A Governance Framework for Information Management in the Global Enterprise

Joe Peppard, Chris Edwards and Rob Lambert
Information Systems Research Centre,
Cranfield School of Management,
Cranfield,
Bedford MK43 0AL
Phone: +44 1234 751122
Email: jpeppard@cranfield.ac.uk

ABSTRACT

The governance of information is a neglected area of research in the information systems literature. Information governance entails outlining responsibilities and accountabilities, defining the set of rules guiding decision making, and managing the interdependencies across the range of decisions with regard to information, systems and technology. The paper first surveys the literature for guidance, drawing out implications for information governance and arguing the organisations should define an information constitution. A number of key dimensions are then extracted from this review and an embryonic framework developed. The paper concludes by highlighting some research directions.

Key words: information strategy, governance, information constitution, global enterprise

How do organisations co-ordinate and control information, systems and technology decisions? How do they assign decision-making responsibility? How are information policies established? How are priorities for application development established? These seemingly innocent questions are ones which organisations are continually addressing yet few organisations appear satisfied with their answers.

The question of co-ordinating and controlling information related decisions is particularly challenging when one examines a global company with operations dispersed throughout the globe, perhaps having different market requirements, operating in different cultural settings and different time zones, across multiple product ranges and customer segments, with a possible variety of distribution channels. Each global location may be at a different stage regarding its technological development and assimilation. Within this context, what aspects of information related decisions should be made locally and what aspects should be mandated from the centre? Even with decisions which are devolved to business units, to what extent should guidelines for decision making be provided, perhaps by the setting of parameters, or should local management have full discretion? These questions, whilst particularly pertinent to global organisations, are also of central importance to all organisations. Effective information management has become a competitive weapon in many industries, and organisations that are unable to co-ordinate and control information related decisions will be at a distinct disadvantage, which may threaten their very survival.

Over the years frameworks and tools for IS and IT planning, investment justification, application prioritisation, resource allocation, IS development, project management, etc., have been developed by both practitioners and researchers. In essence we have all the pieces of a jigsaw but lack a 'picture' to guide us in putting together these pieces, particularly in a distributed organisation. This picture, which determines how the pieces fit together, is the *information governance* structure which will co-ordinate and control these independently understood pieces. The concept of governance is concerned with the set of rules which guide decision making in business, including both formal regulations and informal customs and the allocation of responsibility and accountability (De Jong, 1997; OECD, 1995; Tutty, 1998).

The management of information technology raises certain questions concerning scale, infrastructure planning and risk (Earl *et al*., 1996) and it has been suggested that there are distinct advantages to be gained through standardisation (Butler Cox Foundation, 1991). Therefore, it seems logical to suggest that there are some of these decisions which should be managed centrally and others which individual business units should be permitted to have more discretion over (Brown and Magill, 1998; Cross *et al*., 1997). For example, telecommunications and other infrastructure which are shared across the global company may require centralised control, given global co-ordination requirements, while IT help desk support may be more effective if localised. Even with the latter decision the issue of scale economies must be factored into any choice. Outsourcing to third parties, does not eliminate the need for governance, indeed it could be argued that it becomes even more critical when the supplier is not part of the organisation and is motivated by differing criteria.

Despite its increasing criticality, information governance has not been adequately addressed in the IS research literature. The consequences of not having a governance

framework for information management, or having an inappropriate one, are only too evident. At a purely technical level, systems do not easily integrate due to the incompatibility of hardware or software. There may be difficulty in exchanging information, gaining a single view of a customer, or comparing business unit performance and generally a lack of flexibility in responding to changing business circumstances. Aspects of technological development at the IT industry level are contributing to improvements in this area, for example, we now have standards for data sharing; open architectures are leading to increased software interoperability; TCP/IP is driving the convergence of voice and data networks. The governance structure for information is less developed but is even more fundamental to future business success as organisations need to share information about clients, markets, knowledge and competitors.

The concept of information governance is not new, indeed it was thoughtfully addressed by Buchanan and Linowes as far back as 1980, when the technology was becoming smaller and less expensive and hence could be distributed to business units and even individual departments. Their discussion, however, focused primarily on governance issues related to managing the supply of technological solutions to the business. In today's increasingly globally competitive environment, where information can demonstrably provide competitive advantage, such issues still remain relevant. Yet information governance also needs to more explicitly include responsibilities and co-ordinating mechanisms for managing the overall role of information in the organisation's business strategy.

In this paper we explore the concept of governance in order to develop some guidance for creating a governance structure for information in complex organisations. We first examine how the concept of governance is addressed in domains of study outside of IS. We then draw out some lessons and implications of this in relation to information governance and, building on this, an embryonic information governance framework is then developed and described. Finally, some research areas are suggested.

What is being governed?

Before exploring the concept of governance it is important to consider what is meant by information governance in organisations. In this paper the term information governance is used to describe all those mechanisms by which responsibilities and accountabilities are allocated and policies derived in relation to all those aspects that pertain to the management of information. This will include not just the definition of the information required and the specification of the systems and technologies that exist to supply this information, but also the composition of steering groups, their constitution and scope, the creation of appropriate organisational cultures in relation to information and the alignment of the information processes to support the operation of the IT group(s).

This paper draws a distinction between the *demand* for information (that some term IS or infostructure and the *supply* of information (that some term IT or infrastructure) (Checkland and Holwell, 1998; Earl, 1989; Peppard, 1999; Ward and Griffiths, 1996). Included in the former are all those decisions concerned with aligning applications to

the business strategy and specifying in detail the business requirements of these. Included in the latter are those decisions concerned with developing the appropriate technical infrastructure to support the long term business vision, as well as defining the standards, policies and methods that are to be used in developing and operating the application. This would also include those decisions relating to IT competencies, skills and knowledge to specify, develop and maintain the technology (Earl and Sampler, 1998; Feeny and Willcocks, 1998).

The range of supply side options is increasing as organisations are no longer compelled to source all IT resources in-house, increases the importance of explicit consideration of information governance. Options range from sub-contracting software development to the wholesale outsourcing of all technical requirements. However, even with "total outsourcing" there are aspects of IT management which should remain in house (Dutta, 1996; Lacity *et al*., 1996) and which place new responsibilities on the IT organisation, such as managing relationships with the outsourcing vendors (Venkatraman and Loh, 1994, Lacity and Hirschheim, 1995). Unfortunately, research highlights that many firms outsource their IT without giving sufficient attention to clarifying those decision areas that relate to the governance of information (Dutta, 1996; Lacity and Hirschheim, 1995).

Information governance in the IS literature

The empirical studies that have been undertaken investigating the most appropriate information governance structure have tended to focus upon the IT organisation and the positioning of decision rights within a functional framework. There has been some recent work on capabilities for the IT organisation (Feeny and Willcocks, 1998) and general imperatives for the IT organisation (Rockart *et al*., 1996). While insightful, these studies focus upon *supply* issues and highlight the importance of the governance of *demand*.

The management of 'demand' and 'supply' in the global content is complex. The debate in the literature is portrayed as alternating between centralisation and decentralisation although the "middle ground" has become an appealing alternative (Buchanan and Linowes, 1980a, 1980b; George and King, 1991; Hodgkinson, 1996; Von Simson, 1990). Von Simson (1990), for example, subscribes to an IT organisation design with IS/IT roles played by both a central IT organisation and the business units and prescribes a "centrally decentralised" IT organisation with strong dotted line reporting relationships. In a similar vein the federal structure is often seen as capturing the benefits of both centralisation and decentralisation. With such a structure, business units receive a responsive service from decentralised IT functions, whilst at the same time a corporate IT function provides group-wide IT services and exerts some degree of central leadership and control of IT activities (Hodgkinson, 1996). While appealing, little guidance can be found as to what these decisions are and how to make it work. Table 1 summarises the dominant structural arrangements found in the literature, highlights the advantages of each structural type for the global enterprise and identifies the critical management issues.

Structural arrangements for the IT organisation	Strategies for managing global IS/IT	Advantages	Critical management issues
Independent global IS/IT operations	Subsidiaries pursue independent system initiatives	Business units have ownership Users control IS/IT priorities Responsive to BU's needs	Integration Variable standards of IS/IT competence "Reinvention of wheels" and duplication of effort Little synergy Cost
Headquarters-driven global IS/IT	Corporate wide IS/IT solutions imposed on subsidiaries	Scale economies Control of standards Critical mass of skill	Politics Unresponsive Does not meet every business unit's needs Effect on customer
Informal co-operation in global IS/IT	Informal social networking between the head office and foreign subsidiaries Usually brought about by movement of key IS/IT personnel	Awareness of IS/IT issues in the global enterprise	Co-ordination and direction setting Leaving too much to chance
"Federalism" (Integrated global IS/IT)	Balancing central control and local autonomy without losing the advantage of world-wide co-ordination and integration	Group-wide IS/IT strategy and architecture with devolution where appropriate	Complexity Execution Timing Defining "where appropriate"

Table 1 Summary of information management structural arrangements for the global company (from Peppard, 1999).

From this stream of literature examining the role, function and position of the IT organisation a number of observations can be made. First, no distinction is made between decision types. For example, there is an implicit assumption that if the technical infrastructure is decentralised then *demand* planning is also decentralised. Alternatively, is feasible for significant aspects of the IT infrastructure to be decentralised while *demand* planning may be predominantly centralised. Further even within supply or demand it quite possible for some decisions to be centralised whilst others are decentralised. For instance security policies may be managed centrally whilst project management methods may be fully decentralised. In fact such a mixed approach can be observed in many organisations although the rationale for such an approach may not be so transparent.

Second, the structural arrangements identified in table 1 are centred around the premise of *control of resources*. For example, independent global IT operations is seen as advantageous for individual business units as the available IT resources are under the control of business unit management rather than the corporate centre. Whilst implementing customised designs for business units may lead to higher co-ordination costs (Ghoshal and Nohria, 1993; Porter, 1985) there is a growing body of evidence suggesting that global firms where business units are custom managed outperform firms which force an "indiscriminate fit" (Bartlett and Ghoshal, 1990; Gupta, 1987). Despite this, in the context of IS/IT management, it has been suggested

that some aspects are more appropriate to manage on a global basis (Earl *et al*., 1996; Buttler Cox Foundation, 1991).

Third, as structural arrangements they refer little to other mechanisms of organisational governance or their relationship with mechanisms such as financial budgeting or charge-back mechanisms as means of control.

The archetypes in table 1, although useful in providing a high level classification, do not help in defining a governance structure. It does not assist in defining reporting relationships, budgeting processes, specifying cost recovery mechanisms, defining IS planning processes, identifying who is involved, describing a benefits management process for delivering benefits from IT, or prescribing how relationships are to be managed. It does not help in determining local and global responsibilities and the relationship between headquarters and business units and between the business units themselves. Finally, it does not address how demand requirements are prioritised, how to define approaches to investment appraisal, how to determine the appropriate project management methodologies, how to specify policies regarding hardware and software, or allocate roles and responsibilities. To address these limitations, organisations must define an explicit *information constitution*.

Overall the existing IS literature is limited in addressing operational level issues for developing information governance for organisations. Before proposing a framework for addressing information governance we first provide the context for information governance and then explore how the concept of governance has been addressed outside of the IS domain. This provides guidance for constructing our framework.

A context for defining information governance the global enterprise

In a previous paper, one of the authors has developed a framework guiding the formulation of a global information strategy. This framework, illustrated in figure 1, provides the context for defining information governance. It identifies three forces influencing the global information strategy: the global business drivers, the global business strategy and the global business model (see Peppard (1999) for further elaboration). The business drivers, business model and the intent of applying information strategically both promote and constrain the globalisation process, framing the strategic choices open to the organisation.

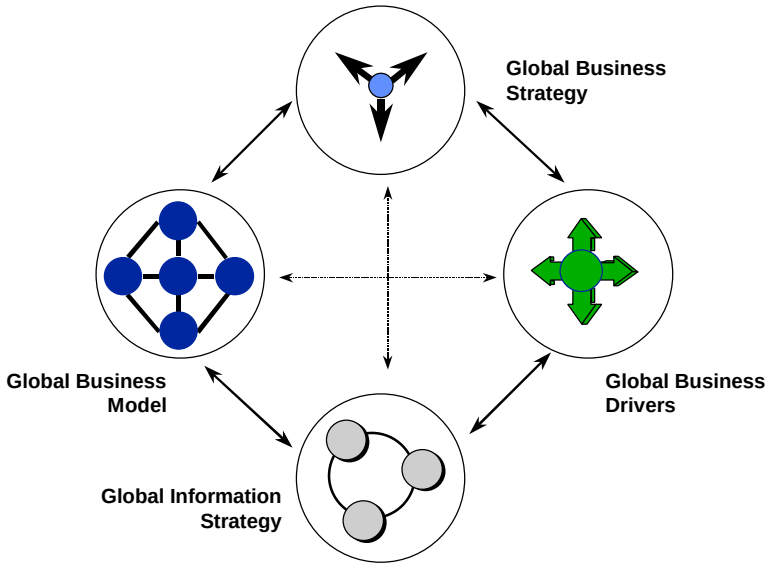

Figure 1 A framework for information management in global enterprises.

The global organisation's information strategy has three components: the global infostructure, the global IT infrastructure, and the global IS/IT suprastructure. The global infostructure, or information demand, is business driven and defines how information and systems align with the global model, the global business strategy and business drivers. The global IT infrastructure is supply oriented and primarily concerned with specifying and provisioning human, data and technological resources. It addresses such issues as data, messaging, technical architectures, IS/IT services and skills and competencies. The global suprastructure defines the governance structure and includes principles, policies and responsibilities at the corporate centre, business units and laterally across business units. It seeks coherence across the range of information, systems and technology decisions.

A survey of governance

In this section of the paper we explore how the concept of governance has been treated outside of the information systems discipline. We have selected a number of areas where the practice of governance is well established or which provide insights into the notion of governance and how it can be articulated or operationalised. The objective is to discuss the literature in these arenas with a view to drawing out lessons and implications and in informing the development of an information governance structure.

The governance and governing of states and countries

The governing of a country or state provides an interesting point to begin exploring the concept of governance as it is probably the most developed as the experience of governance in this arena has a history many hundreds of years. Words like democracy, dictatorship, legislature, federal, constitution, and devolution are part of the nomenclature of government. Different models have been applied in different countries at different times. Even in established political systems, governance structures have

evolved to meet changing social, economic, cultural and demographic evolutions. Within the different systems of government, the roles of the legislature, judiciary, and civil service can be different. There may be local authorities or municipalities to which certain decisions are devolved. There may also different interpretations of seemingly similar notions as, for example, with the federal concept which is operationalised differently in both Germany and the US. The roles of different institutions and actors may also vary, for example, the role and decision-making authority of the President in the US is different to that of the President in Ireland or Germany. While all three have constitutions, Ireland is not a federal state.

Different classification systems have been developed to categorise different systems of government. However, since systems do not fit neatly into rigid categories, they are at best partial and temporary. Aristotle is usually regarded as the father of comparative political analysis, suggesting a classification based on the number of people who participated in government (one, few, or many); on the ethical quality of their rule, depending on whether it was the general interest or in their self interest; and on their socio-economic status. Other classification systems have been based on the party system (one party as with China or a multi-party system as in Nigeria); political development (Weber, 1947); and the economic system.

An interesting way of classifying governance systems is based on the extent of centralisation/decentralisation and the degree of involvement of the general populous in decision making. Such a classification system leads to the definition of four governance environments: centralised with involvement (e.g. democracy: The UK), centralised with little involvement (e.g. dictatorship: USSR in the 1930's), decentralised and involved (e.g. federal democracy: USA), and finally decentralised without involvement (e.g. feudalism: middle ages in the UK). These four governing methods are often reflected in the policies that manage economic activities within the countries applying those methods. For example the USSR underpinned its dictatorship with a centrally planned economy, whilst the USA underpins federal democracy with a free-market system.

In all constitutional democracies officials who make and enforce the law are themselves subject to the law. All government actions must be performed in a legal manner and can be controlled by appropriate authorities. These authorities may include the ordinary courts and the system of common law as in the United States and UK, an elaborate code of laws as in the German Rechtsstaat, or special administrative courts such as the Counseil d'Etat in France.

Most countries have a constitution, written and formally agreed or otherwise, defining the extent of powers and various checks and balances. A trawl of the Internet reveals the governance documents (i.e. constitution) for a number of states and governments (e.g. the US constitution, the Delaware constitution amongst many others). Analysis and summarisation of these reveals the following key components:

Objectives / purposes of the constitution
Principles guiding decisions
Extent of what is being governed
Roles of individuals

Roles of governing bodies
- Membership of these bodies
- Election to membership/appointments
- Meetings of the bodies
- Reports of the bodies
- Relationships with other bodies

Financial responsibilities
Reviews and amendments to the constitution

The governance of organisations

Within the general organisation theory literature four streams of research are particularly relevant to the issue of governance. The first stream is the literature dealing with the general structuring, control and co-ordination of organisation activity (Malone and Crowston, 1996; Mintzberg, 1983). Also included here is the concept of culture (Johnson and Scholes, 1997). In addition, theories, such as general systems theory (von Bertalanfy, 1956) add insight to the debate. The literature on the emerging concept of the virtual organisation also provides insights in relation to aspects of governance (Henderson and Venkatraman, 1998).

It is worth highlighting that organisation theory has identified a number of fundamental co-ordinating mechanisms and these are summarised in table 2. This table highlights the variety of mechanisms which organisations can adopt in co-ordinating intra-organisational activities.

Coordinating mechanism	Basic description and assumption	Literature references
Market system	- Freely available information - Markets are more efficient than hierarchy	Malone *et al*., 1987; Ouchi, 1980; Thompson *et al*., 1991; Williamson, 1985
Hierarchy	Introduces concepts such as 'span of control', 'line', bureaucracy,	Bradach and Eccles, 1989; Thompson *et al*., 1991; Weber, 1947; Williamson, 1985
Gaming	Actors' interests are totally opposed - no communication takes place - equilibrium can be achieved by mini-max strategies - where no conflict of interest the dominant strategies of each player lead to a pareto optimal outcome	Luce and Raiffa, 1958
Voting	Applicable to collective action problems. Core co-ordination mechanism of formal democracy	Arrow, 1951; Olson, 1965
Authority relations	Placing authority for decision-making in one central actor or body - can be used independently of ownership	Ring and van de Ven, 1992
Agency relations	There is a distinction between owners and employees - incentives may need to be constructed to ensure appropriate behaviour	Jensen and Meckling, 1976
Peer group	Co-ordination by membership of or association with a peer group, e.g. accountant	Fama and Jensen, 1983
Internal coordination through social network	Formal and informal roles linked by multiple networks that transmit information, influence and effect	Thompson *et al*., 1991; Tichy, 1981
Negotiation	Suitable where both information complexity and conflict among interests are high. Dialogue between multiple stakeholders leading to an agreed or acceptable outcome	Bazerman and Lewicki, 1983
Trust	No formal mechanisms. Actors 'trusted' to do what is best	Ouchi, 1980
Institutionalisation	Institutionalisation of rules and norms. Action may also be legitimised by custom, habit, culture or law	Ménard, 1995

Table 2 Summary of intra-organisational co-ordinating mechanisms.

The second stream of research is in the area of decision making providing insights into the process of making decisions in organisations, a key element of any governance structure. The concepts of 'muddling through' (Lindblom, 1959) 'bounded rationality' and 'satisficing' (Simon, 1960) are relevant to understanding decision making as is the literature on decision making under uncertainty or ambiguity (Tversky and Kahneman, 1981). Theories, such as the 'garbage can model of organisation choice' (Cohen *et al*., 1972) can help in explaining decisions choices with regard to IS/IT.

The third stream is concerned with politics. Organisations are political entities and any governance structure must take cognisance of this fact. Actors may strive to operate outside any governance structure in order to progress their own ends.

The fourth stream emerges from economics with a number of both prescriptive and descriptive theories inform the debate. Of particular relevance is transaction cost theory (Williamson, 1985) and agency theory (Jensen and Meckling, 1976).

Quasi-legal and regulatory frameworks

The environment outside of the organisation itself can both inform and constrain the governance structure. The governance of the financial aspects of organisational activity takes place in a regulatory environment that is informed by both company law and standards such as GAAP or SSAPs. There are also strict guidelines and codes of conduct set down by professional bodies. Indeed, calling oneself an accountant indicates that one has followed a course of study and an apprenticeship for a number of years and is subject to the rules and regulations of the accountancy body. Many companies have also operationalised and maybe supplemented these governance mechanisms with corporate manuals detailing the management of financial affairs in the company.

Financial directors and accountants have over the years developed systems and procedures for the financial governance of organisations which show a strong internal consistency, clarity of responsibilities and the development of clear operational guidelines. Such systems are more often than not strongly enforced in organisations as the management recognise a strong need for the control of funds. Information governance can without doubt be informed by the successful application of financial governance.

It is perhaps the concept of *corporate governance* which has captured the media attention in recent years. This term tends to encapsulate the ethical and legal frameworks within which directors execute their responsibilities and authority and how they account for their actions. In fact, one of the very first tasks for any aspiring company is to define its own Articles and Memorandum of Association without which it would not be able to incorporate. These are in principle the constitution by which the aspiring company will be governed. Over the years the critical importance of these documents has diminished as they have tended to be written in a very generic style, allowing much latitude to the directors. However, this generic approach has been criticised and is referred to in the recent Cadbury report.

Drivers for organisations to have a corporate governance structure include the legal establishment, regulators, boards of directors, executive managers, shareholders and public opinion. The recent Cadbury Report recommended the specific responsibilities for the key players with particular attention to the frequency, form and clarity of the information provided. This report also sets out a framework for corporate governance in the UK. This framework has a number of pillars which are provided by

- the regulatory framework, including company law and take-over codes
- accountability, including the role of auditors, audit committees
- supervision of directors.
- broader 'social responsibility' aspects.

In the Germanic tradition a different corporate governance structure is in place. Banks can have a strong influence on corporate decisions, perhaps even owning shares in the company. Employees too have an important role in decision making. Consequently, the management of a German company make its decisions less autonomously than the executive management of an Anglo-Saxon company as decisions are based more on consultancy and consensus with relevant interest groups.

Implications for information governance and the information constitution

Even from this brief review one can see that the study of the governance of organisations has developed considerably and has been undertaken by academics from varying perspectives and can provide a fertile ground for providing insights into information governance. Many of the principles underpinning country and organisational governance can provide a sound basis for framing the information constitution. These are summarised below.

No universal information constitution is likely to work for all

Just as countries which have different histories, differing traditions and alternate visions of their future, which are then encapsulated in unique constitutions, so organisations should not strive to copy the constitution of others. Each organisation's information constitution should reflect its own business governance framework, the history of information governance and its strategic intent with regard to information.

Each constitution tends to take direction from its superior constitution. For example the constitution of the state of Delaware is framed within that of the United States and conflict between the constitutions is avoided. Similarly an information constitution should be framed within that of the organisation's business constitution.

By aligning the information governance framework to the business vision, those responsible for operationalising information governance will be able to prioritise the importance of different elements within the governance structure. This will provide a focus as to which components need to support the competitive strategy of the organisation and which need to be undertaken in a way to avoid disadvantage and hence satisficing in these areas would be sufficient.

The information constitution needs to be enduring

The future is uncertain and a governance framework needs to be able to absorb many of the changes that affect the context within which the organisation is working. For

instance the US Constitution when compiled over 200 years ago was able to provide governance guidelines for the US space programme, although one doubts that the authors of this document could conceive of space flight. To achieve this, areas of responsibility need to be defined not the detail solutions in that area, for example, the governance framework should allocate responsibility for project management methods not the particular method to be adopted, such as PRINCE2.

The scope of the information constitution needs to be clearly defined

The precise scope of the constitution needs to be defined, detailing the areas it serves and those it does not. For example in the constitution of Delaware it is critically important to define what constitutes Delaware. If the resulting Delaware law permits execution for murder and that of neighbouring states does not, then a precise definition of the land that is called Delaware could be life or death to an individual. Turning to information it is important to decide if the governance methods will apply to just computer based information or additionally to paper based information or indeed to the emerging area of knowledge management.

Information governance needs to be commonly understood

In general constitutions are available to the members to which that constitution relates and understanding and implications of that constitution are often emphasised. For example, undertaking a search on the Internet of constitutions will reveal thousands of such documents ranging from local chess clubs to government departments, states and countries. Dissemination and common understanding are deemed to be important. Information governance as encapsulated within the constitution should be promulgated throughout the organisation to which it relates and every attempt should be made to gain commitment from organisational management to adhere to its principles.

To aid this, the constitution should be expressed in a clear and straightforward way and linking to organisational benefits, highlighting the consequences for the organisation if information is managed in an inappropriate manner. This clarity of understanding and the rationale behind the governance framework is important for ensuring commitment and motivation for all.

The information constitutions requires policing

One of the common themes through different constitutional approaches is that it needs to be policed in order for the constitution to have any value. Governments have laws and regulators, financial management have audits and auditors. If an information constitution is to be effective it needs to be policed and checks and balances must be established. Individual components of the governance framework need to be monitored at a level appropriate to their criticality to the success of the organisation. For instance, security matters may require extreme policing within a bank by a totally independent body; as security may be less critical to a university, internal control by line management may be appropriate.

Clear responsibilities and roles need to be established

Effective constitutions allocate responsibilities and roles to either organisational positions or bodies, along with clear accountability for their actions. For example, typically a constitution of a chess club would state that cheques could only be signed by senior specified roles, e.g. treasurer. Turning to an information constitution, identifying the responsibility for the future IT infrastructure could be specified to reside with the IT director. The important issue is to be clear who holds which responsibility.

Additionally, not only do responsibilities need to be clearly specified but the interdependencies between responsibilities also need to be articulated. For example, the relationship between the police force and the courts is clearly specified in the UK, defining the relationship as at arm's length. In IT terms this will imply the relationship between the group prioritising demand for IT applications and those supplying technology solutions needs to be clearly specified.

Responsibility for compiling and operationalising the constitution should be clear

Part of the success of the financial constitution in organisations is the acceptance that managing finance is important to the organisation and that responsibility for financial governance is usually clearly allocated to the financial director. Turning to information governance, such clarity of responsibility for the constitution and its operationalisation should be vested in a clearly defined role or body. Maybe the role of the information director or chief information officer (CIO) would take on this governance responsibility.

The elements of the constitution need to be defined and co-ordinated in order to produce an integrated whole. This has been particularly successful in relation to financial governance inside organisations.

The information constitution must reflect external regulatory requirements

The regulatory requirements affecting organisations in many countries are currently under considerable review and modification, particularly in relation to deregulation and the roles and responsibilities of directors and shareholders. In relation to the financial management of an organisation, financial directors and company secretaries frame their financial and legal constitutions having due regard to external regulatory requirements, so the design body for an information constitution should have due regard to any regulatory requirements. For the moment, in relation to information governance, the primary regulatory requirement is that of complying with the law. This manifests itself in the Health and Safety at Work Act which stipulates items such as ergonomic design criteria and screen radiation limits, and the Data Protection Act which stipulates what information can be collected and who will be allowed access. This area of regulatory requirements is sure to become more exhaustive as information becomes more central to the day-to-day lives of individuals.

A governance framework for information

Information governance is concerned with outlining responsibilities and accountabilities, defining the set of rules guiding information, systems and technology decision making in an organisation and managing the interdependencies across the range of decisions. In short, it is about achieving coherence across the range of decisions. Our preliminary research indicates that it has six dimensions:

- **content**: the decision areas which are being governed. Included here are both demand (infostructure) and supply (infrastructure) decisions.
- **responsibilities**: the individuals or bodies responsible and accountable for decisions.
- **co-ordination**: essentially the mechanisms and processes for insurance coherence across all decision areas. It is concerned with defining the committees, groups, and other mechanisms for ensuring a co-ordinated approach to IS/IT decision making, including roles to be played by individuals and groupings.
- **policies**: definition of policy statements, parameters and guiding principles for decision making in the different decision areas.
- **execution**: defining roles for the day-to-day execution of IS/IT activities.
- **control**: the mechanisms for policing decisions.

Figure 2 illustrates an embryonic framework guiding the constructing of an information constitution. This framework suggests an information constitution should be subdivided into four key decision areas. Two areas relate to decisions within the domain of demand and two areas relate to decisions within the domain of supply.

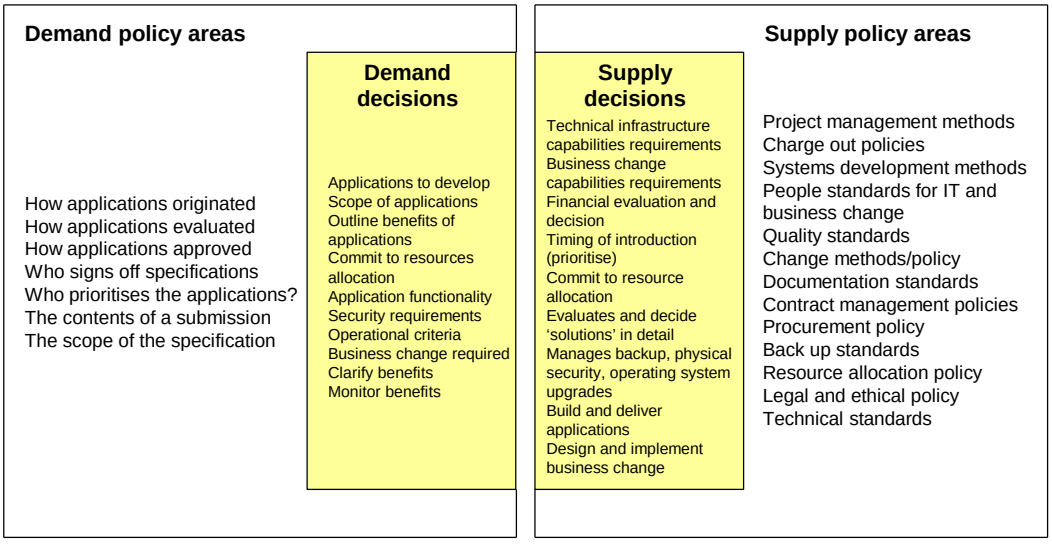

Figure 2 Example of information governance areas.

The four key decision areas are

1. *Demand decision areas*
   This includes all those decisions that relate to ascertaining the demand for information within the organisation. By whom and how such decisions are to be undertaken needs to be clarified.

2. *Demand policy areas*
   The decisions in relation to demand may be undertaken by different groups or individuals who may be functionally and geographically separated. The organisation needs to decide if it requires any consistency within these decisions and if so to define the policies that should be referred to when considering such decisions.

3. *Supply decision areas*
   This area includes all those decisions that relate to ascertaining the supply of information solutions within the organisation. By whom and how such decisions are to be undertaken needs to be clarified.

4. *Supply policy areas*
   The decisions in relation to the supply of solutions may be undertaken by different groups or individuals who may be functionally and geographically separated. The organisation needs to decide if it requires any consistency within these decisions and if so to define the policies that should be referred to when considering such decisions.

The role of an effective information governance framework is to define the particular scope for that organisation of each area and clarify roles and responsibilities for these areas. In figure 2 above, we also have provided examples of the components of the information governance in each of the areas that require management. The organisational benefits of having a clear governance framework that specifies roles and responsibilities and co-ordinates information management activities are critical to securing advantage from applying information.

Conclusion

Information governance is in its infancy and, although many pointers can be gained from the literature, much more research is required particularly in applying these principles to the information domain. At the Information Systems Research Centre at the Cranfield School of Management we are currently applying these ideas and have made initial inroads into defining in detail the subdivisions of information governance the responsibilities for which require to be defined. The framework which we have introduced above is currently being applied across a number of industries. In the future we hope to be in a position to provide guidance for organisations seeking to develop their own information constitution.

References

Arrow, K.J., (1951) *Social Choice and Individual Values*, Wiley, New York.

Bartlett, C.A. and Ghoshal, S., (1990) 'Matrix management: not a structure, a frame of mind', *Harvard Business Review*, July-August, pp. 138-145.

Bertalanfy, L. von, (1956) 'General systems theory', *General Systems*, **I**, pp. 1-10.

Bradach, J. and Eccles, R., (1989) 'Markets versus hierarchies: from ideal types to plural forms', *Annual Review of Sociology*, **15**, pp. 97-118.

Bazerman, M.H. and Lewicki, R.J., eds., (1983) *Negotiating in Organisations*, Beverly Hills, Sage California.

Brown, C.V. and Magill, S.L., (1998) 'Reconceptualizing the context-design issue for the information systems function', *Organisation Science*, **9**, 2, pp. 176-194.

Buchanan, J.R. and Linowes, R.G., (1980) 'Making distributed data processing work', *Harvard Business Review*, September-October.

Butler Cox Foundation (1991) *Managing the Devolution of Systems Responsibilities*, Research Report 81, Butler Cox Foundation, London.

Checkland and Holwell, S. (1998) *Information, Systems and Information Systems: Making Sense of the Field*, John Wiley & Sons, Chichester.

Cohen, M.D., March, J.G. and Olsen, J.P., (1972) A garbage can model of organizational choice. *Administrative Science Quarterly*, **17**, 1-25.

Cross, J., Earl, M.E and Sampler, J.L., (1997) 'Transforming the IT function at British Petroleum', *MIS Quarterly*, December, pp. 401-423.

De Jong, H.W., (1997) 'The governance structure and performance of large European corporations', *The Journal of Management and Governance*, **1**, pp. 5-27.

Dutta, S., (1996) 'Linking IT and business strategy: the role and responsibility of senior management', *European Management Journal*, **14**, 3, pp. 255-268.

Earl, M.J., (1989) *Management Strategies for Information Technology*, Prentice-Hall, New York.

Earl, M.J. and Sampler, J.L., (1998) 'Market management to transform the IT organisation', *Sloan Management Review*, Summer, pp. 9-17.

Earl, M.J., Edwards, B. and Feeny, D.F., (1996) 'Configuring the IS function in complex organisations', in M.J. Earl, ed., *Information Management: The Organizational Dimension*, Oxford University Press, Oxford, pp. 201-230.

Fama, E. and Jensen, M., (1983) 'Agency problems and residual claims', *Journal of Law and Economics*, **26**, pp. 301-325.

Feeny, D.F. and Willcocks, L., (1998) 'Redesigning the IS function around core capabilities', *Long Range Planning*, **31**, 3, pp. 354-367.

George, J. and King, J., (1991) 'Examining the computing and centralization debate', *Communications of the ACM*, **34**, 7, pp. 63-72.

Ghoshal, S. and Noria, N., (1993) 'Horses for courses: organisational forms for multinational companies', *Sloan Management Review*, Winter, pp. 23-35.

Hodgkinson, S.L., (1996) 'The role of the corporate IT function in the federal IT organisation', in M.J. Earl, ed., *Information Management: The Organisational Dimension*, Oxford University Press, pp. 247-269.

Jensen, M.C. and Meckling, W.H., (1976) 'Theory of the firm, managerial costs and ownership structure', *Journal of Financial Economics*, **III**, pp. 305-360.

Johnson, G. and Scholes, K., (1997) *Exploring Corporate Strategy: Text and Cases*, Prentice-Hall, Hemel Hempstead.

Lacity, M.C., Willcocks, L.P. and Feeny, D.F., (1996) 'The value of selective IT sourcing', *Sloan Management Review*, Spring, pp. 13-25.

Lacity, M.C. and Hirschheim, R., (1995) *Beyond the Information Systems Outsourcing Bandwagon: The Insourcing Response*, Wiley, Chichester.

Lindblom, C.E., (1959) 'The science of muddling through', *Public Administration Review*, **19**.

Luce, R.D. and Raiffa, H., (1958) *Games and Decisions*, Wiley, New York.

Malone, T.W. and Crowston, K.G., (1994) 'The interdisciplinary study of coordination', *ACM Computing Surveys*, **26**, 1, pp. 87-119.

Malone, T.W., Yates, J. and Benjamin, R.I., (1987) 'Electronic markets and electronic hierarchies', *Communications of the ACM*, pp. 484-497.

Ménard, C., (1995) 'Markets as institutions versus organisations as markets? Disentangling some fundamental concepts', *Journal of Economic Behaviour and Organisation*, **28**, 2, pp. 161-182.

Mintzberg, H., (1983) *Structure in Fives: Designing Effective Organisations*, Prentice-Hall, Englewood Cliffs, New Jersey.

OECD (1995) *Governance in Transition*, OECD, Paris.

Olson, M., (1965) *The Logic of Collective Action*, Harvard University Press, Cambridge, MA.

Ouchi, W., (1980) 'Markets, bureaucracies and clans', *Administrative Science Quarterly*, **25**, 129-141.

Peppard, J.W., (1999) 'Information management in the global enterprise: an organising framework', *European Journal of Information Systems*, forthcoming.

Porter, M.E., (1985) *Competitive Advantage*, Free Press, New York.

Ring, P.S. and van de Ven, A.H., (1992) 'Structuring co-operative relationships between organisations', *Strategic Management Journal*, **13**, pp. 483-498.

Rockart, J., Earl, M.J. and Ross, J.W., (1996) 'Eight imperatives for the new IT organisation', *Sloan Management Review*, Fall, pp. 43-55.

Simon, H.A., (1960) *The New Science of Management Decision*, Harper & Row, New York.

Taylor, F.W., (1911) *Scientific Management*, Harper, New York.

Thompson, F.J., Frances, J. and Mitchell, J., (1991) *Markets Hierarchy and Networks: The Coordination of Social Life*, Sage, London.

Tichy, N., (1981) 'Networks in organisations', in P.C. Nystrom and W. Starbuck, eds., *Handbook of Organisational Design*, Volume 2, Oxford University Press, New York, pp. 225-249.

Tutty, M., (1998) 'The governance and accountability implications of new organisational structures', in R. Boyle and T. McNamara, eds., *Governance and Accountability, Power and Responsibility in the Public Service*, Institute of Public Administration, Dublin.

Tversky and Kahneman, D., (1981) 'The framing of decisions and the psychology of choice', *Science*, **211**, January.

Venkatraman, N. and Henderson, J., (1998) 'Real strategies for virtual organising', *Sloan Management Review*, Fall, pp. 33-48.

Venkatraman, N. and Loh, L., (1994) 'The shifting logic of the IS organisation: from technical portfolio to relationship', *Information Strategy: The Executive's Journal*, Winter, pp. 5-11.

Von Simson, E.M., (1990) 'The centrally decentralised IS organisation', *Harvard Business Review*, July-August, pp. 158-162.

Ward, J. and Griffiths, P., (1996) *Strategic Planning for Information Systems*, Wiley, Hemel Hempstead.

Weber, M., (1947) *The Theory of Social and Economic Organisation*, Free Press, New York.

Williamson, O., (1985) *The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting*, Free Press, New York.