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ICT-TEX

QMS/EMS Implementation and Control

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Cooperation for innovation and the exchange of good practices Knowledge Alliance

ICT IN TEXTILE AND CLOTHING HIGHER EDUCATION AND BUSINESS

Project Nr. 612248-EPP-1-2019-1-BG-EPPKA2-KA

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TRAINING COURSE

INDUSTRIAL ENGINEERING, QUALITY CONTROL AND MANAGEMENT

Course: QMS/EMS Implementation and Control

Partner: P4 – University of Zagreb Faculty of Textile Technology

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Syllabus: Industrial Engineering, Quality Control and Management

Course draft: QMS/EMS Implementation and Control

Total: *20 hours*

The ***QMS/EMS Implementation and Control*** course includes general concepts about QMS and EMS standards and their implementation steps based on the principles of ICT technology application that can improve business practices and increase the efficiency and competitiveness of their companies as well as the quality of textile products in accordance with modern production, market relations and environmental requirements.

Lecture plan:

Quality specification and conformity assessment of textile products

- The explaination of a quality as a strategic category in business,
- Explaination of conceptual definition of textile product quality in accordance with modern production-market relationships and environmental requirements through the triangle of quality/product purpose/user requirements.

Definition of quality according to ISO standard:

➡ ***„the degree to which a set of inherent characteristics fulfils requirements”***

Some of Quality Definitions

„Philip Crosby" Quality is conformance to requirements.

„Dr Edward Deming" Quality is a predictable gedree of uniformity and dependability, at low cost and suited to the market.

„Dr Juran" Quality is fittness for use/purpose.

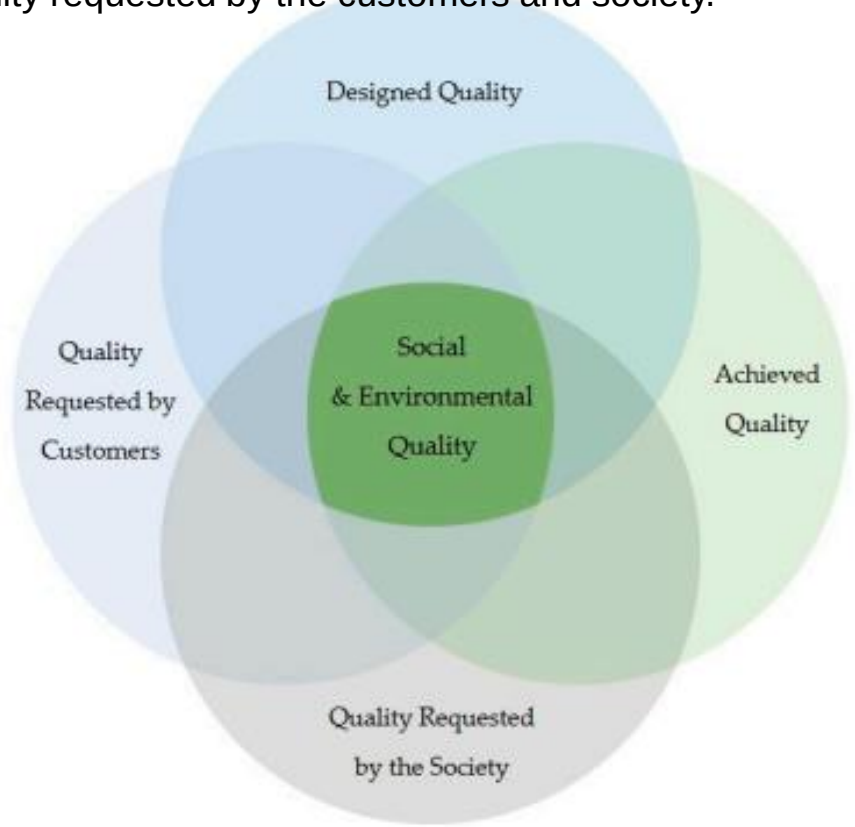
„RJ Mortiboys" Quality is synonymous with customer needs and expectations..

What is Quality? Quality Definition | Quality Meaning (techqualitypedia.com)

Lecture plan:

Quality Management and Environmental Management

Social and environmental quality as the intersection between designed and achieved quality, and quality requested by the customers and society.



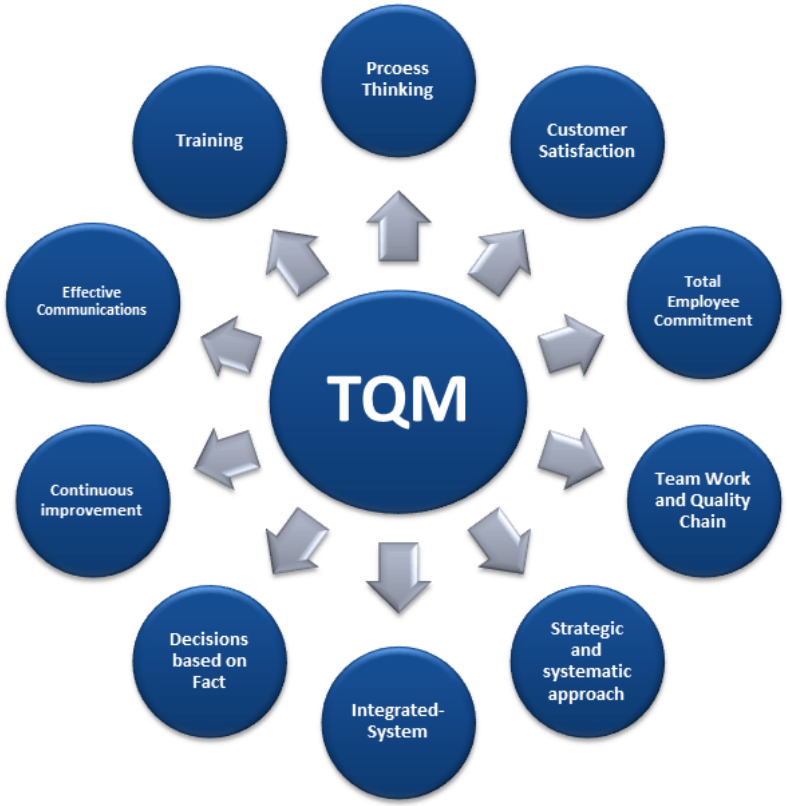
Heras-Saizarbitoria et al. rely on this definition in the QM paradigm to coin novel concepts, such as social and environmental quality, by which they mean the incorporation in the field of business management of the trend to minimize the negative social and environmental impacts of the activities of organizations.

Source: Heras-Saizarbitoria, I.; Arana, G.; Casadesús, M.; Merino, J. Kalitate-Kudeaketaren Hastapenak; The University of The Basque County: Vizcaya, Spain, 2007

Lecture plan:

What is a (total) quality management system?

Quality management system is a system based approach of the organization to manage its processes to well define and meet the requirements of its customers, risk and stakeholders touched by its work.



- Explanation of TQM (Total Quality Management) as a very complex management method that emphasizes quality management in all dimensions of organizational life, according to different concepts
  - basic ideas of Feigenbaum,
  - developed by W. Edwards Deming,
  - Joseph M. Juran to the Japanese ideas.

Lecture plan:

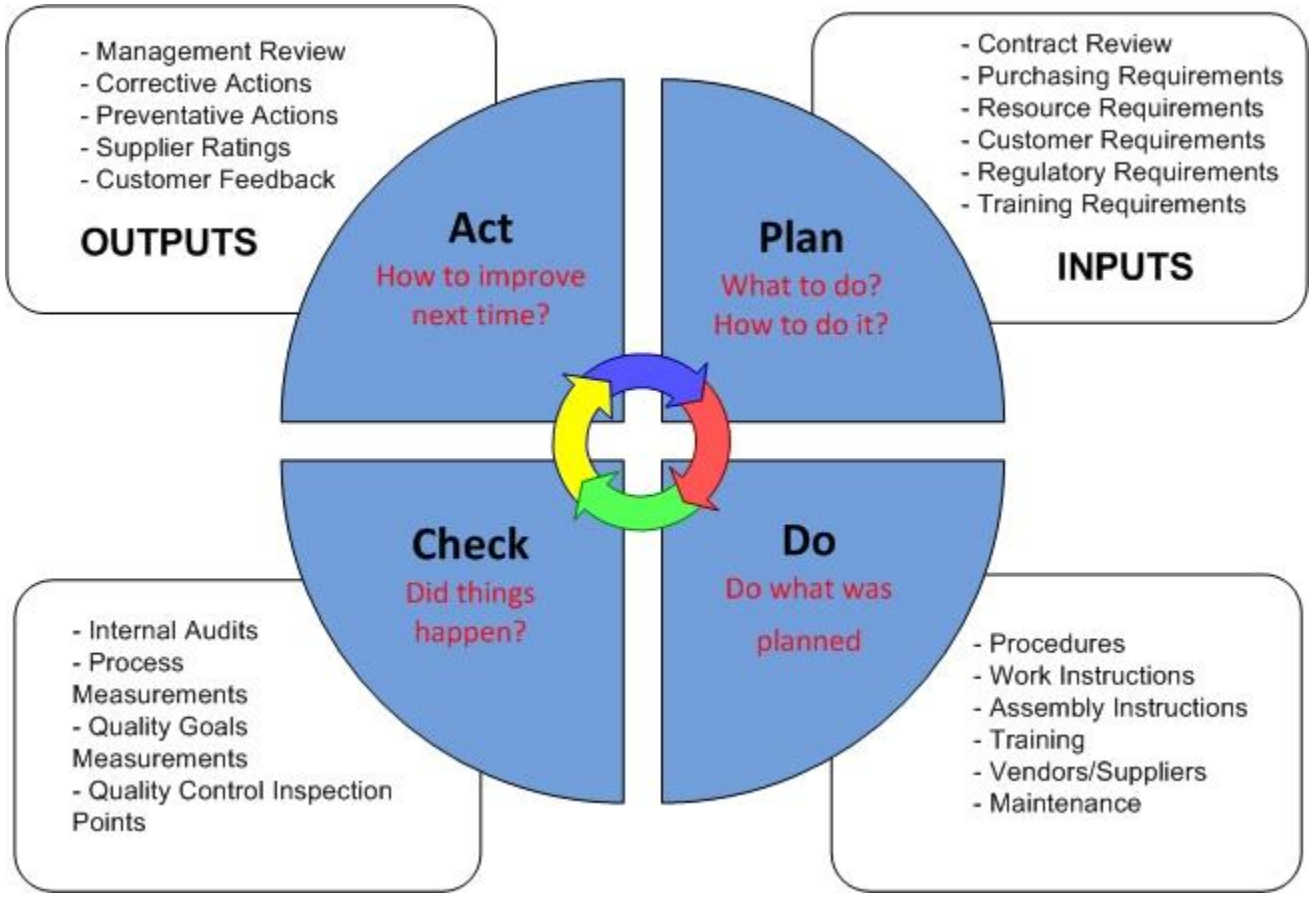
Different organizations use different methodologies, approaches and tools for implementing a quality management and programmes for continuous quality improvement. That programmes have different name and label, such as

- TQM (Total Quality Management),
- Six Sigma,
- BPR (Business Process Re-engineering),
- Business Excellence.

Most of these tools, approaches and techniques are used worldwide, e.g. PDCA cycle or Deming's circle. However, some techniques are more complex and demanding, e.g. Six Sigma, Lean Sigma, Design for Six Sigma or EFQM excellence model for specific problem-solving applications and implementation of advanced techniques and methodologies. It should be selected for the appropriate team and applied correctly to the appropriate process and their successful implementation depends on their understanding, knowledge and proper application in organizational processes.

Source: (PDF) Quality improvement methodologies - PDCA cycle, RADAR matrix, DMAIC and DFSS. Available from: https://www.researchgate.net/publication/49600834_Quality_improvement_methodologies_-_PDCA_cycle_RADAR_matrix_DMAIC_and_DFSS [accessed Sep 21 2021].

Lecture plan:



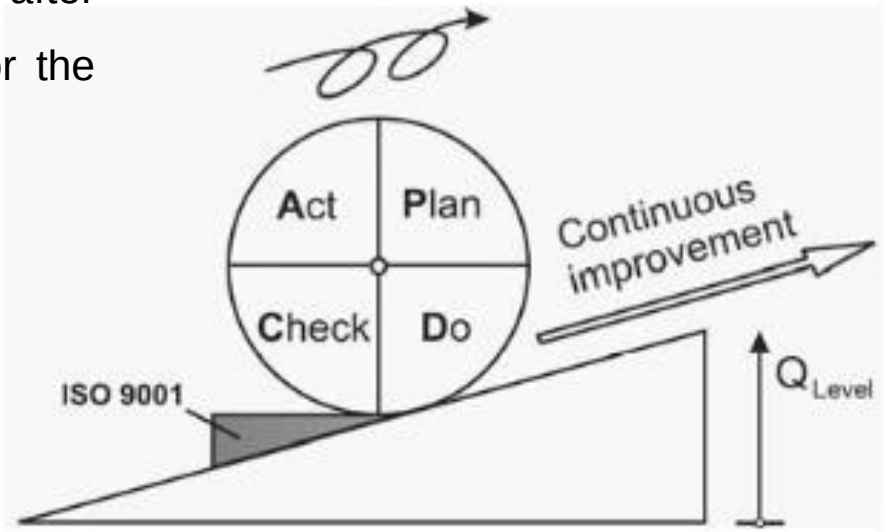
- Explanation of the PDCA model (loops) as the basic way of working of the system leading to the continuous improvement of the quality and environmental aspect of the organization, and systematic approach in quality assurance and quality management, as well as DMAIC, EFQM, Kaizen concepts.

- Using of the PDCA cycle means continuously looking for better methods of improvement. The PDCA cycle is effective in both *doing a job* and *managing a programme*. The PDCA cycle enables two types of corrective action – *temporary and permanent*.

Source: ISO 9001 PDCA Model - Bing

Lecture plan:

The PDCA cycle is not just a tool; it is a concept of continuous improvement processes embedded in the organization's culture. The most important aspect of PDCA lies in the "act" stage after the completion of a project when the cycle starts again for the further improvement.



Lecture plan:

The European Foundation of Quality Management is a not-for-profit organization, which got founded in 1989 and is since then operating in 30,000 organizations from all business areas.

- The European Foundation for Quality Management (EFQM) 2020 model is a comprehensive and updated business model that encompasses sustainability and shares features with Industry 4.0, emphasizing transformation and improved organizational performance, yet with different theoretical and practical foundations.
- The EFQM model adds a strategic and technologically unbiased perspective to Industry 4.0, providing an integrated business excellence framework for Quality 4.0.
- The adoption of information and communications technology (ICT), supported by the digital process integration of “smart” objects (machines and products) that merge the physical and the virtual worlds, led to the appearance of the Industry 4.0 paradigm.

The EFQM 2020 model (EFQM, 2020)

Source: Sustainability 2021, 13, 3107. https://doi.org/10.3390/su13063107

Sustainability in the EFQM Model

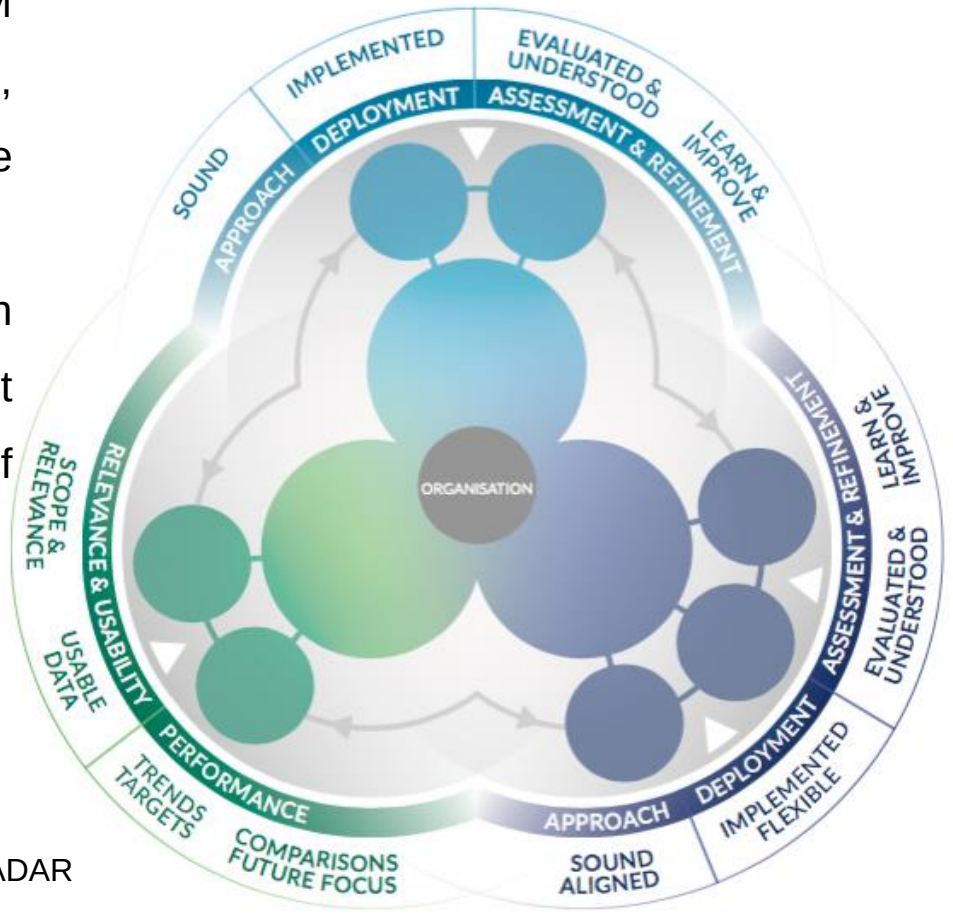
Sustainability in the EFQM Model Sustainability in general can be described as “the assurance that human needs are satisfied today without harming the ability to fulfil the needs of a future generation.”

More than twenty years ago different authors were analysed and commented sustainability in EFQM model as well…

…..Elkington, (1997) states that sustainability exists of three pillars: the social, the economic and the environmental pillar, which represent the profits of an organization, and it is also known as the Triple Bottom Line (TBL). The social pillar represents social capital in the means of public health, knowledge and education. The economic pillar represents the profits of capital, which includes physical, financial and human capital. The environmental pillar represents the crucial natural capital as well as the renewable, exchangeable natural.

In order to understand the thought behind the EFQM Model, EFQM uses RADAR (self assessment tool), which stands for **R**esults, **A**pproaches, **D**eployment, **A**ssessment and **R**efinement and can be seen in Figure.

It supports not only the EFQM Model itself, but also organizations in the current working style as well as it can help to find out current strengths, opportunities and weaknesses of the current way of working.



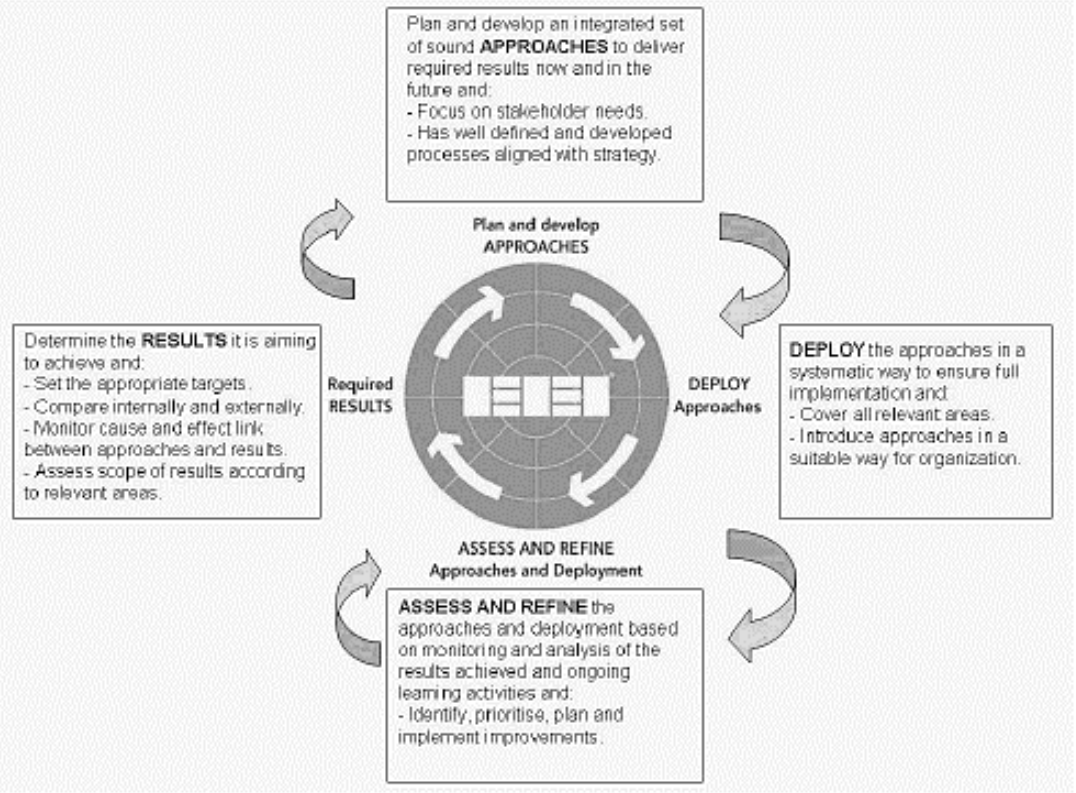
EFQM Diagnostic Tool RADAR

Source: EFQM, (2019b)

Source: MT-Hauber-Denise-Christin

The tool of RADAR Matrix is used for assessment of organizational performance and applied within the EFQM excellence model. As such, it is an integral part of the excellence model methodology.

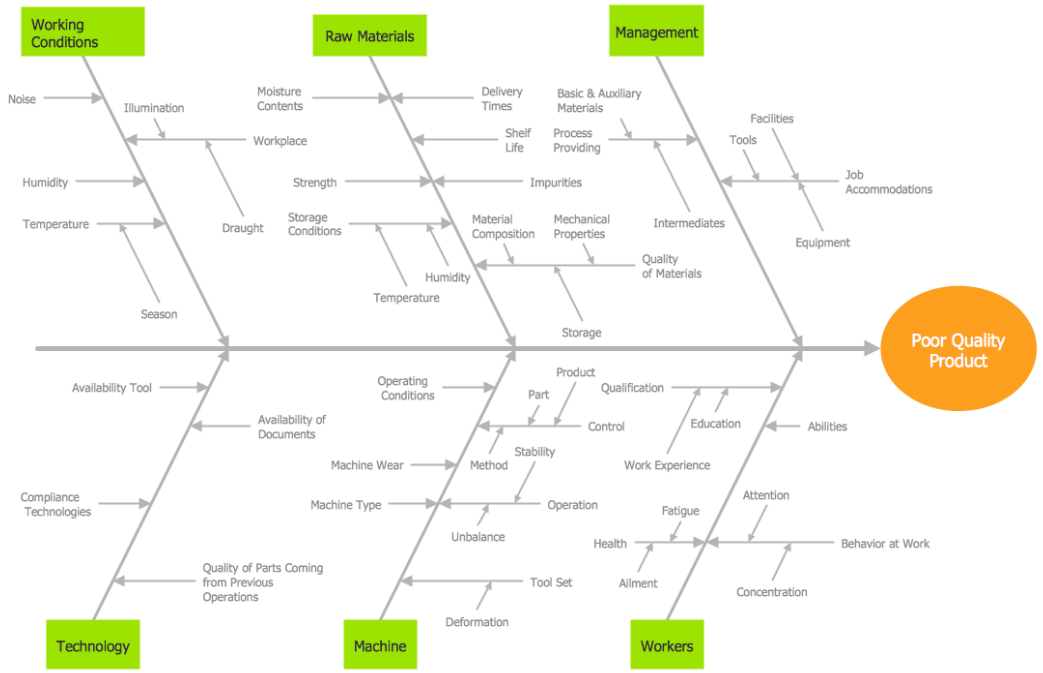
RADAR matrix methodology - if you *cannot measure your process, you cannot define its level of performance and you cannot improve it*. That means if you cannot establish the systematic integrated monitoring system on your approaches you are not able to utilize RADAR in your organization



Source: (PDF) Quality improvement methodologies - PDCA cycle, RADAR matrix, DMAIC and DFSS (researchgate.net)

Lecture plan:

Key elements in Quality assurance of textile products and production



Ishikawa diagram cause identification - a very versatile method used to identify causes of risk, inefficiency, poor quality or other problems in business processes or to find problems (the fishbone diagram). The Ishikawa diagram is based on the principle of simple causality - each consequence (problem) has its own cause or combination of causes. Its goal, therefore, is to analyze and determine the most likely causes of the problem being solved.

Explanation of the 6M method as a simple method for analyzing causes and consequences based on 6 causes - manpower (causes lie in people) - machines (causes lie in equipment, computers, tools, instruments, technology) - materials (causes lie in defects or material properties) - methods (causes lie in rules, regulations, laws or standards) - management (causes lie in improper management), and mother nature (environmental - conditions)

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