Sustaining Data Quality:
Lessons from the Field

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Setting the scene

• A journey of discovery, of lessons learnt based on practical experiences, supported by academic research - as a case study within a diverse organisation operating an ERP System

• Also a doctoral research programme combining theory and practice to bring about professional and managerial change, hopefully with the promise of a contribution to the body of knowledge

• We are all here to improve the quality of our data...but perhaps more fundamentally to ask...how can it become embedded?

• Therefore the question arises: “How can an organisation create an environment where data quality improvements can be sustained?”
Sustainability

• What do we mean by ‘sustaining’ or ‘sustainability’?

• Is it a ‘destination’ or a ‘journey’?

• Maintain the *actual* improvements made so far, a stake in the ground- a ‘destination’

• Maintain the *momentum* of the improvements made so far, by continuing the trend and thereby looking to improve further- a ‘journey’

• It’s a Journey- to stand still will lead to decline
The Organisation: Remploy

- Mission- “To transform the lives of disabled people and those experiencing complex barriers to work by providing sustainable employment opportunities”

- Supported by UK Government (Department for Work and Pensions)

- Manufacturing Operations- 54 factories

- Employment Services- 45 branches

- Operating an full ERP system- Baan implemented in the late 90s
Quality Data

• Originally seen as important… but more as an aspiration… with local ad hoc initiatives to resolve re-occurring problems rather than an enterprise-wide programme. Then with..

• Evidence of ‘issues’ with financial implications published regularly

• Changes in corporate structure to focus more on a product based business model..added complexity

• Tighter month-end closure & reporting timetable- 10 days down to 3 within a three year period.. little time for ‘data clean up’
Data Quality Improvement

- New BI & budgeting tool with far more structured reporting with a complex operation
- Seen as ‘key’ to a number of important Corporate projects
- Recognition of the need for quality data at source
- Data Quality Improvement Project launched in 2005
- The journey begins…
- At the pace of Paula Radcliffe rather than Usain Bolt. But the distance isn’t 100 metres
## Conceptual Overview

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- Scope for applying TQM principles to data quality

- Note that there are differences between the Manufacturing and Information models particularly around outputs
Data Quality Improvement Project

• Launched at a Finance Conference Autumn 2005 with executive sponsorship (Director of Finance) focusing initially on:
  • Selling the initiative
  • Education and training
  • Review financial processes
  • Ownership and responsibility for data
  • Master Data (Cleansing!!)
  • Measurement- essential to any improvement process- KPIs
  • Finance community to cascade the initiative through each business
Measurement- Key Performance Indicators

• Seven KPIs established around key crucial commercial operations within an ERP system and previously identified as sources of data quality issues:
  – Two external- relating to customers and suppliers
  – Five internal- relating to order progression and fulfillment
  – Measured at factory and business levels
  – Monitored by way of a Weighted Index
  – But not just highlighting ‘issues’- identifying ‘good practice’
  – More than just a measure
Measurement- Roll Out

• Site and business indices distributed weekly/monthly to:
  • September 06  Finance Community and Exec
  • September 07  Added Business Managers
  • September 08  Added Operations Manager
  • January 09    Added Factory Managers
  • January 08    Included within Quarterly Business Review meetings (Businesses and Exec)
  • December 08   Quarterly business targets set
Extension of the Initiative

• Between December 08 and April 09

• Meetings with all 50 plus factories and business offices via individual site visits by way of an Action Research/Focus Group approach

• Two-way process to share information, ideas, perceptions

• Covered KPIs and general data quality issues

• Discussion points agreed between all parties and distributed

• Results summarised and shared with the businesses
  • Guidelines as to best practice
  • Issues identified
  • Suggestions for future progress

  Seen by everyone as very positive
Guidelines and Issues

- **Best Practice guidelines- at site and business levels**
  - Hold regular site review/planning meetings at least weekly
  - Provide visibility of the measures and monitor progress
  - Focus initially on the five internal site-specific measures
  - Review progress at business level with each site on a monthly basis
  - Awareness of the importance of quality data and ‘getting it right first time’

- **Identification of Issues**
  - There are training requirements and gaps in peoples’ knowledge
  - Requirement for ‘key’ personnel at site and business levels- to provide business specific support
  - Communications within and across sites/businesses
  - Potential for sub-optimisation
Overall Index Improvement

Data Accuracy KPI Improvement Tracker

Index Improvement

Quarter/Year

Index
Trend
Overall Progress

• Individual site/business indices aggregated to a Company figure to measure overall month-on-month movements

• Seen as ‘indicative’ of the progress towards improved quality data

• Summary of progress:
  • 29% improvement in the first six months to March 07
  • 16% improvement in the year to March 08
  • 27% decline in the eight months to November 08- which coincided with the Company’s Modernisation Programme
  • 37% improvement in the year to November 09
  • 56% improvement over the three and a half years

• 70% Improvement in supplier invoice ‘first time match rate’
Quantitative Study

- A web-based internal questionnaire was undertaken in June 09 to study reactions and perceptions to the notion of data quality
- Circulated to 111 colleagues- 45 responses.. 41%
- Summary of results:
  - 85% Identified that problems with master data and transactional data seriously impacts a company’s operation
  - 81% Identified that people who provide and process data have a serious impact upon data quality
  - 93% Identified that process problems seriously impact upon the quality of data
  - 88% Identified that poor data entry and lack of knowledge and training are major causes of data quality problems
  - 97% Identified that ‘root cause analysis’, ‘up front error prevention’, ‘identify and clean errors at source’ are important in resolving DQ problems
  - 82% Believe they have the ability to influence the quality of their data and provide quality data to others
  - Overall in line with a ‘Data Quality Professional’ survey in 2007
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  - 82% Believe they have the ability to influence the quality of their data and provide quality data to others
  - 26% Happy with the quality of the data they receive
Culture Change

• Journey

  – “What gets measured gets done”
    • A good start, but by whom?

  – “What gets measured by the Exec gets done quicker”
    • A further improvement, but too top-down

  – “What is measured, communicate, discussed and agreed at all levels has a very good chance of becoming embedded
    • Bottom-up supported by top-down
    • A potential key to sustaining any type of change?
Motivational Factors for Improvement

• Belief that it will:
  – Improve efficiency
  – Help control their factory
  – Supports their principles

• Competition between colleagues- site/business

• ‘League Table’ Syndrome

• Requirement to achieve monthly/quarterly targets

• Distinct movement from “I’m gonna get my axx kicked” to “My life is better for doing it this way”
Lessons Learnt

• Take things slowly to ensure everyone is onboard

• Identify who has ownership/custody and responsibility. The businesses ‘own’ the data - culture change/paradigm shift

• Provide regular visible measures and monitor progress

• Build data quality targets into peoples’ objectives

• Ascertain root causes of issues and resolve problems at source

• Identify how the process will improve the quality of the data and thereby support the corporate mission to make a difference to the lives of disadvantaged individuals
Deciding Factors

- Sell the concept up and down the organisation
- Attitude & willingness at all levels to embrace something new
- Senior management sponsorship & involvement
- Measurement of progress & the publication of the results
- Cultural issues
- System & structural changes can prevent a return to type
- Have an ‘internal champion’ who has the respect of the audience
Outcomes

• Overall quality of data has improved with a degree of sustainability - but *controlled* rather than *self*-sustainability. However still a good start to a life-long journey

• Principle findings:
  – Role of champions
  – Measurement, reporting and feedback
  – Time and maturity
  – Sustainability as a process
  – Perceptions of data quality
Final thoughts

• The aim has been to combine both theory and practice to bring about organisational change to improve management and professional practice.

• Challenge: to reciprocate the process by also incorporating the findings into the body of academic knowledge…’Engaged Scholarship’

Sources: Van de Ven and Johnson (2006) and Van de Ven (2007)

• Questions?

• I’d also welcome feedback, discussion and input, so please feel free to contact me at anytime
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References


