



ISRC Topic Brief

The Governance and Structure of the IT Organization

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Executive Summary

As organizations have become more complex over the past twenty years, so have the structures and the governance mechanisms that control them. Similarly, with the growth of various computer technologies, IT has become increasingly complex, in terms of hardware, software, and architecture. Thus, the governance and structure of IT reflects both organizational and technological changes. During the 20th century, four major governance structures have emerged: centralized (where 10-15% of IT responsibility is devolved and decentralized), centralized hybrid (where 50% of IT responsibility is devolved and decentralized), decentralized hybrid (where 70-80% of IT responsibility is devolved and decentralized), and decentralized (where all IT responsibility is devolved and decentralized). However, not all IT organizations are entirely one of the four structures. Instead, IT structures are hybrid arrangements, where the three major functions of IT: infrastructure management, use management, and project management are governed by different structures, depending on the nature of the corporation. Many different variables influence how an IT department governs and structures themselves, including corporate governance, economies of scope, and absorptive capacities. Nonetheless, as corporate structures continue to evolve and technology becomes increasingly complex, IT governance and structures will continue to adapt to meet the changing needs of tomorrow's business.

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Integrated Framework

During the past 20 years, Information Technology structure has become increasingly more complex. In the same time period, corporate structures have also become more complicated. In order to understand IT structure, it is necessary to first examine the theoretical frameworks of corporate structure and then apply these theories to the structure of IT.

Up until the 1920's, corporate structures were centralized. Centralized organizations can be conceptualized as large, formalized, functional bureaucracies, with standardized work. In the 1920's, companies began setting up decentralized, multidivisional structures in order to become more efficient. According to Chandler, among the leaders in the decentralization movement were the E.I. du Pont de Nemours and Company; General Motors Corporation; Standard Oil Company; and Sears, Roebuck, and Company.

Twenty years later, in 1946, Peter Drucker visited General Motors again to examine their corporate structure. After interviewing executives at GM, Drucker noticed a change in the corporate structure. He ascertained that "information and decisions must flow continually in two directions: from central management to the divisions, from the divisions to central management" (60). Thus, Drucker concluded, a more accurate description of GM's structure would be to characterize it as a federal union between centralization and decentralization.

By taking the research of Drucker and Chandler together, there are three main types of corporate structure: centralized, decentralized, and a federal union. These 3 types of structures were later applied to Information Technology departments and identified as centralized,

decentralized, and distributed. Under the context of networking and processing of data, these three hardware structures can be defined as:

1. Centralized computing: A system that is based on processors located in one site (except for microcomputers and remote workstations)
2. Decentralized computing: A number of processors deployed in different locations, not connected to a common network and functioning autonomously
3. Distributed computing: A number of processors deployed in different locations and linked in a common communications network (Ahituv, Neumann, and Zviran, 1989).

These are displayed graphically below in Figure 1.

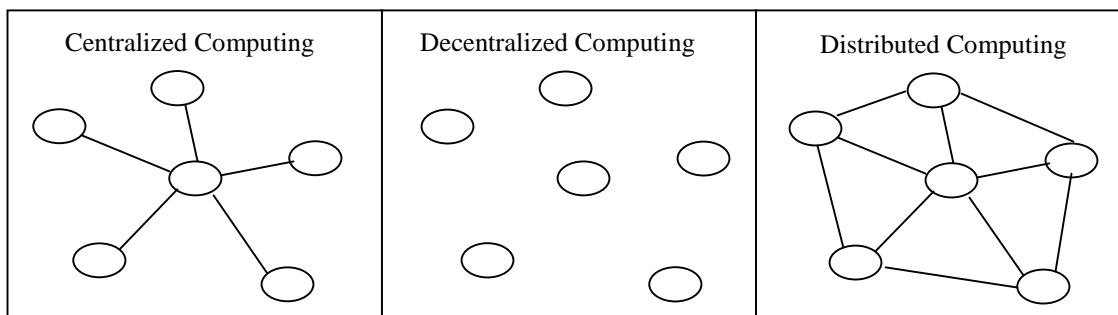


Figure 1 Three Typologies of IT Structures

Despite the growth in the diversification of corporate structure through the 1960's and 1970's, IT structure was still centralized. However, in the 1980's, researchers discovered that, with the advent of client-server architecture, the distribution of data processing activities was spreading, and IT resources and responsibility for IT activities had finally begun to be decentralized. Researchers also discovered that not all IT activities devolved and it was concluded that the federal IT management structure was then the dominant structural form in multi-business companies. From a structural perspective, the federal IT management structure is defined as:

"a distributed function, with each business unit containing and largely controlling its own capability. However, there is in addition a central IS unit reporting to corporate management which

has responsibility for defined aspects of policy and architecture across the organization, and which may deliver some common or shared services. It may or may not be coincident with the IS unit for corporate HQ" (Hodkinson, p. 162)

In an effort to further sharpen the typologies of IT structure, researchers proposed a four-factor model of IT structure. The new typology included a centralized and decentralized hybrid. The centralized hybrid has 50% of IT responsibility devolved, while the decentralized hybrid has 70-80% of IT responsibility devolved. This is in contrast with the centralized structure having 10-15% of IT devolved and decentralized, where all activities are fully devolved. The hybrid solutions are what Drucker would label a federal union of centralized and decentralized governance structures. Table 1 displays the four IT management structures.

Table 1 Profiles of the Four IT Management Structures

IT Management Structure	Average amount of corporate IT management responsibility ¹	Process decentralization ²	Intercomputer communication ²	Amounts of Shared Data and applications ²	Organizational Structure ²
Centralized	All	Low	Low	Low	Functional
Centralized Hybrid	Most	Low	High	High	Functional
Decentralized Hybrid	Some	High	High	High	Matrix/Product
Decentralized	None	High	Low	Low	Product

References: 1: Main and Short (1989); 2: Fiedler, Grover, Teng (1996)

Nonetheless, it is not enough to simply characterize four typologies of IT structures, for more modes of IT structure have been found in practice. In order to further investigate the typologies of Information Technology, the various spheres of IT activities need to be input into the

understanding of the structures. Sambamurthy and Zmud (1999, p. 262) explain these 3 general IT activities as:

- IT infrastructure management: "decisions that address the nature of hardware and software platforms, annual enhancement to these platforms, the nature of network and data architectures, and the corporate standards for procurement and deployment of IT assets"
- IT use management: "decisions that address applications prioritization and (short-term and long-term) planning, budgeting, and the day-to-day delivery of operations and services"
- Project management: "blending knowledge of IT infrastructure capabilities and capacities with knowledge associated for the conceptualization, acquisition, development, and deployment of information systems applications"

In deciding what structure to utilize for these IT activities, there are typically 3 stakeholders that govern IT decisions: corporate IT, divisional IT, and line management. Governance represents "an organization's IT-related authority pattern" (Sambamurthy and Zmud, 1999). Thus, when the 3 activities of IT are governed by corporate, divisional, and line management in the three types of structures (centralized, decentralized, and combining the 2 hybrids to form a federal structure), patterns emerge in the locus of authority as shown in Table 2.

Table 2 Modes of IT Governance Feasible in Practice (Adapted from Sambamurthy and Zmud, 1999)

Centralized Governance Mode					
Spheres of IT Activities			Patterns in the Locus of Authority		
IT infrastructure			Corporate IT		
IT use			Corporate IT		
Project management			Corporate IT		
Decentralized Governance Mode					
Sphere of IT Activities	Patterns in the Locus of Authority				
	Pattern D1	Pattern D2	Pattern D3	Pattern D4	Pattern D5
IT infrastructure	Divisional IT	Divisional IT	Divisional IT	Divisional IT	Line management
IT use	Divisional IT	Divisional IT	Line management	Line management	Line management
Project management	Divisional IT	Line management	Divisional IT	Line management	Line management
Federal Governance Mode					
Spheres of IT Activities	Patterns in the Locus of Authority				
	Pattern F1	Pattern F2	Pattern F3		
IT infrastructure	Corporate IT	Corporate IT	Corporate IT		
IT use	Corporate IT	Divisional IT or line management	Divisional IT or line management		
Project management	Divisional IT or line management	Corporate IT	Divisional IT or line management		

In attempting to determine why patterns exist within the different modes, many explanations have been offered in IS research. These explanations include types of industry, firm size, corporate strategy, and corporate structure. However, current research is proposing that there is not just one reason for why patterns exist. A contingency model is needed in order to better understand why companies chose a particular IT governance system. The categories of factors include:

1. Corporate governance, including overall governance mode (centralized vs. decentralized) and firm size (small vs. large)
2. Economies of scope, including diversification mode (internal growth vs. acquisition growth), diversification breadth (related markets vs. unrelated markets), and exploitation strategy for scope economies (enterprise-wide consolidation of assets vs. enterprise-wide line/IT partnerships)
3. Absorptive capacities, including IT knowledge (low vs. high)

When these three factors are considered in conjunction with one another, a more robust explanation of firms' IT governance structures can be found. Yet, more research is needed in this area in order to fully understand the dynamics of these factors.

As corporate structures continue to evolve, so will IT governance and structures. Many new organizational forms will affect the future of IT. Some future areas of interest to IT researchers include studying the phenomenon of flatter and more flexible overall organizational forms and the role that these new structures will play on IT governance. Further, with frequent acquisitions and spin-offs being commonplace in American business, these changes will have profound impacts on the future of IT. Lastly, with the rise of the Internet, virtual linkages are being created across organizational boundaries that will prove to be a challenge for IT. Thus, from the centralization of the past to decentralized structures in the 1920's to the hybrid structures that exist today, structure of IT has and will continue to evolve and prove to be challenging for those that govern its' existence.

Implications for Management

The research on the governance and structure of Information Systems has implications for management. Management must realize that many forms of structure and governance exist for IT. While many options exist, there are a few guidelines for management to follow. IT structure must:

- Remain in alignment with organizational and environmental contexts
- Reflect current decision-making processes in their organizations.
- Not be deficient in their capabilities, for the influence of IT structure can be overridden by IT deficiencies.
- Reflect the nature of the integration and structure of the organization. A decentralized IT function would be inappropriate in a centralized corporation and, conversely, a centralized IT style would be inappropriate in a decentralized company.
- Reflect the competitive strategy of the organization.

As managers seek to evaluate the structure of the IT function, they must also look at the broader organizational environment and not be afraid to transform the IT department to better adapt to the organization. Management must realize that they are not constrained to a particular governance solution. Hybrid solutions exist that will allow them to better serve the needs of the individual business units. However, the key to IT governance decisions is communication and a full understanding of the business unit and organizational structure. The communication must result in sharing of knowledge, commitment, and decision making. By analyzing the various elements of the organization, the best fit between IT and organizational structure can be achieved. The results of a perfect "fit" between organizational and IT structure will be a increased ability to better meet the needs of the organization, an increased likelihood of successful implementation of future IT projects, and the ability for IT to become a strategic partner in the future of the organization.

ADDITIONAL REFERENCES
(NOT EXTRACTED)

Chandler, A. D., Jr. and Salisbury, S. 1971. *Pierre S. Du Pont and the Making of the Modern Corporation*. New York, NY: Harper & Row.

Drucker, P. F. 1946. *Concept of the Corporation*. New York, NY: The John Day Company.

ARTICLE EXTRACTS

The following section contains summaries and analyses of key articles in the area of governance and structure of the IT organization. The reference for each of the articles is provided as sources for further study.

Article Title: Factors Affecting the Policy for Distributing Computing Resources**Summary:**

Many factors seem to affect how an organization distributes hardware computing resources, including the size, structure, and locus of the decision-making. It was found that the only significant determinant of the distribution of computing resources was the extent of distribution of the decision-making process within the organization.

Value to Managers:

MIS management needs to deal with the way in which resources are allocated in a network. In order to determine how to handle these situations, managers need to account for the current decision-making processes in their organizations.

Description:

There are two approaches to investigating how an organization distributes resources: the technical approach and the organizational approach. In the context of this article, the technical approach dictates the degree to which computers are physically distributed (centralized, distributed, or decentralized) and the organizational approach includes the organizational structure, size, and the distribution of the decision-making processes.

A questionnaire was sent out to IT executives that collected information on:

- Organizational characteristics, including demographics, industry classification, number of employees, structure (functional product, matrix, or conglomerate), and geographical distribution
- Organizational Information Systems, where the management rated their overall success of the information system, the hardware configuration (centralized, distributed, or decentralized), and the processing method of the data

Results indicate that organizations with centralized decision-making also have centralized computing. Also, the size of the organization (indicated by the number of employees), its structure, and industry classification have no influence on computer resource distribution.

Key Lessons:

Decision making processes of organizations has more of an impact on the centralization of computer resources than the size, structure, and economic structure of the corporation.

Cautions:

The survey was conducted in Israel and consists of Israeli firms. Although the Israeli economy is similar to Western economies, a comparative analysis of other countries is needed to determine what role cultural factors might have played in the conclusions.

Research Base:

Questionnaires were mailed to the highest ranked IT managers in 1360 randomly selected organizations in Israel. A final sample of 303 organizations was used.

Reference:

Factors Affecting the Policy for Distributing Computing Resources by Niv Ahituv, Seev Neumann, and Moshe Zviran in **MIS Quarterly**, volume 13, number 4, pages 388-401, 1989.

Article Title: Examining the Emergence of Hybrid IS Governance Solutions: Evidence from a Single Case Site**Summary:**

Research has found that firms do not adopt a uniform IS governance solution for all business units. Instead, a hybrid solution is chosen. It was found that four business unit characteristics contribute to decentralized governance: organic decision-making, high business unit autonomy, a differentiation competitive strategy, and an unstable industry environment. However, the influence of the four characteristics can be transcended when there are perceived deficiencies in IS capabilities and the culture does not promote structural change at the business unit level.

Value to Managers:

While the organization of the firm does impact the way that IS is governed, the variables' influence can be overridden by IS deficiencies.

Description:

Past IS research has found evidence of variables at the organizational level that are good predictors of IS governance. However, the organizational level variables do not explain why IS implements different solutions to support different business units. The authors predicted that six business unit level context variables would explain centralization of systems development in multidivisional firm. The six variables include mechanistic vs. organic structuring, business unit autonomy, competitive strategy, workgroup interdependence, industry stability, and information intensity of products/services. It was further predicted that two variables would be prerequisites for a "deviant" systems development governance solution: IS capabilities and culture.

Results found that four of the six business unit level context variables did affect the centralization of systems development: organic decision-making, high business unit autonomy, a differentiation competitive strategy, and an unstable industry environment and that IS capabilities and culture are prerequisites for a "deviant" systems development governance solution.

Key Lessons:

Not only do organizational factors influence IS governance, so do business unit context variables. Also, even if a business unit has the characteristics that would permit a decentralized strategy, the governance of IS can be mediated by a lack of trust in IS and a culture that is unwilling to accept a change in structure.

Cautions:

The results were derived from a single case. In order for the results to be generalizable, the model needs to be tested by other methods or additional cases.

Research Base:

Data was collected in a for-profit Fortune 500 company with a divisionalized structure. On-site interviews were conducted with the CIO, the Director of Systems in the central IS group, a top non-IS executive in four strategic business units, and the IS executives in two strategic business units. Following the on-site interviews, a survey was mailed to the participating executives to collect additional information.

Reference:

Examining the Emergence of Hybrid IS Governance Solutions: Evidence from a Single Case Site by Carol V. Brown in **Information Systems Research**, volume 8, number 1, pages 69-94, 1997.

Article Title: Alignment of the IS Functions With the Enterprise: Toward a Model of Antecedents**Summary:**

Many factors contribute toward the governance structure that an IS organization chooses. It was concluded that overall organizational factors and IS infrastructure factors contribute to IS alignment.

Value to Managers:

Effective performance of IS depends on the "fit" between the organization and IS. Thus, in order for there to be a perfect "fit," managers must recognize that many factors contribute to the "fit."

Description:

Prior IS research has offered little evidence as to why a firm chooses a particular IS organization. Thus, the researchers attempted to determine the antecedents that predict IS alignment. It was found that there are four governance types: decentralized, centralized, centralized hybrid, and decentralized hybrid. Further, it was also concluded that the primary antecedents for IS alignment decisions are: corporate vision, corporate strategy, overall firm structure, culture, the strategic role of IT, the role of IT senior management in the top management team, user satisfaction with the management of technology, user satisfaction with management of use of technology, the strategic grid of current/future applications, and the locus of control for system approval/priority.

Key Lessons:

Cultural, technological, and organizational factors all contribute to IS alignment with the organization. Many factors must be taken into consideration when deciding on an alignment or a realignment structure.

Cautions:

The research is based upon interviews with only six Fortune 500-type companies. It is difficult to generalize the results to all large firms.

Research Base:

Six large Fortune 500-type companies, including two diversified manufacturing firms, two in petrochemicals, and two in insurance, that had implemented some IS design change within 12 months prior to the first on-site visit. On-site interviews were conducted, followed by a follow-up survey, and a report confirmation. A total of 46 managers were interviewed: 24 IS managers and 22 non-IS managers.

Reference:

Alignment of the IS Functions with the Enterprise: Toward a model of Antecedents by Carol V. Brown and Sharon L. Magill in MIS Quarterly, volume 18, number 4, pages 371-403, 1994.

Article Title: Transformation of the IT Function at British Petroleum**Summary:**

The British Petroleum IT department sought to change their image to become an integral part of the business. The transformation is examined and from the case study, six principles of transformation are presented. As a result of the transformation, IT is now seen as a strategic part of the business at BP.

Value to Managers:

As managers seek to evaluate the structure of the IT function, they must also look at the broader organizational environment and not be afraid to transform the IT department to better adapt to the organization. If change is necessary, there are principles that can be utilized to allow for a successful change.

Description:

In 1989, the British Petroleum IT department attempted to transform itself in response to poor perceptions of IT in the organization. As a result of the transformation, principles of transformation were developed:

1. IT should be a part of a wider transformation. As goals are set in the organization as a whole, IT must be tied to the mission
2. Set early and demanding goals
3. The transformation program should be tied not only organizationally, but outside the company as well. Vendors should be included in the transformation process.
4. Create a value system that encourages "breaking the mould." Continually allow the changing of old and new practices.
5. Build a strong CEO-CIO relationship so that both share the same goals. Both CEO and CIO must understand how necessary IT is to achieve a business vision and how IT performance is critical.
6. Develop and employ teamwork.

The principles do not represent a comprehensive list. Rather, the six principles are the reason for the difference at British Petroleum and thus can be used as guidelines for an IT manager seeking to transform the IT function.

Key Lessons:

The organization must recognize the role that IT can play in the strategic direction of the firm and IT must realize that IT must be able to fulfill the strategic needs of the organization.

Cautions:

The transformation principles prescribed are based upon a single case study.

Research Base:

The study results were derived from a longitudinal study over six years in British Petroleum. Interviews were conducted with 40 managers, along with an examination of internal papers and reports.

Reference:

Transformation of the IT Function at British Petroleum by John Cross, Michael Earl, and Jeffrey Sampler in **MIS Quarterly**, volume 21, number 4, pages 401-423, 1997.

Article Title: An Empirically Derived Taxonomy of Information Technology Structure and Its Relationship to Organizational Structure**Summary:**

For IT to support the organization there must be a match between organizational and IT structure. This study empirically develops four IT structures: centralized, decentralized, centralized cooperative, and distributed cooperative, based upon the degree of centralization of computer processing, the capability to support communications, and the ability to share resources. By understanding the organization's decision making, integration, and structure, IT managers can best fit IT and organizational structure.

Value to Managers:

The best way for IT to support an organization is to identify and understand the nature of the organization locus of decision making, integration, and structure. By analyzing the various elements of the organization, the best fit between IT and organizational structure can be achieved.

Description:

Using the characteristics of the degree of centralization of computer processing, the capability to support communications, and the ability to share resources, the authors were attempting to empirically develop a taxonomy to match IT and organizational structures. The authors found four IT structures:

- Centralized structure characterized by centralized processing, low communication, and low sharing; typically found in a functionally structured organization with low integration and centralized decision making.
- Decentralized structure characterized by decentralized processing, high communication, and high sharing; typically found in a product-structured organization with decentralized decision making.
- Centralized cooperative structure, characterized by centralized processing, high communication, and high sharing; typically found in a functionally structured organization with high integration
- Distributed cooperative structure, characterized by decentralized processing, high communication, and high sharing; typically found in matrix and product structured organizations with high integration

Thus, since the purpose of IT structure is to support the firm, this can be best achieved if the IT structure matches the requirements and the nature of the organization.

Key Lessons:

As organizational forms are transformed, IT must change to support the changing structure of the organization. As organizations become more integrated, IT must adapt and continue to evolve to a form that will support the needs of its' users.

Cautions:

While the study focuses on the "matching" of IT with organizational structure, further research is needed to determine the causal relationship between IT and organizational structure.

Research Base:

Following in-depth interviews with 12 senior IS administrators in the United States and Canada, a questionnaire was developed and sent to 900 senior IS executives in for-profit companies with revenues greater than \$50 million per year. 313 questionnaires were used in the final analysis.

Reference:

An Empirically Derived Taxonomy of Information Technology Structure and Its Relationship to Organizational Structure by Kirk Fiedler, Varun Grover, and James Teng in **Journal of Management Information Systems**, volume 13, number 1, pages 9-34, 1996.

Article Title: IT Structures for the 1990s: Organization of IT Functions in Large Companies**Summary:**

Information Technology (IT) function organization was investigated in large multi-business companies. The results indicate that there is an increased trend toward decentralization of IT in large organizations and also a move toward the federal IT organization structure.

Value to Managers:

The article provides evidence that corporate management function is correlated with IT management style. A decentralized IT function would be inappropriate in a centralized corporation and, conversely, a centralized IT style would be inappropriate in a decentralized company.

Description:

With the rise of the federal corporate structure, there has been no research that investigates the prevalence of federal IT management structure. Thus, the study seeks to investigate the pervasiveness of the federal structure, along with the relationship between IT style and management style.

Key Lessons:

The study concluded that federal structure does exist in IT. Two types of federal IT structure were found: strategic leadership IT management style, characterized by strong leadership and coordination of centralized and distributed resources and strategic guidance IT management style, characterized by less formal IT management, where divisional IT units dominate. Further, there is a relationship between IT and corporate management style.

Cautions:

The sample size of both the IT and General Management questionnaires prevents this from being as strong of a study as possible. Also, with the surveys being conducted in the United Kingdom, there are questions of generalizability of the data.

Research Base:

The 1989-1990 Times 200: the largest companies by revenues, in the United Kingdom. Matched pairs of questionnaires were sent to the IT Director or Senior IT Manager and to a Senior General Management executive in each corporation. 50 companies responded to the IT survey and 28 replied to the General Management questionnaire.

Reference:

IT Structures for the 1990s: Organization of IT Functions in Large Companies by Stephen K. Hodgkinson in **Information and Management**, volume 22, number 3, pages 161-175, 1992.

Article Title: Organization and Management of Information Systems Functions**Summary:**

The IS departments of four firms in Bahrain were studied to determine the relationship between the maturity of the IS department and the organizational structure. It was found that each of the four firms was at different levels of maturity and had adapted different IT structures. IT needs to analyze the maturity of the organizations that they are supporting in order to best fit the organization.

Value to Managers:

In assessing the best IT structures, it is necessary to assess the maturity of the organization, so that the IT structures adequately supports the maturity of the organization.

Description:

Four private sector organizations were studied in Bahrain, a small island country. Each of the organizations was at different levels of maturity and was analyzed using a growth stage model, where the six stages of IS can be classified as: initiation, contagion, control, integration, data administration, and maturity. As an organization moves through the six stages, it adopts different IS structures. The study found that each organization has adopted a different IT structures and that no structure is used uniquely. For instance, one firm uses a project-oriented structure for systems development and a functional structure for operations. It was concluded that as the firms mature, they will continue to adopt a hybrid IS solution that is applicable to its' maturity level as an organization.

Key Lessons:

As an organization moves through maturity levels, to data administration and higher levels, the IT structure must continue to evolve and not become stagnate.

Cautions:

The research was conducted in Bahrain among four organizations. It is untested if the results are widely generalizable.

Research Base:

Four organizations in Bahrain were studied. Data was collected through personal interviews with managers, system analysis, programmers, and operation supervisors of the IS department based upon a set of 12 structured questions.

Reference:

Organization and Management of Information Systems Functions by Emdad H. Khan in **Information & Management**, volume 21, pages 73-85, 1991.

Article Title: Matching Computer-Based Information Systems with Organizational Structures

Summary:

Computer-Based Information Systems (CBIS) structure must "fit" with the organization in order for the CBIS to have an impact. CBIS can be categorized into one of four forms: online systems with a central processor surrounded by dumb terminals; distributed processing structure; networked systems; and stand-alone systems. According to the authors, there is an optimal architecture for each organizational structure.

Value to Managers:

To reduce resistance to CBIS and increase the likelihood of successful implementation, there must be a match between the CBIS with the organizational structure.

Description:

According to previous IS research, four CBIS architectures have been defined:

1. Centralized systems: mainframe with dumb terminals
2. Distributed systems: also called peer-to-host systems, central host linked with smart terminals, many to one communications
3. Decentralized systems: referred to as "peer networks," linked independent terminals or processors, many to many communications.
4. Stand-alone systems: stand-alone PCs used in individual departments or in small organizations

Previous management research has proposed six organizational structures:

1. Simple structures: small, young, centralized, little information, CEO in control
2. Machine bureaucracy: large, centralized, formalized, functional bureaucratic, standardization of work
3. Professional bureaucracy: little formalization, bureaucratic, standardization of skills, decentralized, high skill specialization
4. Divisionalized form A: large, machine bureaucratic division oriented to markets, standardization of outputs, loosely coupled to administration
5. Divisionalized form B: large, bureaucratic or organic division oriented to markets, tightly coupled to administration by strong culture
6. Adhocracy: decentralized, low formalization, small, coordinated by mutual adjustment, organic, high specialization of skills

For CBIS to be successful there must be a match between the organizational structure and the CBIS architecture. Ideally,

- A simple structure should implement stand alone PCs
- A machine bureaucracy should utilize centralized systems
- A professional bureaucracy should implement either centralized or distributed systems
- A divisionalized form-A should utilize centralized or distributed systems
- A divisionalized form-B should implement decentralized systems
- An adhocracy should utilize decentralized systems

Key Lessons:

By matching the CBIS to the organization, the system will be used and accepted. However, in some cases, it may be necessary to change the organizational structure to better accommodate an appropriate information system. This is a strategic and conscious decision that must be made as part of the CBIS design process.

Reference:

Matching Computer-Based Information Systems with Organizational Structures by Richard Leifer in **MIS Quarterly**, volume 12, number 1, pages 62-73, 1988.

Article Title: Managing the Merger: Building Partnership Through IT Planning at the New Baxter**Summary:**

In mid-1987, Baxter Healthcare Corporation merged with American Hospital Supply. To manage the merger, a strategic planning study, focusing on executive interviews and "micro" and "macro" analysis, was performed. As a result of the shared knowledge, shared commitment, and shared decision making, the partnership was effective.

Value to Managers:

The key to IT governance decisions is communication and a full understanding of the business unit and organizational structure. The communication must result in sharing of knowledge, commitment, and decision making, not only for merger activities, but also for everyday business activities.

Description:

To better handle the merger between Baxter Healthcare Corporation and American Hospital Supply, a seven-month strategic plan was implemented. During the study, executives from both organizations were interviewed. The interviews served a dual purpose: information was collected and there was a basis for executive understanding of solutions. As a result, there was improved communication with MIS during implementation. Second, presentations to business executives were conducted at the micro and the macro level. Therefore, business executives were more comfortable that their business units were being understood adequately (micro level) and understood the corporate planning issues and tradeoffs (macro level). Thus, there was shared knowledge between all departments, as well as shared decision-making. Finally, since all business executives were involved, there was shared commitment between the units.

Key Lessons:

Instead of focusing narrowly on MIS activities, the strategic plan also focused on how the two businesses could best be organized to exploit the strengths of the previously separate firms. By soliciting information from all business units, the result was that there was an alignment of business strategies with the IT infrastructure and defining future IT needs.

Reference:

Managing the Merger: Building Partnership Through IT Planning at the New Baxter by Thomas J. Main and James E. Short in **MIS Quarterly**, volume 13, number 4, pages 469-484, 1989.

Article Title: Arrangements for Information Technology Governance: A Theory of Multiple Contingencies**Summary:**

IT governance research has traditionally focused on single factors to attempt to explain why an organization chooses an IT structure. It is argued that three factors (corporate governance, economies of scope, and absorptive capacities) interact with each other to determine the IT governance mode.

Value to Managers:

IT management needs to understand that their IT governance structure has evolved due to many different factors. Thus, senior executives must make changes in their IT structure, in order to maintain an alignment with the organizational and environmental contexts.

Description:

Traditional IT research has focused on one factor to explain why an organization has decided on a particular IT structure. However, in reality, there is not one reason why a company chooses a structure. Thus, it is best to examine many reasons and their interrelationships. The contingent forces can be best categorized as:

1. Corporate governance, including overall governance mode (centralized vs. decentralized) and firm size (small vs. large)
2. Economies of scope, including diversification mode (internal growth vs. acquisition growth), diversification breadth (related markets vs. unrelated markets), and exploitation strategy for scope economies (enterprise-wide consolidation of assets vs. enterprise-wide line/IT partnerships)
3. Absorptive capacities, including IT knowledge (low vs. high)

These 3 factors were examined in order to explain the choice of an IT governance solution.

Key Lessons:

Dynamic and complex factors explain why an organization chooses an IT structure. It was discovered that:

- a) Reinforcing contingencies induce a centralized or decentralized mode of IT governance
- b) Conflicting contingencies will induce a federal mode of IT governance, and
- c) Dominating contingencies will induce a centralized or decentralized mode of IT governance

Cautions:

The data set was collected in the late 1980s, and was not published until 1999. Thus, one potential problem is that it is not set in today's IT management context. Additionally, with only 8 cases recorded, the generalizability of the research is unsure at this time.

Research Base:

Multiple case studies of the governance arrangements at eight firms, chosen from an initial field of 35. Telephone interviews were conducted with the firm's CIO and senior IT manager and usually the CFO for the business units involved with the field survey.

Reference:

Arrangements for Information Technology Governance: A Theory of Multiple Contingencies by V. Sambamurthy and Robert W. Zmud in **MIS Quarterly**, volume 23, number 2, pages 261-290, 1999.

Article Title: Linking the Information Technology Structure with Organizational Competitive Strategy: A Survey

Summary:

In order to determine an appropriate information technology structure, it is necessary to determine the degree of organizational competitive strategy. A match between structure and strategy is instrumental to the successful implementation of information technology systems.

Value to Managers:

In order for a MIS manager to aid in the implementation of systems, it is necessary to ensure that the IT structure reflects the competitive strategy of the organization.

Description:

There are four strategic types of organizations:

1. A defender, an organization with a conservative competitive strategy that engages in little or no product development
2. A prospector, an organization with an aggressive competitive strategy that attempts to pioneer in product/market development
3. An analyzer, an organization with a moderate competitive strategy that makes fewer and slower product/market changes than a prospector and is less committed to stability than a defender
4. A reactor, an organization with no distinct competitive strategy

It was hypothesized that the strategic type of the organization would differ with respect to the degree of centralization of IT activities (defined as systems development and maintenance, systems operations, and systems administration). Specifically, a defender would be more centralized than a prospector and an analyzer with respect to IT activities and that an analyzer would be more centralized than a prospector. Results indicate that IT structure is strongly related to competitive strategy and that the degree of centralization of IT activities is related to competitive strategy.

Key Lessons:

IT structure must fit within an organization on many dimensions, including competitive strategy. However, competitive strategy is not the only variable. Other variables include overall decision making structure and organizational form. Nonetheless, there is a close association between strategy and information technology.

Cautions:

The data was collected through mail questionnaires without any follow-up. Therefore, it is possible that not all participants read the questionnaire fully or had the appropriate knowledge to answer all of the questions. Thus, there may be some bias in the results.

Research Base:

Two questionnaires were mailed to 102 organizations in the computer component industry; one questionnaire measuring the centralization of IT activities sent to IT managers and another questionnaire to the President of the organizations measuring the competitive strategies of the organization. The questionnaires were matched, for a final sample size of 52.

Reference:

Linking the Information Technology Structure with Organizational Competitive Strategy: A Survey by Hamid Tavakolian in **MIS Quarterly**, volume 12, number 3, pages 309-317, 1989.