



Valuing Information as an Asset



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This paper expands on the short, introductory paper *Unlocking the Value of Information* that the authors wrote for EURIM in November 2009. Many of the background source documents used can be found at:
www.eurim.org.uk/activities/ig/voi/voi.php.



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OVERVIEW

The best-managed organisations increasingly recognise that information is a key asset - perhaps the most valuable strategic asset they possess. By focusing on the information rather than the technology, these organisations are finally realising the full potential of their investments in IT and optimising business performance.

At the same time, finance functions are transforming themselves. They are simplifying and outsourcing many routine accounting tasks and moving from their traditional roles as 'bean counters' and cost controllers to becoming managers of business value, strategic partners to the CEO and providers of strategic decision support to the rest of the business.

These two evolutions are connected. The key to unlocking the potential of information assets is to apply the disciplines of accounting to them - asset identification, stewardship, valuation and value optimisation. This needs a clear understanding of how information creates, and occasionally threatens, organisational value. The finance function's traditional role as a gatekeeper to accounting information and its new role as the custodian of organisational value, mean it is perfectly placed to move to centre stage in the information age.

This paper has been written for senior executives and policy makers in the private and public sectors to assist them in their task of transforming the information culture and practice within their organisations. We argue the need for an asset-centric, value-based approach to the management of information, as opposed to the still common, but often unsuccessful, security-centric approach that tends to view information as a toxic liability.

The asset-centric perspective is a proactive approach that manages information in the same way as other assets such as pounds, people and property. It is successful because it focuses on the exploitation of information assets and, because we naturally take more care of what we value, it also leads to greater protection of those assets. When information becomes widely recognised as part of the life blood of the organisation, the culture embraces both the need to democratise access to it and the importance of information quality and security.

By contrast, the security-centric approach tends to foster a reactive, technical-specialist focus. Organisations that adopt this approach generally restrict access to data to the privileged few and as a result they also restrict the potential business benefits. At the same time, because they encourage a more mechanistic, tick-box approach to security, they often fail to prevent the quality and security lapses that triggered the attention in the first place. This compliance-led approach is more common in the public sector, where highly-publicised security lapses have helped to create and reinforce a safety-first mindset and where the incentives and rewards for exploiting information assets are less prevalent.

WHY INFORMATION, RATHER THAN TECHNOLOGY, IS THE STRATEGIC ASSET

Expenditure on Information Technology (IT) has grown significantly during the last 20 years. However much of the emphasis has been on investing in the 'T' – the hardware and software that enables the acquisition, storage and processing of data. This in turn has accelerated the 'drowning in data but thirsting for insight' syndrome that so frustrates many business users. Moreover, as volume of structured and unstructured data continues to grow exponentially, so do the associated power and space costs of storage. At the same time the demands and costs of compliance have also grown, as organisations are required to achieve minimum standards of data quality and security to comply with increasing legal, regulatory and consumer trust requirements.

For most organisations the 'T' in IT is now regarded as something of a utility. It is necessary infrastructure but rarely a source of significant competitive advantage or public value. This realisation has led to a shift of emphasis, at least by leading organisations, from the 'T' to the 'I' and a growth in investment in information management tools such as business intelligence (BI) and analytics. Thus, for the last five years, Gartner's annual global survey of CIOs has seen BI topping the list of IT priorities. Gartner's conclusion is that, after many years in which the CIO's priorities failed to match those of their CEO's, BI is now acting as the bridge between IT and the business. Meeting the latter's need for greater insight across all areas of operations – from cost and risk control, to process efficiencies, and through to greater customer insight and innovation.

The need for greater insight, by improving the management and analysis of information assets, is even greater at times of financial difficulty and increased uncertainty, because the margins for error in decision making are reduced. Thus global sales of BI and analytics software grew by 22% in 2008, despite the recession and major cut backs elsewhere.

Even if the corporate objective is simply to cut costs, organisations need information to understand what is currently being spent and how to discriminate between 'good costs', that generate value, and 'bad costs' that can be reduced or even eliminated entirely. Without better information, organisations are wielding the cost-cutting axe blindfold and risk cutting the very investments that are essential to their future survival.

¹ Some terminology:

Information systems and information technology are the processes and systems which collect, process, store and deliver information. Within IT the specialist tools that support information management include Business Intelligence (BI) tools. Gartner define BI as "The use and analysis of information to enable people to best lead, decide, measure, manage, innovate and optimise performance". The component software tools used to achieve this include:

- *Data Integration (DI) – including data quality, matching and integration*
- *Master Data Management (MDM) – key foundation, providing a 'single source of the truth' across core reference data (eg customers, products etc)*
- *Analytics – including data mining, trending, modelling, forecasting, scenario plan-ning and simulation for predictive foresight*
- *Query & Reporting (Q&R) – reporting tools that allow users to access information and perform their own queries.*

■ The broken information culture in the UK is reducing economic income by c£65bn per annum, £44bn in missed private sector profits plus £21bn in avoidable costs in the public sector.

Capgemini: The Information Opportunity 2008

■ Information has become a top-3 organisational priority for 80% of the organisations surveyed. 84% agree that high performing organisations have more evidence-based decision making.

Capgemini: The Information Opportunity 2008

The UK Government's recent Operational Efficiency Review is a case in point. It was set up to identify significant cost saving opportunities and had five streams including back office, procurement and IT. However, the identified savings of c£15bn were in effect educated guesstimates, because a common problem across all five strands was the absence of reliable information to baseline and benchmark costs.

However, improved information management has a much bigger role to play than simply improving the effectiveness of cost-cutting programmes. There are many compelling examples of organisations that have transformed their performance and, in some cases, owe their existence to the efficient exploitation of information assets. In *Competing on Analytics*², Thomas Davenport and Jeanne Harris identify companies from a wide range of industries that have made the superior use of information their main source of competitive advantage. Industry leaders such as Amazon, Dell, UPS, P&G, Honda and Tesco build their competitive strategies around data-driven insights – they identify the true drivers of financial performance and their most profitable customers, accelerate product innovation, optimise supply chains and pricing etc. These strategies, in turn, generate impressive business results. The secret weapon for these companies is sophisticated data analysis and predictive modeling, driven by data-savvy business leaders.

The benefits of foresight over hindsight

By improving and harnessing the quality and integration of historical data, traditional Business Intelligence provides better hindsight. But hindsight can only enable organisations to improve their reaction time between 'fail and fix' and just as one would not contemplate driving a car using only the rear view mirror, one should not run a business that way (see *Figure 1*). In contrast, analytics provides the foresight that enables these leaders to proactively 'predict and prevent'. To continue the driving analogy, this is the equivalent of sat nav – enabling organisations to know not just where they have been but also to anticipate what is round the next corner and to plot the most cost effective route map.

Davenport and Harris calculated that the high performing organisations featured in their research were almost 3 times more likely to have significant analytical capabilities and 4.5 times more likely to value analytical insights than their low performing counterparts.

A good example of the transformation in corporate mindset that the use of analytics can enable is London Fire Brigade. The brigade has reduced the focus of resources on reactive 'fire fighting', quite literally, by increasing and better targeting resources on fire prevention. Records of where fires have occurred historically are now supplemented by a wide range of external data and analytics is used to identify trends and those properties and people with the highest future fire risk.

- "What is not measured well, will not be managed well... improved management information drives improved cost control".

**Operational Efficiency Review:
April 2009**

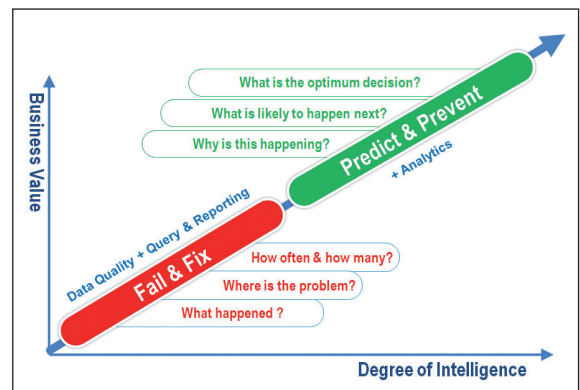


Figure 1

² Harvard Business School Press, 2007.

Despite these compelling examples of the organisational value of information, there remain many more organisations that are not only held back from achieving their corporate goals by poor management of information, but are also at significant risk. This is particularly true of the public sector, where there have been a number of well-publicised examples of failures in basic disciplines such as information security. Amplified by media frenzy, such events rapidly destroy public trust and/or market confidence. As a result, some public sector bodies have adopted a 'security-centric' approach and have simply stopped sharing information, even within the same organisation and where it is legitimate and fully justified in terms of public value. However, the consequences of failing to share information effectively are well known, and include high profile cases such as, Soham, Shipman and Baby P.

Nevertheless, there are signs that, at policy level at least, the 'asset-centric' approach to information management is winning through. This is evidenced by a blizzard of reports on the need for better use of information in the public sector, including from the Knowledge Council (*Information Matters*) and the Cabinet Office (*The Power of Information*). Similarly at local government level the Audit Commission (*In the Know; Is there something I should know?*) and the Department of Communities and Local Government (*Effective Partnership Data Management*) have published a number of reports focusing on the importance of improving information management in order to improve performance.

One common theme from all these reports is the importance of exploiting and sharing information assets. In addition, there is a recognition of the need to increase the status, capability and capacity of information professionals and to rationalise the tools, processes and approaches across the public sector.

TWO THEORIES OF INFORMATION

Before going any further we need to explore and contrast two economic theories of information – a 'classical' theory that focuses on the use of information for control, and a 'modern' theory of information that focuses on learning and adaptation.

Information for control

One of the early tasks of organisational theorists was to explain how to manage the large, complex manufacturing businesses that emerged in the US at the end of the 19th century. The classical theory is therefore based on a vision of economics and of economic actors which is mechanistic and drew heavily on models from physics and engineering.

Mechanical paradigms were the natural choice for the challenge of managing large but relatively stable businesses. The focus of information was therefore regarded as *control*. We have a model of how the world works or how we want it to work – a production plan, a marketing plan, a financial budget – and we use information to alert us to a deviation from plan or to help complete aspects of the plan that were incomplete. In response, we either change actions or modify the plan.

■ “Customer data is more valuable than the store walls.”

Luc Vandevelde, Managing Director, Promodes Carrefour

Information for learning and adaptation

More recently, in order to cope with the reality of increasingly complex business ecosystems, and the high pace of change, a paradigm has emerged that has its roots in the adaptive models of modern biology. In the modern world economic boundaries are blurred and individuals and firms operate through relationships, networks and alliances which transcend formal definitions of an entity. In the mechanical paradigm, individuals and firms respond to their environment, but cannot change it. In the adaptive paradigm, they respond to their environment but also change it by their actions and evolve as they do so.

Ian Davis of McKinsey refers to the need for organisations to be agile to cope with 'the new normal', a turbulent and fast-changing world marked by persistent uncertainty and change plus unrelenting cost pressure. Successful organisations therefore need models not just of how their world works, but of how the world might be, and information systems must yield the information flow to support this modelling. The complex adaptive system paradigm offers a more exciting, but challenging, vision of the role of information. In the classical paradigm, information simply holds back the flood of disorder to a greater or lesser extent. In the modern paradigm organisations that can learn and adapt can create new order. It is this ability to support agility and proactivity that is key to the modern theory of information.

Arguably, the information balance shifts from adaptability to control as one moves down the organisational hierarchy, and as the balance of managers' responsibilities shifts from strategy to implementation. However, one must not over generalise – in a 'learning organisation', learning takes place at all levels. The global trend towards 'pervasive business intelligence', which describes the use of information resources to support decision making throughout the organisation at all levels, is a reaction to this.

As more and more organisations find themselves in a rapidly changing economic and social environment they begin to recognise the importance of information in helping them manage uncertainty. In the private sector the pressure for change comes from the increasingly competitive global economy. Traditionally public sector organisations have lacked such a 'burning platform' to drive action - hence research consistently finds that they tend to be at lower levels of 'information evolution'. However, the combination of the increasing reliance on a mixed economy for public service delivery and the 'perfect storm', created by rapidly increasing and fragmenting demand and the budget crisis, are proving to be a strong incentive for change in attitudes to information assets in the public sector.

Nevertheless, in the modern world there are still aspects of economic life that are closer to the classical model. Following the failure of risk management that led to the recent financial catastrophe, we are now powerfully aware of the continuing need for control. All organisations need information for control as well as information for adaptation and learning; information for efficiency versus information for flexibility and transformation. So it is not that a modern theory of information has made the classical theory redundant but a matter of getting the balance between the two roles of information.

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THE INTANGIBILITY PARADOX

How information assets compare with other assets

How does information fit within conventional notions of an asset? Information assets are not always easy to identify. They do not arrive shrink-wrapped - they may be complex and interrelated and may have been developed internally over a long period.

In accounting parlance, an asset is 'the right or access to future economic benefits that is controlled by the firm as a result of past transactions or events'. So from an economic perspective a defining feature of any asset is its longevity. Information has a *stock* and a *flow* aspect in a way that physical assets usually do not, at least to the same degree.

Individual items of data are frequently transitory – they are specific to a place and time. A stock of information, an information resource, may only have longevity if it is replenished with a flow of new data. The extent to which the stock will need to be replenished and the frequency of updating, depends very much on context. In financial markets information resources are commonly updated daily, or even by the second.

So in conventional asset terms, a stock of information could be viewed as an asset that may require continuous maintenance to preserve its functionality. It follows that information is often most usefully thought of as an aggregate. For example, in an HR setting, the unit of information could be the personnel record of one individual, which is compiled from data from many places.

Like some other intangible assets, a distinguishing feature of information assets over conventional assets is that, although they can depreciate over time if not maintained, they are not depleted by use. So the marginal cost of exploiting them is very low. This is an important reason why intangibles can be so valuable. In commercial applications non-consumability generates a winner-take-all economy. You might spend \$1bn building the world's best gearbox plant, but once it reaches capacity there is room in the market for other less-efficient plants. But, if you spend £1bn creating a patent for some blockbuster drug then you could take the whole market, there is no capacity limit. Similarly, the same information assets can be reused many times and, unlike say cash or buildings, often at the same time. Indeed, information assets can be self-generating, because the quality and accuracy of information tends to improve with use and in combination.

Intangibles and the balance sheet

As an asset, information should be subject to the normal disciplines of accountability. The ideal state is easy to describe. Suppose organisations could measure the cost and the value of their information assets, then these information assets would sit in the balance sheet alongside operating assets like buildings and machines, and alongside financial assets like cash and receivables. In terms of accountability, this would be the gold standard. There would be little need to worry about efficient investment and stewardship of information assets, because they would be subject to all the financial disciplines that ensure resources are used efficiently in a well run business. Those disciplines are principally three:

1. The visibility of **balance sheet recognition** would help ensure proper care and stewardship of the information assets.
2. The **regular testing of asset values** would provide strong incentives for managers to use these assets efficiently. In a company, the impact is felt in the measurement of profit and the measurement of return on capital. In those parts of the public sector required to do resource accounting, there is an impact on the capital charge.
3. The **regular measurement of return on capital** drives a ceaseless quest to create value, for investors or for taxpayers, and a search for new information investments where value exceeds cost, abandoning old ones, where it doesn't.

However, accounting rules do not allow 'intangible' assets like information into the balance sheet – even when such assets represent the main source business value. As developed economies have evolved from the industrial age into the information age, so has the relative importance of different asset classes – and intangibles have emerged as the leading asset class. For example, according to research by investment firm Ocean Tomo, in the 1970s factories, equipment and inventory made up over 80% of the stock market's value. Thirty years later, partly because the outsourcing of many manufacturing processes to the emerging economies in India and Asia, tangible assets account for only 20% of the S&P 500's value. Intangibles such as brand, knowledge and information are the key sources of corporate value in the modern age.

This also means that we are moving from a world where the company has boundaries with inputs and outputs, to a world where the company is more virtual. An organisation such as Dell is the epitome of this new model. Dell has little physical plant and inventory but it does have a brand and intelligence about consumers and supply chain logistics that enable the fast delivery of on-demand PCs. Its value is not created within its own walls but by its ability to manage and leverage the power of its ecosystem.

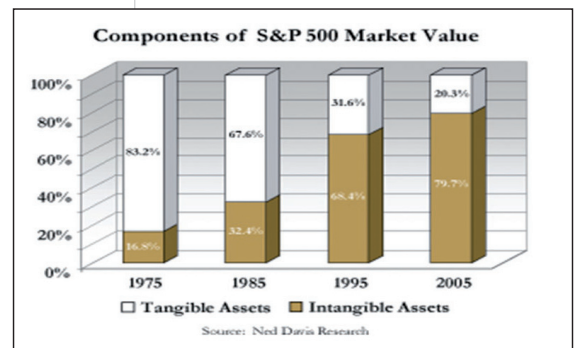


Figure 2

Hence why, during mergers and acquisitions, a company is rarely valued at its book value. Investors are interested in a company's ability to generate future profits and therefore in the quality of its intangible assets.

The obvious response to this is to assert that accounting has not caught up with the knowledge economy, and to press for the rules to be changed. But the same rules apply to all intangibles and these rules are not likely to change any time soon, because there is a very good reason for the accounting treatment of intangibles, which goes to the essence of what makes assets like information valuable.

An asset that is in competitive supply cannot be a source of competitive advantage because everyone else can get one too. Assets that confer competitive advantage are likely to be complex and specific to the business. It is precisely because they are unique that they offer differentiation. Their value is organisation-specific – it is a function of the benefit they will confer in the future, which may be very real and very large, but it is also uncertain and contingent. These assets don't fit straightforwardly into the binary, black-and-white world of the balance sheet, which provides a snapshot of past activities and requires assets to have an easily-measurable market value.

So the great paradox of intangibles is that what makes them hard to account for in conventional terms is the direct result of what makes them valuable, which is their uniqueness. But though they are hard to account for, the potential benefits of accountability and quantification are particularly great for intangibles, in fact, accountability is essential. Just because intangibles cannot be counted on the balance sheet, does not mean that they do not count and should not be counted.

The procedures for the identification, valuation, care and custody of physical and financial assets, are well embedded in modern organisations. Best practice may not always be followed, but we all know what it is. Most organisations also now apply disciplines of accountability to human capital. They understand that people are valuable assets and they appoint specialists, ie: the HR function, to record and care for human capital and to invest in training and developing people.

Similarly, the best pharmaceutical companies with their R&D assets, and branded-goods companies with their brands, have developed an environment of accountability for these intangible assets. They try to give some of the payoffs of conventional balance sheet accounting, in order to encourage and incentivise the right decisions from managers.

However, information management is a new discipline and although examples of best practice are available it certainly hasn't yet reached the 'corporate instinct' level.

■ So the great paradox of intangibles is that what makes them hard to account for in conventional terms is the direct result of what makes them valuable, which is their uniqueness.

IDENTIFYING AND VALUING INFORMATION ASSETS

Identifying what you have, where it is, and who is using it

A balance sheet has two dimensions: it lists the organisation's assets and it assigns values to those assets. It follows that the first step in building an information culture is to ensure that the organisation knows what information assets it has and what it needs. This requires an information audit, or information asset profiling exercise, in order to create an information asset register (IAR), with protocols for asset identification and recording. The IAR provides the basis for the stewardship and valuation of information assets and it is essential if the organisation is to transform and optimise its information assets.

Elements of an Information Audit

Typically the audit will identify:

- What information is held
- Who holds it
- How it is held and managed
- How it flows through the organisation and its ecosystem.

The audit will also assess the sources of information value:

- What the information is used for
- How critical the information is to the organisations strategic goals
- Whether it should be retained
- Who else needs existing information but does not have access
- Where information and information resources are being duplicated
- What gaps are there in the information the organisation requires
- User satisfaction, information bottlenecks and inefficiencies.

Even in the world of physical assets, an asset register may be missing. For example, though governments control enormous portfolios of assets, balance sheet accounting by governments is still not universal. Moreover, it is clear that some governments do not even have a physical asset register, so they don't actually know what assets they have. Just a decade ago the UK government was a pioneer in balance sheet accounting, and a necessary precursor to that was the compilation of a complete asset register.

Whether or not public bodies traditionally saw the business need for the stewardship and valuation of information assets, the Freedom of Information Act created a pressing regulatory need for them to know what information they had and where it was kept. In the public sector, the need to comply with legal requirements such as this saw a significant rise in compliance-orientated technical solutions such as data quality and electronic records document management. More recently, there has been an upsurge in demand for more business-orientated applications such as business intelligence and analytics, applications that do not simply clean and archive structured or unstructured data for compliance but search and analyse it to provide insights that can transform performance.

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Assessing the value of information assets

Having identified the organisation's information assets, the next task is to value them. Failure to value information assets will have a number of consequences. It maintains the traditional view of information as an enabler or 'overhead' and this will probably add to costs, as the organisation continues to retain information that has little value, and reduce its value as data quality and information usage remain poor. It leaves investments in information vulnerable to budget cuts, particularly in hard times, as it is difficult to defend new or even existing investments in information assets unless their value is quantified and widely acknowledged. As a result, the very investments that are most needed to help organisations ride out the storm are at most risk from the 'blindfolded budget axeman'.

The value of an asset to an organisation is the difference between the value of the organisation with the asset, and its value without the asset. This is the value of using an asset, which is called its *economic value* (EV). The *value added* or *value created* by investing in an asset is the difference between its economic value and its cost. Another way of thinking about value added is to express it in terms of a return on investment - the annual stream of benefit divided by the cost of the asset.

In the case of a private sector firm, we would measure economic value as the value of the incremental cash flow or profits expected to result from using the asset³. In general, and in the case of a public sector organisation, we can define economic value broadly in terms of the value of the incremental benefit expected to result from using the asset. In some cases this benefit may have to be estimated and this may involve judgement and an element of subjectivity.

In practice, however, valuing information often turns out to be more straightforward than might first appear, especially if one is both diligent in identifying areas of value added and creative in finding ways to quantify it. Even when it is challenging to quantify the value of an information investment fully, a partial analysis will often suffice to establish the case.

Often business cases or 'benefit-realisation exercises' limit the scope of the search for value to only the business unit that made the initial investment. Yet it is generally the case that many others within the wider enterprise and its ecosystem also benefit from the improved decision making that the information enables. This is particularly true in the public sector, where the search for value-added can extend to not only other public sector bodies but also delivery partners in the private and third sectors as well as to public value for the country as a whole.

The economic value of information often comes from saving resources or costs elsewhere in the system. There may be measurable cost savings from the accounting system, or the resources saved may be time, or space.

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³ If there is an external market for an asset, then an alternative way to realise value from an asset is to sell it, that is sell the property rights to it rather than selling the use of it. We will ignore this option because, as for most other intangible assets, in most practical situations the alienation of information through resale is not an option.

These are usually quite easy to measure so, to this extent, information investments are readily quantifiable. Moreover, they are as measurable in the public sector as they are in the private sector.

The concept of *deprival value* is of great help in the psychology of identifying areas of value. Decision makers often find it hard to answer questions like ‘what is this information worth to your organisation?’ But they find it much easier to answer the question ‘what would the organisation lose and what would the consequences be if it were deprived of the information?’ Thinking in terms of deprival value helps enormously to focus on the economic value of a resource and how it would have to be replaced. This sort of discussion is the natural preliminary to the creation of internal markets, to benchmarking against external markets, and of outsourcing.

Value Assessment Methodologies

A number of proprietary methodologies exist to assess information value, though as yet none is in widespread use. These include:

- **Forrester** – Total Economic Impact™ (TEI) methodology. TEI measures costs and cost reduction, which are areas that are typically accounted for within IT, but also weighs the enabling value of a technology in increasing the effectiveness of line-of-business activities.
- **SAS & Shark Finesse** – ‘Unlocking the Value of Information’. This is similar to the Forrester approach. It comprises an interview process and software tool for calculating the return on investment and public value from business analytics, at either the initial business case stage or at the subsequent benefits realisation stage.
- **The National Archives** – ‘Information Management Value Model’. Assesses the benefits of content and document management.
- **Data Connects / Tribal** – ‘Customer Data Integration’ evaluation. An approach used for a project to identify the value of CDI.

Some examples

The following are some anonymised examples of organisations that have begun the process of calculating the value of information assets. Currently this has only been done at project level, rather than enterprise level, but the examples serve to illustrate where to look for sources of value. We have selected mainly public sector examples purely because the valuation of information assets tends to be regarded as more problematic in that sector.

- **A police force:** The force calculated that its investment in business analytics solutions has reduced the administration time required to manually collect, cleanse and report on data, with a value of around £5.9m per annum. However, this does not include the much greater savings and benefits from increased operational effectiveness, for example, improved crime prevention and detection.

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- **A local authority:** Data Connects (a group of information experts from across Local Government) employed Tribal to research and calculate the value of the integration of customer data to the average London borough. Tribal used interviews and workshops to calculate that Customer Data Integration is worth around £5.4m over five years to the average borough, most of which is cash savings. These savings mainly result from reducing incorrect payments and improving revenue collection, such as parking fines, but also include some administration savings, such as previous time spent searching for information.
- **Tax & Benefit agencies:** One large tax department is reducing tax fraud, error and debt by c£100s of millions per annum by using business analytics to target, detect and prevent defaulters and fraudsters at both individual and corporate level. Over 5 years the fraud application alone will have an ROI of over 1000%. Another large benefits department expects to identify an additional £400m per annum in fraud and error by integrating and analysing data from across a range of departments.
- **Welfare agency:** One major agency tripled the uptake of unclaimed benefits by vulnerable consumers, using improved segmentation and targeting. It found it hard to quantify the benefits from this but could identify the 'avoided costs' of previous untargeted marketing campaigns. In addition, it is possible to quantify the avoided cost if vulnerable consumers can no longer live independently and end up in expensive residential care or hospitalised as a result of poor welfare.
- **A Trading Fund agency:** The agency used business analytics to better align finite inspection resources to risk. This has reduced the number of enforcement checks by 15% while increasing the number of prohibitions by 32%. In turn this improved revenue collection and contributed to the biggest post war reduction in the numbers killed and seriously injured on the roads. Moreover, by focussing less on compliant customers, the agency increased customer satisfaction by 22% and has been congratulated by a Select Committee for being the model of best practice in its sector across Europe. The agency is in the process of seeking to measure the financial value of these improvements both to itself and to its wider ecosystem using, for example, a proxy value for 'lives saved' based on the cost to the UK of serious accidents (in terms of emergency services, hospitalisation, courts etc).

Ongoing monitoring and communication of value

Information valuation exercises can be resource hungry and the value of information will, of course, change according to changing context and a wide range of factors. Therefore, as with the valuation of other intangibles such as brands, organisations need to find proxy measures to measure the success of its information management approaches and whether information value is increasing or decreasing.

These measures may include some or all of the following:

- **Data security:** A basic principle of this paper is that we care for what we value. It follows that one measure of whether the organisation understands the value of its information will be a reduction in the data losses and breaches identified. However, it may be natural for this figure to go up initially, simply because the organisation will be more sensitive to the importance of reporting losses and breaches.

- **Data quality and timeliness:** Clearly, as the quality and/or timeliness of data increases, so does its value, because business user trust and usage increases and better decisions can be made. An old saying in the retail industry is that: 'If information is available monthly, then decisions taken will take 6 months to have an effect. If it is available weekly, then decisions take a month to influence outcomes; if daily, it takes a week; and if hourly, the decisions can have an impact the next day'. The reason why most major retailers operate on real-time historical data and why many use predictive analytics are therefore clear.
- **Data users:** The number of data users is also a proxy of information value. The more people within the organisation (and across its wider ecosystem) who are making legitimate use of information for improved decision making, then the greater the 'value multiplier' effect.
- **Data uses:** The number of applications to which the information is used is also a sign of information value. For example, the UK Vehicle and Operator Services Agency initially invested in business intelligence and analytics to improve reporting and risk management. However, once the organisation became familiar with the tools, usage quickly spread to the analysis of traffic hotspots, monitoring of MOT station quality standards, demand forecasting for vehicle testing, location analysis etc.
- **Business user satisfaction:** User satisfaction with information is a key indicator of value. For example a survey conducted by Better Management identified that 46% of organisations that adopt a Business Intelligence Competency Centre organisational model (see page 14) achieve an increase in user satisfaction (eg because information workers are more proactive in engaging with and assisting users to identify and solve business problems).
- **Business results:** Once the correlation between improved use of information and specific business results has been demonstrated, then it is possible to measure value directly from the achievement of selected strategic KPIs. For example, retailers have identified a clear link between improved information and factors such as increase in stock availability, reduced stock holdings, increased sales, etc.

However, it is still not enough to regularly monitor these proxies for information value. The key to success is also to communicate that value throughout the organisation. Only then will front line workers begin to understand the importance of the data they are handling and begin to care for it as they would the organisation's money.

For example, in January 2008 the Metropolitan Police were in a position where only 1 of their 32 boroughs rated 'excellent' for data quality and 14 were rated 'poor'. Within 12 months they transformed their performance with 18 boroughs achieving an 'excellent' rating and none being rated 'poor'. A key part of this transformation was the communication of the operational benefits of data quality to front line officers. One case concerned an offender who was arrested for a daytime burglary. When records showed he had separately been stopped at 3am the next morning and that there had been a reported mugging in the vicinity, he was placed in a line up and identified by the victim as the mugger – all within 24 hours, due to accurate and timely data. The Met's data-quality programme manager stressed that regular communication to and the nurturing of stakeholders was critical to their success.

■ The key to success is also to communicate that value throughout the organisation.

A STRATEGY FOR MANAGING INFORMATION ASSETS

The management of information assets is an evolving discipline and, unlike the management of physical and financial assets and even human capital, best practice has not yet reached the corporate 'instinct level'. So at this point in the evolution of information management, organisations also need to monitor closely the maturity of their information management evolution at a strategic level. They need to know where they are, where they are aiming to get to and how to measure that they are moving in the right direction.

Information management maturity

Information Management Maturity models assist organisations with the process of benchmarking their current position, targeting future status and measuring progress. This type of exercise is important to the development of a prioritised and coherent strategy and roadmap. Without it, there is likely to be a long, piecemeal and expensive journey with many wrong turns on the way.

Information Management Maturity Models

The maturity models on the market range from measures of the maturity of specific components, for example:

- HMG Information Assurance Maturity Model
- AMR research Business Intelligence / Performance Management Maturity Model
- The Data Warehouse Institute Maturity model
- Teradata Enterprise Data Warehouse Maturity Model.

And more holistic measures across all information management dimensions, for example:

- SAS Information Evolution Maturity Model
- Gartner Enterprise Information Management Maturity Model.

Research across all sectors demonstrates a correlation between information management maturity and overall organisational performance. This correlation has also been noted in a recent Audit Commission report ('In the Know'), which identified that 3-star and 4-star-rated councils also tended to be rated higher for their use of information.

The evidence from over 1,000 maturity assessments by SAS is that the public sector lags behind the private sector in terms of current stage of evolution, averaging around 1.5 points on a 5 point scale compared to the private sector average of around 2.5. The biggest 'lagging dimension' for the public sector is not 'technology' but 'culture' followed by 'people'. The absence of competitive pressure appears to be the biggest reason for this. Similarly, in Gartner's annual survey (see page 2), business intelligence technology remains some way down the priority list for CIOs from the public sector; perhaps because there is less demand from the business users.

Research by Capgemini also suggests that the key barriers to information exploitation are not system-related, rather they are staff skills (31%), user culture (30%) and lack of leadership (23%). They note that the areas with the most potential to benefit from improved information are not the areas where organisations are currently investing, for example, customer management. Capgemini identifies three key success factors: treating information as a strategic corporate asset, leadership and changing staff behaviour and skills.

Organising to deliver the strategy

Once a strategic direction has been set, the next best-practice step in many information-mature organisations is to set up a 'centre of excellence', often called a 'Business Intelligence Competency Centre' (BICC), to implement the strategy. The analyst group IDC define a BICC as "...a permanent, formal organisational structure, which includes representatives from the business and IT, to advance and promote the effective use of business intelligence to support the organisation's business strategy."

Populating the BICC with people who have business and business-analyst skills, not simply IT skills, is vital because one of the main objectives of BICCs is to better connect IT and information workers with the business and to proactively promote better and more widespread use of information throughout the organisation. This need is underlined by the McKinsey finding that internationally nearly 75% of senior managers highlighted the importance of IT being more tightly integrated with business strategy, but only 27% said that had been achieved in their company. Clearly a BICC has a big role to play in bridging this gap.

NTT DeCoMo, a global telecoms operator, set up a BICC in 2003. In the 4 years that followed, the number of business units using analytics increased 15 fold and the number of data extractions by 220%. In that same time period business performance increased dramatically, including a reduction in customer 'churn' by 37% to an incredibly low level of 0.77%. This was enabled by the 'predict and prevent' capabilities of analytics, which allowed NTT to identify customers who were exhibiting behaviours typical of someone about to change providers, and to intervene with appropriate offers before that happened. The value of this reduction in churn alone was \$84m per annum.

Other key drivers for adopting BICCs include the need to consolidate business intelligence and analytics tools and scarce and thinly-spread information management staff. Failure to do this reduces efficiency and effectiveness, for example due to high levels of duplication. It also results in high wastage amongst valuable and increasingly in demand information workers who are subject to poaching by organisations who are further advanced on the information maturity evolution curve.

Adoption of the BICC organisational model will be particularly important to public sector bodies, who need to not only protect the resources they currently have but also need to play catch up and accelerate their exploitation of information resources. The Knowledge Council, The Audit Commission and The Department of Communities & Local Government have each identified significant capability and

■ The Knowledge Council, The Audit Commission and The Department of Communities & Local Government have each identified significant capability and capacity problems in information management within the public sector.

capacity problems in information management within the public sector. However, at the same time, ever tighter budget constraints will make it likely that only the larger departments will individually be able to recruit the required resources in the future. It is likely therefore that most small to medium-sized public sector bodies will need to consider shared-service BICCs.

WHAT DOES THIS MEAN FOR THE ROLE OF THE CIO?

The role of IT leadership is changing in parallel with the changing role of the CFO that we discussed earlier. The IT function has also experienced significant outsourcing and, reflecting the trend from 'iT' to 'It', there is a parallel trend for the role of Chief Technical Officer (CTO) to give way to the Chief Information Officer (CIO). The CIO's role is less about managing the technology and more about expert commissioning and ensuring that the outputs from the technology are turned into information and put to good use by the business. In businesses that do this, IT is regarded as a strategic value generator rather than a cost centre.

This evolution is exemplified by the mission statement of the CIO and the IT department at Nokia: *"Ensuring growth – accelerating transformation"*. Information has been declared as one of Nokia's three strategic enablers, alongside people and brand. Moreover, despite the recession, the Nokia CIO is being pushed by board colleagues to invest more in capabilities that will enable greater efficiencies and innovation.

For many organisations in the USA this shift has already occurred. Recent research by McKinsey shows that the CIO reports to the CEO in 56% of American organisations, and that their focus tends to be on strategy and growth. However, Europe is lagging in this evolution, with only 31% of CIOs reporting to the CEO and their focus remains predominantly on efficiency and utility. This suggests that in Europe, even though the name plate on the office door may have changed to CIO, often the skills and behaviours have not.

McKinsey also found that only just over 33% of business respondents saw scope for IT to improve the management of the IT infrastructure (perhaps because these costs have been squeezed for some years now). But around 80% saw scope for IT to improve its support to business units and to innovate to provide new capabilities

Recent years have also seen a trend towards insourcing – bringing some of the IT functions back in house, often due to dissatisfaction with the value added by the outsourcing supplier. This is perhaps not surprising, because many outsourcing contracts were created in the old days of 'iT', and are proving to be unsuited to the emerging need for 'It' and better quality and faster information and insight.

Many outsourcing suppliers that have been slow to adapt to this trend are seeing not only their margins disappearing, as infrastructure costs are remorselessly driven downwards, but the whole contract being put in jeopardy due to perceived lack of added value.

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- Recent years have also seen a trend towards insourcing – bringing some of the IT functions back in house, often due to dissatisfaction with the value added by the outsourcing supplier.
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The Knowledge Council for the UK public sector acknowledges that there is an abundance of CTOs in the public sector but a severe shortage of genuine CIOs. They are planning significant training and recruitment activity to address this capability gap and to increase the skills and status of information workers generally.

Will this be enough to elevate the CIO profession to board level? The CIO needs to beware the CFO. Arguably, the modern CFO has most of the skills and all of the business drivers and influence needed to manage information as a strategic asset and business value generator. Authentic CIOs who have become intrinsically linked to business value, drivers and processes may be destined to become the Chief Operating Officers (COOs) of the future. But for titular CIOs, who have so far failed to make the required evolutionary leap, it may already be too late and they may be facing a future as an IT contract manager. The outcome of this evolutionary contest will depend on who in the organisation grasps the nettle of information asset management, valuation and optimisation.

SUMMARY

Information is a critical strategic asset for organisations and must be treated and accounted for accordingly. In contrast, predominantly security-centric approaches to managing information rarely succeed even in their limited objectives, because we only truly take care of what we value.

Like water in the home, the approach to managing information must ensure not just that it is leak proof but also that it is free flowing and on tap where and when it is needed. But, as with water, information can be taken for granted and often its value is only fully understood when one is deprived of it. Therefore, it should also be 'metered' and accounted for, so that its cleanliness and usage can be monitored and managed and it will be more appreciated for the precious resource that it is.

As the business lead for value identification and maximisation, CFOs should take the lead role in promoting, managing and accounting for information assets. CIOs should encourage this process, because it will forge closer links with the wider business and change the perception of IT from that of a cost centre or utility to a strategic enabler.

The current recession provides even more reason to encourage and accelerate this evolution in approach to managing information. When resources are scarcer the margin of error is less and the stakes are higher, so it is even more important that informed decisions are taken. Doing more with less requires working smarter, not just harder, and the most successful organisations are achieving this by approaching and exploiting information as an asset.



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