

Sustaining Data Quality: Lessons from the Field

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- 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?”



- 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



- 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



- 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'



- 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



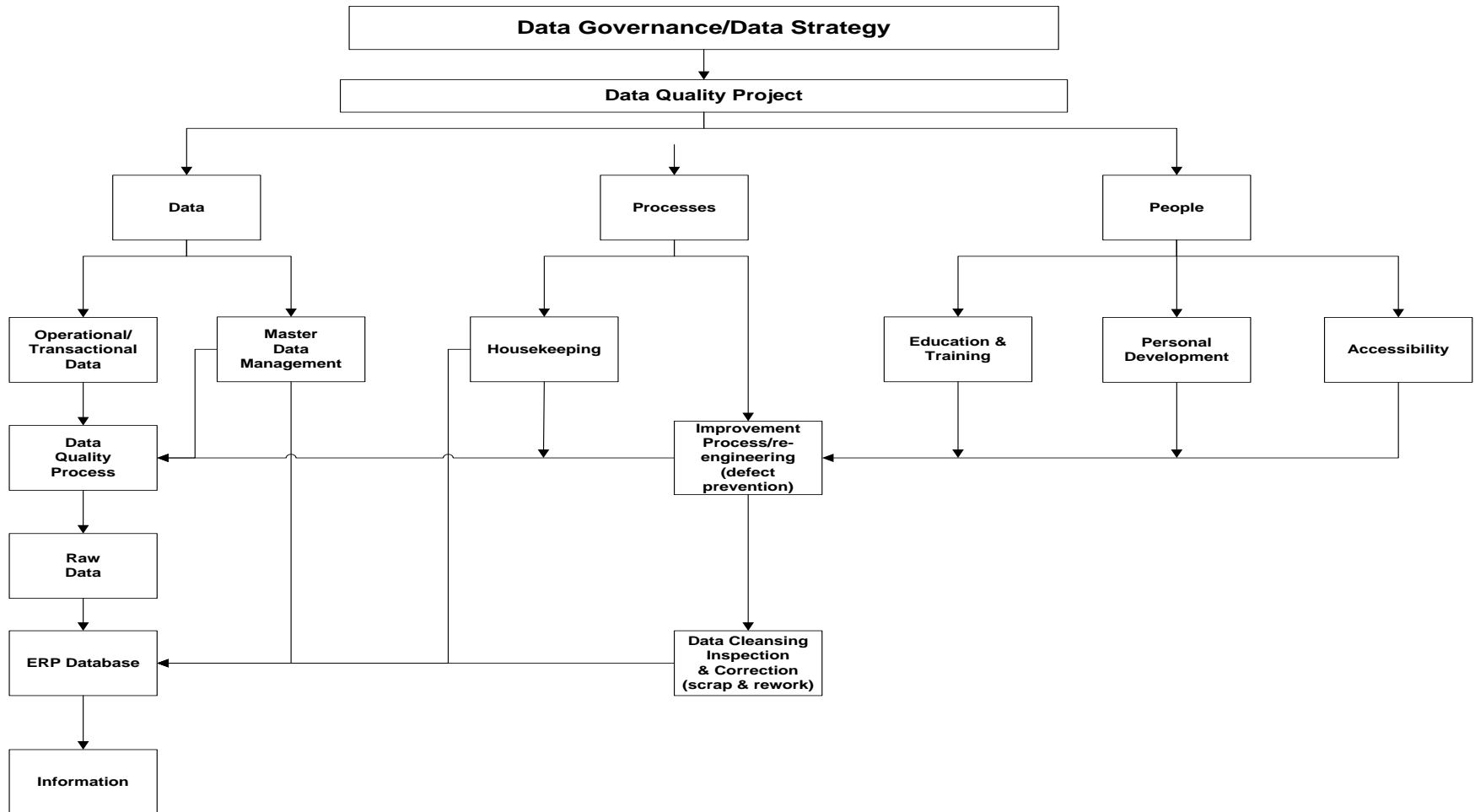
Conceptual Overview

Generic Process	Manufacturing System	Information System	ERP Environment
Inputs	Raw materials	Raw data	People/Processes/Data
Processes/ Operations	Assembly line	Information system	ERP Database
Outputs	Physical products	Information products	Information-People

Sources: Strong, Lee and Wang (1997: 104), Wang (1998: 59) and Orna (1996)

- Scope for applying TQM principles to data quality
- Note that there *are* differences between the Manufacturing and Information models particularly around outputs

Conceptual Framework



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Data Quality Improvement Project

Remploy

Putting ability first

- 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



INVESTOR IN PEOPLE



- 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



- 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

- 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

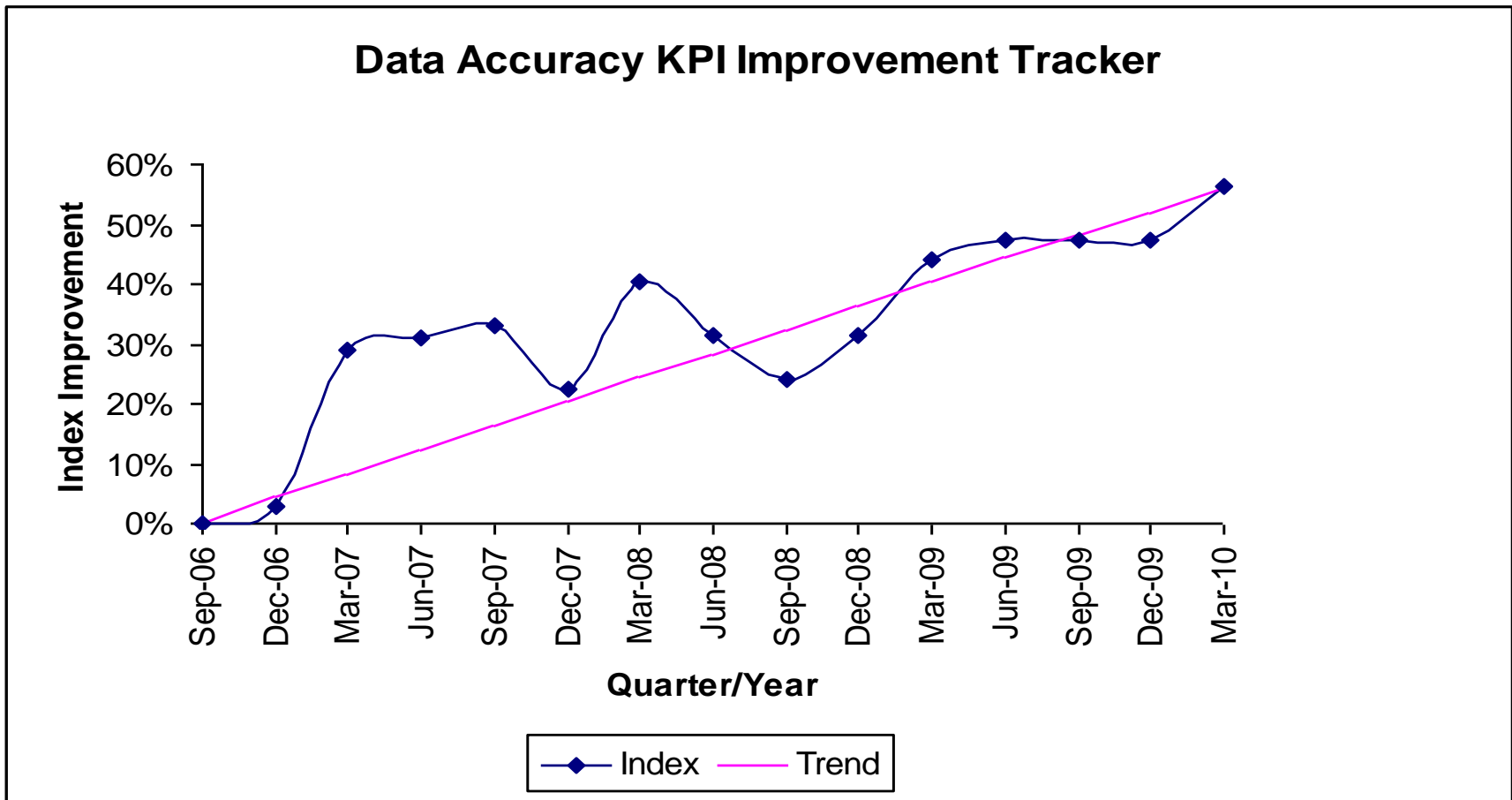
Seen by everyone as very positive



- 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



- 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'



- 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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 - **26% Happy with the quality of the data they receive**



- 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”



- 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



- 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



- 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



- 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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