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DRIVERS FOR INFORMATION & DATA QUALITY

EXTRACT FROM “THE DATA STRATEGY & GOVERNANCE TOOLKIT”

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Drivers for Information & Data Quality

“You don’t have to do this. Survival is entirely optional”

W. Edwards Deming

“Businesses will live or die by their data quality competence”ⁱ.

Gartner Group

Looking back

When I wrote the first edition of this report back in late 2007 the Information Quality universe was very different. The Global Financial Crisis has served to shift to centre stage the value of information and the importance of high quality information for critical decision making and effective governance and risk management.

Initiatives such as the US Data.gov, Recovery.gov, and USASpending.gov, and equivalent programmes in Europe and elsewhere, have highlighted, in a very public and embarrassing way, the lack of quality in critical information that drives government processes and impacts the bottom line of government spending. Examples such as the infamous \$1 million dollar hamⁱⁱ reported on Recovery.gov cause embarrassment and fuel distrust of the data (and the government).

As one blogger in the US wrote in 2009ⁱⁱⁱ:

I want to be able to trust that my government's leaders are going to invest in technology wisely and responsibly, and build useful tools that reliably provide me with the information I want or need -- the information that I'm paying for. I hope the folks down the street in the White House and in every agency can start getting their act together fast. They've built a lot of good will by announcing and launching new online tools like Recovery.gov, but they're losing it quickly by allowing it to be populated with crap.

This shift towards transparency and openness in both Government and business is driving a strong shift of emphasis to the value of high quality, trustworthy data and information.

As Larry Dubov and Alex Berson write in their recent book *“Master Data Management and Data Governance”*:

Undisputable fact about the value and use of data—any business process that is based on the assumption of having access to trustworthy, accurate, and timely data will produce invalid, unexpected, and meaningless results if this assumption is false.

What are the Drivers?

There are a number of key drivers for quality information across a variety of industries and organisation scales. The significant evolution which has taken place in recent years has been the shift away from "name and address" type data to other information types such as financial and inventory data. Studies by Gartner^{iv}, Forrester^v and others over the past few years have documented a number of these drivers.

Cost Reduction, Revenue Assurance and the CFO's Agenda

In the economic climate which prevails there is an increasing focus on the ability of quality data to contribute to cost reduction and maximising revenue. The statistics are compelling, and, interestingly, are by and large consistent with the 'rule of thumb' Cost of Poor Quality metrics that exist in manufacturing industries.

A global study by Experian QAS in January 2011^{vi} found that 87% of respondents reported wasted departmental budget as a result of inaccurate contact data, with the loss being between 15% and 25% on average. A study by SiriusDecisions in 2008 found that addressing poor quality data in customer marketing data could uplift revenues by up to 70%^{vii}. Finally, Gartner Group's Ted Friedman reported in 2010 that 36% of respondents to a Gartner study reported losses in excess of US\$1million annually due to poor quality data. A further 35% were unable to estimate the cost impact^{viii}.

An interesting point to make in the context of Revenue Assurance is that the common controls that are implemented are usually in the form of data integrity checks between billing and inventory systems to ensure that customers are paying correctly for the goods or services they are receiving (for example comparing customer billing data with network inventory in a telecoms environment). This is a data quality control, albeit by a different name.

This theme of 'a rose by any other name' occurs in many other aspects of strategic drivers for information quality. Attention must be paid to what is actually being done rather than the label which is being applied to it. My personal experience was that I transferred an information quality team from a CRM programme to a Compliance and Revenue Assurance programme with minimal changes to tools or how we approached managing issues and opportunities.

The Hackett Group have recently published^{ix} an interesting research paper on the top issues on the CFO's agenda in 2011. This report is initially interesting for the emphasis that is put on establishing data stewardship and standardising and cleansing master data (67%), putting it just behind the implementation of Business Intelligence (76%) as a technology investment priority. Stewardship and cleansing and standardisation of data are just some of the ingredients of an effective information quality culture and programme. Elsewhere in this chapter we discuss the relationship between business intelligence and information quality.

The Hackett Group report is doubly interesting when the findings are examined through what Dr Tom Redman calls "the data and information quality lense"^x. A large number of the key strategic priorities, agenda items, and risks that are identified by CFOs in this report are inherently driven and supported by good quality information and good quality practices around the management and maintenance of information quality. Failure to include information quality considerations in the implementation of these initiatives will likely result

in sub-optimal outcomes for the CFOs in question as the deliverable will not match the desired outcomes.

I've summarised a mapping of the issues to information quality with a brief explanation of the relationships involved.

Hackett Group Finding	Information Quality Impact
Revenue Growth Acceleration Important/Very Important (88%)	Growing revenue means being able to target customers more effectively and maximise the likelihood of conversions on sales. This is a data –intensive activity and requires good quality information at its heart to be cost-effective.
Customer Service/Satisfaction Improvement Important/Very Important (81%)	The customer service impacts of poor quality information are well known. Improving information quality, and the culture of quality in general, will contribute to this goal.
Helping to maintain a competitive cost structure Important/V Important (62%)	The cost impacts of poor quality information range between 10% and 35% of turnover. Addressing these challenges, particularly if your competitors are not, will lead to a competitive advantage
Improving finance's analytical, modelling, and forecasting capabilities Important/V Important (61%)	Ultimately, this ties back to the challenges in Business Intelligence of trying to create better outcomes from crummy quality data. Investment in technology for analysis will not improve outputs without the underlying quality of information being addressed from the source.
Forecasting performance (accuracy, cycle time, efficiency) a performance focus area (81%) Management reporting performance (cost, cycle times, quality) also a focus area (58%)	In effect, the objective here is to improve the quality performance of an information process along a number of key dimensions of information quality (timeliness, accuracy). The efficiency could relate to reducing 'scrap and rework' activities in the information work flow.
Improving BI information architecture (50%) and Improving Analytical Capabilities (53%) are priorities in Enterprise Performance Management	The information architecture for business intelligence has information quality as a key foundation stone. Likewise, the ability to perform meaningful analysis is predicated on an assumption of good quality data, or at least an understanding of the limitations/issues in the data.
Rolling out web-based and self-service tools (45%) and Integrating processes with external partners (33%) feature as Technology Investment priorities	Self service and web-based solutions can help support information quality. However, they can also be affected by poor quality information impacting user adoption. Integration of processes/information requires attention be paid to the quality of information and effective cross functional governance be put in place to manage and mitigate the risks posed by non-quality information or inappropriate access to data.

Compliance with Statutory Regulations

Compliance with Statutory regulations continues to be a strong driver for information quality investment. Laws such as the Sarbanes-Oxley Act, legislation restricting international trade, Anti-terrorism laws, money laundering rules, Data Protection and Privacy regulations, as well as industry or country specific legislation (e.g. product safety or telecommunications regulations) continue to set new demands and challenges for organisations.

The Hackett report cited earlier highlights that 32% of CFOs see “Managing increased levels of Government Regulation” as being important or very important. Government regulation invariably requires reporting and evidence of compliance, which necessitates good quality data.

In February 2011 the UK FSA^{xi} published a review of the process for approving internal Solvency II models in UK financial services firms. They found some significant problems with the maturity of the data management and data quality elements of the review. Specifically there was little evidence to support the completeness or accuracy of models and little evidence of discussion of data quality or reporting of quality of information at Board level in the UK Financial Services sector.

Companies rely on the quality of the data in their enterprise systems as a cornerstone of their compliance strategies. Failure to assure and ensure the quality the information that is relied up on for Regulatory reporting could prove extremely damaging to the business, *and potentially to its Executive Officers and Management*. In many cases the business and management could face significant financial penalties or custodial sentences.

Given the shift towards increased transparency it is likely that as we move towards the middle of this decade we will see increased imposition of transparency requirements in legislation which will further drive the need for trustworthy and reliable information in organisations.

Data Privacy

In the European context it is very easy to draw a clear link between the disciplines and practices of information quality management and the requirements of EU Data Protection laws, based on Directive 95/46/EC. Simply put, the Directive describes the 8 fundamental data protection principles as “Principles for Data Quality”^{xii}. Among these 8 principles are the requirements that data be kept accurate and up to date, be kept for no longer than is necessary for the purposes for which it was obtained, and that the data be adequate, relevant, and not excessive for those purposes.

In addition, the maintenance of flags and suppression indicators on data to block it from being processed for certain purposes (most commonly to prevent an address or email address being used for direct marketing or a phone number being used for cold-calling) raises challenges around the management of that data in a quality assured way.

Furthermore, effective governance and management of Data Privacy controls, particularly in the European context, requires organisations to classify their data so they apply appropriate controls over personal and sensitive personal data as defined in the Directive.

Finally, the emerging concept of ‘Privacy by Design’ dovetails very strongly with many of the methodologies and best practices in Information Quality and Information Governance.

Traditionally, the focus in “Data Protection” has been on the physical protection of data. But physical security is the low-hanging fruit of Data Privacy, with Forrester highlighting in 2008^{xiii} that:

“Data privacy goes beyond the traditional IT security and touches on issues such as corporate culture, data collection policies, and data quality initiatives. Organizations that ignore these additional dimensions increase their risk of having data breaches resulting in financial penalties and lost consumer trust.”

With penalties for breaches of the Data Protection Act in the UK of up to £500,000 per offence, and with more stringent penalties potentially in the pipeline across Europe by 2015, and with many jurisdictions having legislation based on similar principles to the EU legislation (e.g. South Africa, Australia, New Zealand, and Canada, Switzerland, Iceland, and Argentina to name but a few), and with the USA beginning to adopt more mature Data Privacy laws, both at State level and at Federal level, this has potential to be a strong driver through 2015 and beyond.

Data Migrations

The migration of data from one system to another, either as a result of a systems implementation such as CRM or ERP systems, or the merger of data from two companies arising from merger and acquisitions activity is an activity which requires particular attention be paid to the quality of data and information. This is equally true of scenarios where data is being split out from systems or where companies (or their assets) are being split (e.g. splitting a “good bank” from a “bad bank” as has happened frequently over the past few years).

A study by Bloor Research in 2007^{xiv} found that:

- Only **16%** of data migrations are delivered on time and on budget
- Project overruns average in excess of **40%** of the total time budget.
- Project over-runs averaged over **30%** of the total financial budget for the project.
- Only **1 in 10** companies performed any data profiling, which may have affected their assessment of scope and risk associated with the migration.
- **More than half** of all respondents blamed poor, inadequate or unrealistic scoping for budget overruns (either time or money budgets).

The fact that data profiling (or rather the lack of it) has been identified as a key contributor to the cost and time over runs on **84%** of Data Migration projects is a clear indicator that poor quality Information, and the failure to address Information Quality in Migration planning, is a critical point of failure in Data Migration projects.

Likewise, a study conducted by researchers in Brunel University in the United Kingdom identified that failure to address Information Quality issues was a key cause of failure in CRM projects^{xv}.

Organisations that profile their data have a greater ability to more accurately estimate the scope, time and costs of their projects to ensure that the migrated information meets the needs of the target systems and processes.

To fully appreciate the potential upstream and downstream business value impacts of failures in data migrations, one need only consider the fact that “faults in integrating computer systems following the 2007 merger of First Choice Holidays and the tourism unit of TUI

AG” lead to the accounts of Europe’s largest tour operator having to be restated by stg£117 million (US\$185million) resulting in their CFO resigning and their share price dropping by 12 percent^{xvi}.

Business Intelligence

When the marketing hyperbole is boiled away, Business Intelligence aims to provide tools to knowledge workers to support better business decisions. Ultimately, the success or failure of a Business Intelligence platform implementation rests on the ability of the knowledge workers to trust the information that they are basing decisions on.

This can be complicated by the fact that, in many cases, the ‘conventional wisdom’ in an organisation about their data might be based on little more than rumour or hearsay. Studies by Gartner and others have identified improving “**User adoption of Major Applications**” as second only to Compliance as a driver for investments in Information Quality. In this context it is imperative that the organisation understand the quality of the data which is feeding their Business Intelligence tools so that variances from the ‘conventional wisdom’ can be explained with evidence based on the source data.

In a recent conversation with Andrew J. Brooks of HP’s Enterprise Information Solutions consulting practice in the UK, he suggested that organisations that don’t take steps to understand the quality or non-quality of their data are essentially ‘flying blind’. Those that do put the effort in to validate their data and make this visible to the organisation are at least enabling their decision makers to ‘act on fact’ - even if this is, ‘don’t trust this data’.

Ultimately, trustworthy and reliable data is a key foundation of Business Intelligence. The old IT adage of “garbage in, garbage out” is particularly appropriate. Investing in Business Intelligence *without* addressing data quality is akin to building an expensive and impressive mansion on foundations made of sand.

However, as Gartner highlighted in 2008:

“A recent European Gartner BI survey of more than 600 BI users found that more than 35 per cent identified data quality as a top-three BI problem facing their organisation in the next 12-18 months, making it the second biggest challenge overall”^{xvii}

Over a third of respondents citing data quality and it being the second biggest challenge faced in BI implementations clearly shows that the adoption of Business Intelligence in a meaningful way within organisations requires that they tackle the challenges of poor quality information to get to the opportunities that their BI promises to find.

Risk Management

As a general umbrella category of driver, Risk Management has emerged a significant issue in recent years, particularly in light of the contribution poor quality information and data have made as a root cause of the current international financial difficulties. In part this is due to the critical role that information plays in the very management of risk itself.

When establishing organisation goals and identifying risks, information is a key input into the assessment of risk and the decisions that are taken around risk appetite and the need to mitigate or control risks, or simply not to pursue that particular organisation goal due to the level of risk involved.

Likewise, when assessing solutions, defining or implementing controls, conducting monitoring and assessment of controls and risks, or embarking on programmes to improve the effectiveness of risk management, **information** is essential to enable those decisions to be made and the issues to be prioritised.

If you cannot trust the quality of the information then the job of prioritising and managing risk becomes even harder. In the current economic climate, the increased focus on risk management means that this represents a key driver for information quality initiatives.

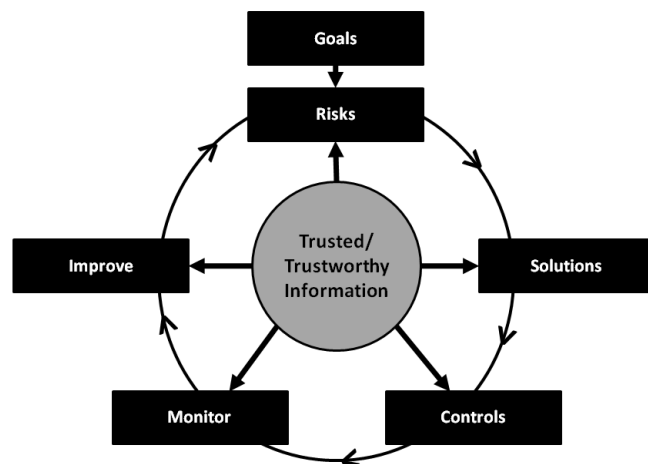


Figure 1: Information's Role in the Risk Cycle

A 2009 study by Deloitte^{xviii} found that, while Risk Manager's concerns around data and information had declined slightly from the previous year's level, it was still a very substantial issue. In Deloitte's 2007 report 61% of respondents had reported that 'Data' was a "very significant" issue, with 33% reporting it as "Somewhat significant". In 2009, the figures were 45% and 43% respectively, suggesting that many organisations had managed to reduce the significance of their risk in the intervening years. However, this still means that 88% of Risk Managers see 'Data' as being at least a somewhat significant challenge to their Enterprise Risk Management Strategy. This is down from 94% in 2007.

Interestingly, Deloitte's analysis in the 2009 report focuses on the findings re: Culture, which while important, and while featuring more prominently as a "Significant" factor, does not attract the same level of overall concern, at only 84% in total. Admittedly, this is an increase on the 2007^{xix} study which found that 81% of respondents felt that "Culture" was a challenge.

In both the 2007 and 2009 Global Risk Management Surveys "Data" ranks higher than any other factor as a significant challenge. It is tempting to suggest that the shift in results between 2007 and 2009 in the "Very Significant" responses for 'Data' and 'Culture' are due to a maturing of attitudes in organisations to recognise the cultural aspects of information quality now that the initial hype about technology solutions may have abated. However, there is no actual evidence at this time to support that supposition.

Deloitte's 2011 Global Risk Management Survey^{xx} further highlights the importance of information and data in risk management, particularly in the Financial Service sector.

- **28%** of respondents have increased data requirements in response to liquidity environment since 2009
- While **82%** of respondents said that their systems were capable or somewhat capable at gathering information, this must be read in the context of
 - only **38%** having Data Governance that was “Very Effective” or higher
 - Only **37%** rating their data management and maintenance as “Very Effective” or higher
 - Only **33%** rating their Data Process architecture and logic as being “Very Effective” or higher
 - Only **31%** rating their Data controls and checks as being “Very Effective” or higher.

A key concern highlighted in the context of risk management is the difficulties raised by repurposing information from other parts of the organisation for Risk Management purposes. Unsurprisingly then, over three quarters of respondents highlighted **Risk Data Quality and Management** as a key capability they were seeking to develop, ranking just behind the development of improved Risk Information Reporting (which was at 86%).

In this context it is worth considering the discussion on Business Intelligence earlier in this chapter as it may be that these priorities may shift in the future as lessons are learned about the importance of quality information to these types of reporting capabilities.

Service Oriented Architecture

The move in IT organisations towards Service Oriented Architectures is critically dependent on effective management of the quality of information. “Garbage in, Garbage out” is one of the fundamental laws of Information physics, regardless of the technology by which the data is being moved around.

A key driver for the implementation of Service Oriented Architectures is the improvement of Business/IT alignment in organisations, more closely aligning IT systems and architecture with business processes and goals and enabling, amongst other things, more rapid adjustment to changes in regulatory factors. Of course, an underlying assumption of SOA is that the data being shared will be of high quality.

Organisations who seek to implement Service Oriented architecture strategies or solutions without tackling the fundamental challenges of their information quality run the risk of repeating the failures of CRM and ERP implementations, only on a potentially larger scale.

Master Data Management

Increasingly organisations are seeking ‘single versions of the truth’ for their critical enterprise information. This pursuit of single instances of the truth is often aligned with other strategic programmes such as CRM or ERP implementations or Compliance, all of which have already been identified as key sufferers from poor Information Quality.

Master Data Management is increasingly a must-have capability within businesses. However it is often viewed as being primarily an IT issue rather than a Business challenge. However achieving a Single View of anything in an organisation requires significant changes in the Business in terms of organisation alignment, process design and the adoption of sound practices to ensure the quality of the Master Data repository.

In instances where the Single View of Truth is incomplete, inconsistent, lacking in accuracy or rife with duplicate instances of the same ‘thing’ (person, product, supplier etc) it is inevitable that the end users of these systems will lose faith in them and create their own ‘skunk works’, effectively eliminating the stated benefits and goals of the MDM programme.

Writing in 2009 for InformationManagement.com^{xxi}, Dan Power (a leading consultant in the MDM field) put it very succinctly:

“Data quality and MDM are inextricably linked, because the net purpose of MDM initiatives is to deliver a single source of truth on one or more master data domains containing accurate, complete, timely and consistent data. Without early, systematic attention to high levels of data quality (plus the right data quality tools and solid data governance to resolve the issues that inevitably come up) your master data hub will simply be a fast, automated way to shoot yourself in the foot.”

Civil Litigation

In the rush and hubbub surrounding compliance with Statutory regulations, it seems that sight has been lost of the simple fact that poor quality information can get you sued.

Good quality information is essential in many ‘life or death’ instances, such as in health care. With the increasing application of technologies to scenarios such as patient medication and care in hospitals, or in the delivery of services that might affect the life of a person there is an increasing focus on improving the quality of information in these scenarios to reduce the risk to life and limb. As one delegate at an Irish Information Quality conference in 2006 commented:

“In financial services or telco a 5% to 10% duplication rate in your Single View of Customer means you might send junk mail to the wrong address. In healthcare that level of duplication in Patient records could mean you’ve just killed two people.”

Recently in the UK a General Practitioner was sued because a typo on a letter referring a patient for assessment by an oncologist resulted the letters not reaching the patient and in the patient’s breast cancer going undiagnosed until it had become untreatable. She later died, leaving an orphaned son. The GP admitted liability in the High Court for not following up on the letter and a six figure pay-out is likely^{xxii}.

However, even in the mundane world of customer data and managing bills and payments liability can arise. A 2009 ruling by the Court of Appeal in England and Wales is a game changer for the Information Management profession as a whole, and Information Quality in particular. In *Ferguson vs British Gas*^{xxiii}, a woman switched to a different gas company and settled her account with British Gas. Over subsequent weeks she received a series of letters from British Gas demanding payment of an outstanding bill. She sued British Gas for harassment. The Court held, amongst other things, that a company can be held liable for mistakes made by computerised systems or the personnel who programme or operate such systems.

Similar cases are increasingly being reported in jurisdictions worldwide, with the legal fallout from the Global Financial crisis likely to result in yet more precedent setting cases. It is a sad fact that during economic downturns individuals and organisations tend to litigate more either to redress wrongs that they would ignore in more prosperous times or as a means of managing cash flow by forestalling any pay-out through litigation^{xxiv}.

All persons (individuals and organisations) owe a duty of care to avoid causing loss or injury to others through acts or omissions. Whether it is litigation on foot of a restatement of earnings by a company or a legal action taken by the estate of a person who was incorrectly medicated in hospital, the potential scope for liability is quite broad and, to complicate matters, can change quite quickly and can vary from jurisdiction to jurisdiction.

Evolution from COTS to Cloud

The past few years have seen ‘Cloud Computing’ move into the mainstream of business, to an extent displacing the traditional Customisable Off The Shelf Solutions, particularly for SME sector companies. The existence of such solutions (be they Cloud based or not) levels

the playing field as regards organisational capabilities and the speed with which you or your competitors can deploy new solutions. As a result the competitive advantage that might have existed previously in your systems architecture (e.g. it was only economically viable at a certain scale) will increasingly be found in the quality of the information that drives your organisation's processes.

Ultimately, if you and your competitor are using the same off the shelf software or have both bought in to Salesforce.com, with approximately the same 'off the shelf' generic industry processes then, just as in Manufacturing quality, your competitive advantage will be derived from the quality of your 'finished product' – the information produced by your processes.

Data Driven, Information Inspired

Writing in 1998 Peter Drucker bemoaned the focus on the 'T' in IT which had pervaded organisations for the previous fifty years. He stressed that the focus of the next Information Revolution would need to be on the *meaning* and *purpose* of Information. Today, with the need for high quality information to drive and enable needs as diverse as risk management, cost control, revenue assurance, management of business performance, CRM, MDM, and Regulatory Compliance, despite decades of technology investment, Drucker's words resonate as prophetic.

Dr. Tom Redman's 2008 book *Data Driven* highlights the wonderful properties of data as an asset in organisations and stresses the need for management, both IT and 'Business', to embrace new skills to better manage the special characteristics of the "Data Asset". It is these 'special characteristics' that contribute to many of the Information Quality challenges that affect Regulatory Compliance, the success or failure of Data Migrations, or any of the other drivers we touched on in this chapter.

The emergence of drivers such as transparency, more stringent regulation etc. raise the questions of what the information **means** to the organisation and what **purpose** (or purposes) we will put the information to. This is particularly true in the context of Data Privacy. As Information Quality can be defined as 'fitness for purpose', or its ability to be a trusted source for one or more purposes, workers in organisations are faced with having to figure out what that means for their organisations and the role that they play in them. This is borne out by the number of Google searches (>54%) which can be classified as 'searching for the meaning of Information and Data Quality'

The proliferation in 'desktop' reporting tools, business intelligence 'dashboards' and a myriad of systems, tools and processes for the creation of, storage of, analysis of and presentation of facts and figures about businesses, people and performance has placed an immense amount of potential power at the fingertips of modern workers. The Internet has, in turn, extended the scope of information that can be accessed and the scope of who might access that information.

Guy Tozer, one of the first 'practitioner' writers in this field, describes our situation as follows:

“This curious state of affairs has been brought about by a combination of technological, political and organizational factors which have enabled decisions makers within an enterprise to have access to even greater amounts of information related to the circumstances of their business than ever before.”^{xxv}

However, as Mr Tozer points out, for most managers and decision makers the “essential facts about the status of his business are hidden from the decision maker by the impressive mass of misleading, inaccurate, inconsistent or just plain irrelevant data with which he is presented.”

Today, organisations are emerging from the initial ‘gold rush’ of the Information Age where demand for information was driven by process/technology solutions such as CRM and ERP systems. The focus is shifting more towards what Drucker predicted, with the meaning and purpose of information in organisations being the critical contributors to competitive advantage.

Regulatory drivers are focussing on the control and management of the information. The pain of past failures in CRM and ERP projects has educated a generation of managers that this is most definitely not a technology problem. And an increased awareness on the part of Knowledge workers and information consumers that the key facts they need to know are often lost in the din of irrelevant or plain crummy data all contribute to an environment where information quality is, to paraphrase Gartner, a ‘life or death’ organisation competence.

Conclusion

The list of drivers for Information Quality outlined above is not exhaustive. The true drivers in your organisation will depend on your industry and, while many of those listed above may feature, inevitably your industry or your situation will present other drivers.

To understand the drivers for Information Quality in your organisation, you need to first understand what Information means to your organisation (and recognise the different perspectives on that meaning) and what the purpose of information is for your stakeholders (and accept that there will be different and potentially competing purposes). In that context you will be able to better articulate the inherent and often implicit importance of information quality to your organisation.

The challenge in shaping your Information Quality strategy is to recognise and select the key drivers that will enable you to secure and retain support and which you can clearly map objectives and deliverables to. Ultimately, the value of your strategy and the priority of the driver you choose should be directly linked to the delivery of tangible value to your organisation.

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