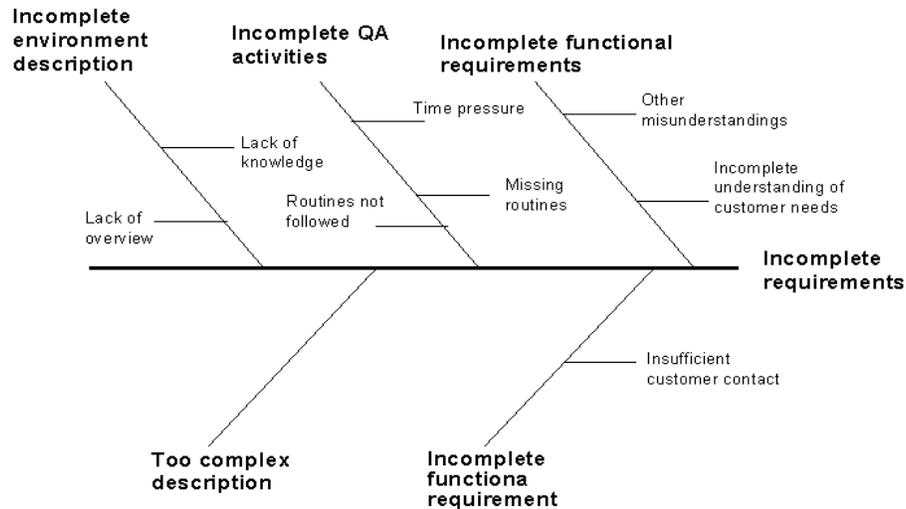


Fig. 4

Focus Groups

- Useful for marketing or advertising organizations to test products on the general public.
- Consist of various people from the general public who use and discuss your product, providing impartial feedback to help you determine whether your product needs improvement or if it should be introduced onto the market.

Brainstorming and Affinity Diagrams

- Teams using creative thinking to identify various aspects surrounding an issue.
- An affinity diagram, which can be created using anything from enabling software to post-it notes organized on a wall, is a tool to organize brainstorming ideas.

Tree Diagram

- To identify the various tasks involved in, and the full scope of, a project.
- To identify hierarchies, whether of personnel, business structure, or priorities.
- To identify inputs and outputs of a project, procedure, process, etc.

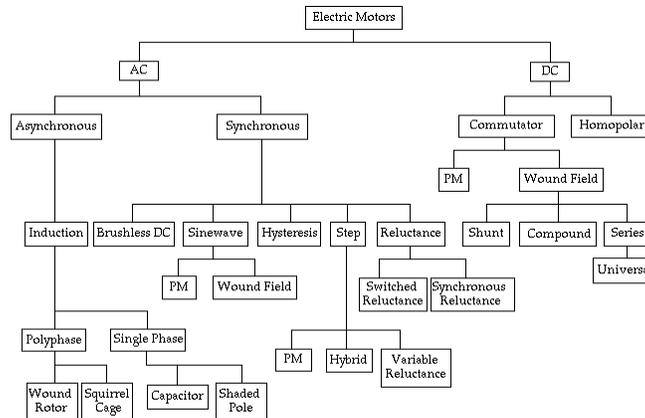


Fig. 5

Flowcharts and Modelling Diagrams

- Assist in the definition and analysis of each step in a process by illustrating it in a clear and comprehensive manner.
- Identify areas where workflow may be blocked, or diverted, and where workflow is fluid.
- Identify where steps need to be added or removed to improve efficiency and create standardized workflow.

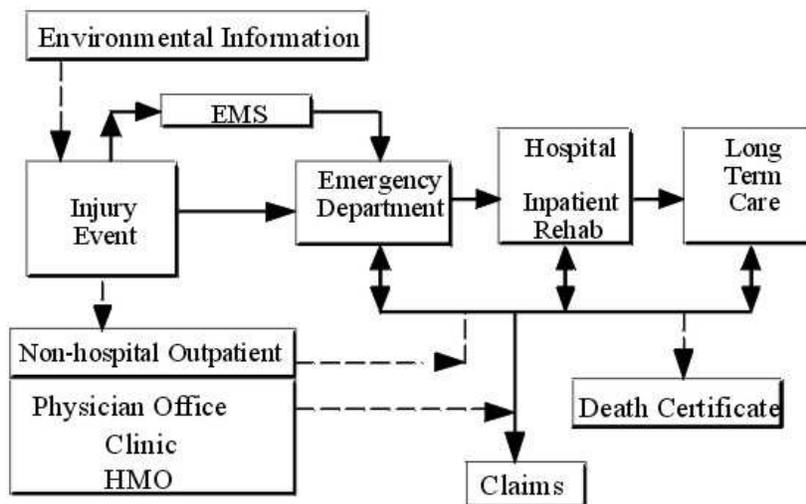


Fig. 6

Scatter Diagram

- To illustrate and validate hunches
- To discover cause and effect relationships, as well as bonds and correlations, between two variables
- To chart the positive and negative direction of relationships

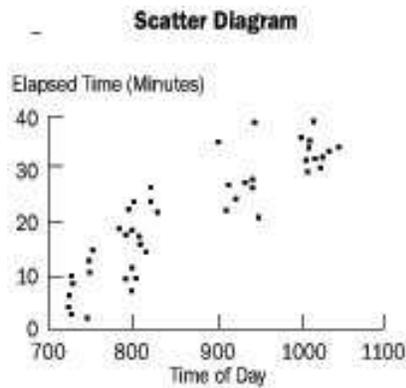


Fig. 7

Relations Diagram

- To understand the relationships between various factors, issues, events, etc. so as to understand their importance in the overall organizational view.

PDCA

- The Plan-Do-Check-Act style of management where each project or procedure is planned according to needs and outcome, it is then tested, examined for efficiency and effectiveness, and then acted upon if anything in the process needs to be altered.
- This is a cyclical style to be iterated until the process is perfected.

All of these TQM tools can be easily created and examined by using various types of computer software (Pollock, 2003) or by simply mapping them out on paper. They can also be easily integrated into team meetings, organizational newsletters, marketing reports, and for various other data analysis needs. Proper integration and use of these tools will ultimately assist in processing data such as identifying collecting policies, enhancing work flow such as mapping acquisition procedures, ensuring client satisfaction by surveying their needs and analyzing them accordingly, and creating an overall high level of quality in all areas of your organization.

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- *Sytsma, S., Manley, K. (June 9, 1999). *The Quality Tools Cookbook*. Retrieved September 15, 2004 from <http://www.sytsma.com/tqmtools/tqmtoolmenu.html> Encyclopaedic reference site for commonly used TQM tools, describing use and creation of the specific tool.

Figure References

- Fig. 1 SkyMark. (2004). Retrieved September 16, 2004, from <http://www.skymark.com/resources/tools/histograms.asp>
- Fig. 2 SkyMark (2004). Retrieved September 16, 2004, from http://www.skymark.com/resources/tools/run_charts.asp
- Fig. 3 Systma, S. (1999). Retrieved September 16, 2004, from <http://www.sytsma.com/tqmtools/pareto2.gif>
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- Fig. 5 Yeadon Energy Systems. (2004). Retrieved September 16, 2004, from <http://www.yeadoninc.com/diagram.gif>
- Fig. 6 National Highway Traffic Safety Administration. (2004). Retrieved September 16, 2004, from <http://www.nhtsa.dot.gov/people/perform/trafrecords/pages/codes/flowchart.jpg>
- Fig. 7 Quality Assurance Project. (2004). Retrieved September 16, 2004, from <http://www.qaproject.org/images/scatterdiagram.jpg>

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