



Relevance and Benefit of Commercial Quality Improvement Methodologies at Statistics Canada

9 – Quality Management Systems 1
Wednesday 1st June

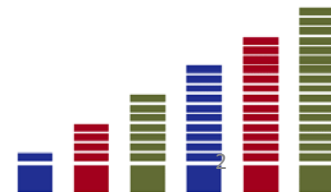
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IN Instituto Nacional de Estadística **eurostat** 
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Madrid, May 31 - June 3

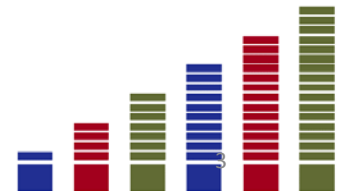
Outline

- Motivation
- Total Quality Management
- Lean
- Six Sigma
- Define Measure Analyze Improve Control (DMAIC)
- ISO
- Conclusions



Motivation

- Producing quality official statistics that matter
- Develop and maintain credibility and trust
- Working with private sector partners
- Quality improvement methods used in industry
- Certification from recognized authorities



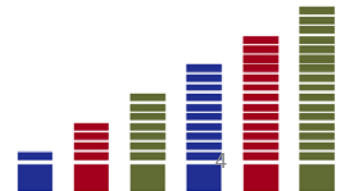
Total Quality Management

Total Quality Management

- Customer focused
- Involves all employees in continual improvement
- Performance measures continuously monitored at all steps in the business process
- Principles include strong governance; strategic and systematic approach to planning; continual improvement; fact-based decision making; emphasis on communication

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- Quality is fitness for use
- Agency-wide commitment to quality
- GSBPM, performance indicators
- Principles include project team approach; every employee plays a role in ensuring quality; continuous improvement; adapt quality assurance practices to the program



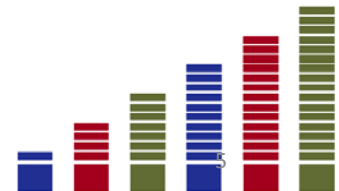
Lean

Lean

- Eliminate waste (human talent, defects, inventory, overproduction, waiting time, motion, transportation, processing waste)
- Concurrent activity
- Delay irreversible decisions
- Contact with users and clients
- Strong governance, clear focus

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- Eliminate re-work
- Staff are to be proficient in corporate business applications and tools
- Optimize use of corporate services
- Separate development from ongoing operations
- Focus on core business
- Make corporately optimal decisions



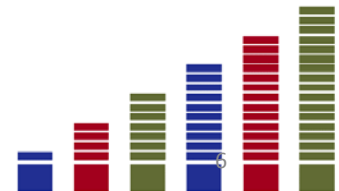
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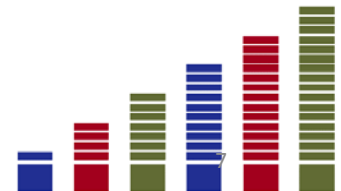
Six Sigma

Six Sigma

- Variation hinders good quality
- Prescriptive approach
- No more than 3.4 defects in one million opportunities
- Assumption 1: the process produces enough volume to observe one million observations
- Assumption 2: units falling within +/- 6 standard deviations are of acceptable quality

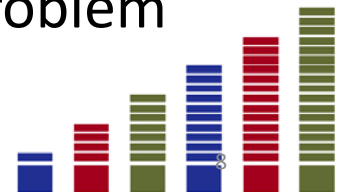
Statistics Canada

- Agree
- Prescriptive approach for data collection, dissemination
- In 2015 observed 0.6% errors in accuracy among 1162 disseminated products
- Will disseminate 1 million products over approximately 900 years
- Intervene when errors exceed 2 times the standard deviation



Define Measure Analyze Improve Control (DMAIC)

- To implement Lean Six Sigma: DMAIC
- Name is suggestive of Deming cycle Plan Do Check Act
- DMAIC principles resemble the Juran trilogy of quality planning, quality control and quality improvement (from Juran's Quality Handbook, 1951)
- Statistics Canada uses quality control in data collection and coding, and promotes quality planning and quality improvement
- Central Statistics Office in Ireland – McSweeney and Moore (2015)
- Attempt 1: staff resistance, uneven follow-through
- Attempt 2: stronger governance, focus on good problem solving rather than certification



ISO 9001: 20252

- Governance structure, accountability, security and confidentiality
- Management of survey requests; client involvement; survey design; documentation; analysis
- Recruitment and training of fieldworkers; data collection

Statistics Canada

- Policy Suite; exceed the ISO requirements for security and confidentiality
- Departmental Project Management Framework; client, data provider and stakeholder engagement; Quality Guidelines
- Centre of expertise in collection planning, development and research
- Go beyond the ISO requirements with respect to data from secondary sources

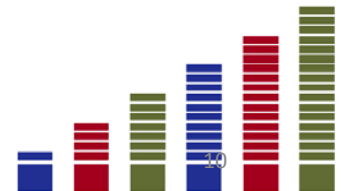


ISO 9001 20252

- Data processing, automated and manual: coding, data analysis, data tables, data security
- Full disclosure to clients of methods and data sources for observational, qualitative and quantitative research

Statistics Canada

- Corporately supported systems for editing, imputation, coding, record-linkage, weighting, estimation, disclosure control
- Exceed the ISO requirements in data validation
- No observational research; qualitative testing of questionnaires, fully documented; Directive on documenting metadata; never divulge sampling frames or sensitive information



Conclusions

- Principles of Total Quality Management, Lean and Six Sigma are coherent with the core business of producing official statistics
- Adapt these and other quality management strategies into our own set of principles and practices, enforced by a suite of governance instruments
- Gains of pursuing formal certification are not obvious
- Key ingredients to success so far have been a clear governance structure, strong leadership, and well communicated common goals.

