

Business information challenge: transforming data into knowledge

BY [PETER HUGHES](#) AND [ALLAN D. GRODY](#)

We have all heard that knowledge is power, or its derivative, that content is king. That may well be true but in today's world one thing is certain: information is a massive headache. Technology has facilitated the exponential growth of the data elements that turn information into intelligence, to the point that business information has become a challenge to store and maintain. Organising it into reliable and controlled sources from which manageable, accurate and understandable reports and dashboards can be created is becoming an increasingly costly exercise.

Nevertheless, it is an inescapable fact that in today's globally competitive environment the need for accurate, secure and immediate information on risks and performance encompassing a business's own operations and those of its customers and partners is critical to maintaining both excellent performance and

competitive advantage. High quality information is, without question, among a firm's most important assets.

It was not so long ago when discrete business activities were contained within legal entities within sovereign states. Legal entity financial statements were the single source of all truth and knowledge concerning that business's performance and condition. This is no longer the case. The information technology revolution has allowed business information to go global and, for internationally active businesses, it now transcends both the legal basis and geographical sovereignty of its regulators.

Business performance management and data management have become inextricably linked. The new mantra is Enterprise Data Management. Data integration, data warehousing and the business intelligence applications that consolidate, aggregate, analyse and distribute business information through a hierarchy of data bases and visualised through management dashboards is what business executives rely on to manage their businesses. It is left to their finance directors to organise the financial statements so that they can be used by the accountants, tax offices, regulators and auditors that need them.

This development raises a few rather important questions. How concerned should we be at this apparent divergence between business information and financial statements? For example, should M&A dealmakers and new owners be as concerned with the quality of the business information they will acquire as they are with audited financial statements? And how will new owners know the quality of what they are acquiring if there are no generally accepted industry standards by which to measure data quality?

In a roundabout way the financial services industry has already begun to concern itself with these aspects. The new Capital Accord (Basel II) now requires banks to measure their operational risks and set aside protective capital for them. Behind business information, in whatever form, is data. Data is the raw material from which information is developed, interpreted

and distributed. Faulty data leads to defective or poor quality information which in turn leads to faulty business decisions. It also leads to increased exposure to operational risks. Underlying these operational risks are exposures to information lapses that are directly linked to data quality issues.

Let's examine this linkage in more depth by looking at a particular, and for financial firms, very important class of data: reference data.

Reference data uniquely identifies products and their terms and conditions; supply chain participants (customers, suppliers, counterparties, issuers, etc.); accounting and reporting requirements (general ledger accounts, cost centres, regulatory, statutory and risk reporting matrices, etc.); and provides the variable information required by value-bearing transactions such as prices, currencies and interest rates. Transactions fail if reference data is faulty or the data recorded in sending and receiving systems are inconsistent and can't be matched. Regulatory and compliance failures result if supply chain or product reference data do not contain the correct reporting classifications. Financial accounting and reporting processes fail if account and cost centre codes are faulty or are not correctly specified in transactions and reporting matrices. Losses of revenue can occur if sales volume or particular trades are incorrectly valued due to faulty price and rate related reference data.

There have been many attempts to estimate costs and losses associated with reference data but they have all been based upon surveyed opinions and anecdotal evidence. Recent research estimated that each of the largest financial firms have embedded annual costs on average between \$238m and \$1,242m comprising direct costs, losses and operational risk related capital (*Operational Risks and Reference Data: Exploring Costs, Capital Requirements and Risk Mitigation*, Allan D. Grody, Fotios C. Harmantzis, Gregory J. Kaple, February 2007). Of the total, 35 percent to 52 percent represent losses caused by faulty reference data.

By any standard, the costs and operational consequences of faulty reference data are ▶▶

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severe. Failed transactions and reporting processes need to be exported to manual workarounds and/or spreadsheets where they can be controlled, investigated, repaired and reprocessed. Additional verifications and reconciliations need to be introduced to control the multiple data sources that have to be created in manual workarounds and spreadsheets outside their respective automated information processing systems. In this way these systems also lose their facility for auto-reconciliation. SWIFT has estimated that these repairs cost the industry \$12bn annually (*SWIFT – Results of STP Reviews* reported on in 2002).

The end result is losses, increased costs and a proliferation of potential points of operational failure, more processes, more people, more data sources, less security, i.e., increased exposure to operational risks.

In many banks this proliferation of costs and potential points of operational failure can be chronic. Indeed, manual workarounds and spreadsheets applied to failed transactions or defective reporting often become an integral part of a firm's standard operating environment. Failed trades, payment errors and misapplied cash in high volumes due to faulty reference data are a standard feature of most banks' operational landscapes as are the teams of operations personnel whose sole task is to investigate and repair operational failures. Perhaps even more perverse are the performance monitoring mechanisms, e.g., Key Performance Indicators (KPIs) and Key Risk Indicators (KRIs) that are applied to the workaround and spreadsheet based processes that exist as a direct consequence of faulty reference data and only serve to mask the true condition of faulty data and unnecessary operations.

It is not difficult to know when a firm is suffering from faulty reference data. It is evident in the volumes of failed transactions and the scale of manual workarounds. Given the potentially far-reaching implications for profitability and increased exposure to operational risks one would expect firms to have implemented systems that measure data quality and the risk consequences of faulty data. But to be effective and meaningful such a measure-

ment system must be replicable across operating universes of any size and complexity simply because the resulting quality and risk measurements will only have value if they are consistent, comparable and capable of consolidation and aggregation. The fact is that very few firms, if any, have such mechanisms that are applied either to their data sources or operational processes.

In addition to reference data, businesses typically have aggregated information related to non-financial performance, such as productivity and risk data, on which they rely for managing their business day-to-day. This is fairly innocuous if data quality is good. It's a nightmare if it isn't. If ownership is transferred in a company whose business performance information or reference data is unreliable or inadequate, providing continuity to that business under new ownership will be severely impeded. Similarly, merging high quality and poor quality data into single sources of performance information and reference data inevitably leads to overall degradation and data redundancy which are extremely costly to fix. The usual solution, cross-mapping of the disparate islands of redundant data, builds new costs into the information technology infrastructure along with new operational costs to accommodate the inevitable reconciliation process that follows from cross-mapping data failures.

Business information and financial statements are two very important but different and largely independent sources of performance information. However, it is only the financial statements that have an established measurement framework through Generally Accepted Accounting Principals (GAAP) complemented by both internal and external audits. So perhaps the time has come to be equally concerned about standardising the measurement of data quality and the risk consequences of faulty data.

This may not be as difficult as it first appears. All data sources, reference data and business information, have measurable properties. These relate to the inherent risk in the type of data concerned and what it is used for, the general ledger accounts to which the data sour-

ces relate and the manner in which each data source is created, managed and maintained. Relatively simple mapping tables and mathematical models can convert these measurable properties into three basic measurements: (i) *Data at Risk (DaR)*: The absolute risk weighted size of data sources; (ii) *Data Quality Index (DQI)*: The quality of data sources on a scale of zero to 100 whereby 100 represents best practice; and (iii) *Data Value at Risk (DVaR)*: The portion of Data at Risk (DaR) not covered by best practice data quality management and is the result of applying the DQI as a percentage to the DaR.

This is just one example of what can be done to begin the task of standardising the measurement of data quality and the risk consequences of faulty data across organisations and between organisations. These results can then be analysed and correlated with similar measurements of risk-weighted operational processes where a high degree of interdependence between Data Values-at-Risk (DVaR) and Operations Values-at-Risk (OVaR) would be expected given their interdependency as discussed above. These quality and risk measurements will provide invaluable guidance on the risk exposures that need to be managed and operating efficiencies and cost reductions that can be achieved.

Business information and its underlying data have become so critical to the performance and value of a business that it probably needs its own quality measurement framework – perhaps a set of Generally Accepted Data Principles that provides for a consistent framework for transforming reference data into enterprise business knowledge, in the same way GAAP transforms financial data into enterprise performance knowledge. ■

The Authors: [Peter Hughes](#) is a Chartered Accountant, Managing Director of ARC Best Practices Ltd, and a former banker with JPMorgan Chase where he held area and country management positions in audit, finance, operations and risk management. [Allan D. Grody](#) is an Executive Consultant to ARC, President of Financial Inter-Group Holdings Ltd, an Emeritus Adjunct Professor at New York University's Stern Graduate School of Business where he founded their Risk Management Systems program, and the retired founder of Coopers & Lybrand's (now PricewaterhouseCoopers) Financial Services Consulting Practice.