New Perspectives on Role and Structure in the Management of Information Systems & Technology

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CIO Collaborative Research on IS/IT Organizational Design and Governance

MIS Research Center

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Focal Questions of Today’s Discussion

- What are the role and structure of the IS/IT function and why do we care?

- What are the contingencies that effect IS/IT structure?

- What evidence do we have regarding the most prevalent IS/IT structure?

- What are some more specific characterizations of IS/IT structure?
The Evolving Role of IT

Data Processing
MIS
IT
Business Technology

1960 1980 2000

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IS/IT Roles - Efficiency & Innovation

IS Involvement in Initiation of Business Operations Improvement

Operations Improvement Partner
General Partner
Supporter
Business Innovation Partner

IS Involvement in Initiation of Business Innovation

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A pattern of decision making for activities like management of IT infrastructure, application development, service delivery, and IT investment.

The key issue is whether decision making is delegated to the business unit or centrally controlled by corporate headquarters.
**Governance Structure**

**NOT ONE SIZE FITS ALL!**

- There is no best or ideal IT governance structure.
- IT governance should fit the organizational and environmental context.

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**Environmental Factors Influencing IS/IT Structure**

**DYNAMISM**

Dynamism – Refers to the volatility & unpredictability of changes in the environment that a firm has to deal with. Industries with higher uncertainty in demand, for example, are more dynamic.
Munificence – Refers to the opportunities for growth within an industry. Firms need to adopt structures that can help them to capture these opportunities for growth.

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Complexity – Refers to the number and heterogeneity of task-environment elements that a firm has to interact with. The larger the number and heterogeneity of the entities (e.g., competitors) a firm has to deal with, the more complex the environment.

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**FIRM/BUSINESS UNIT SIZE**

Business Unit Size – Economies of scale may make it more likely that decision authority is delegated to larger business units.

Firm Size – Diseconomies of managing make it difficult to coordinate decisions across a larger firm.

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**FIRM STRATEGY**

Firm Strategy – A firm may choose an efficiency or innovation orientation, or a balance of both.
Growth Mode – Whether a firm grows through internal development or through acquisitions, is likely to influence the decision making structure.

Corporate Structure – The IT function structure may mimic the corporate structure.
Business Relatedness – The synergy (i.e., relatedness) between different business units may influence the IT decision making structure.

Local IT Knowledge – The IT knowledge/capability available at a business unit may influence the IT decision making structure.
**Does IT Governance Matter?**

<table>
<thead>
<tr>
<th>IT Investment</th>
<th>Impact on Return (ROA)</th>
<th>Impact on Stock Market Valuation (Tobin's q)</th>
</tr>
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<tbody>
<tr>
<td>Firms with Average IT Governance Alignment</td>
<td>0.166 *** (0.052)</td>
<td>2.183 *** (0.660)</td>
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<tr>
<td>Firms with Good IT Governance Alignment</td>
<td>0.420 *** (0.090)</td>
<td>4.088 *** (1.143)</td>
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<td>Firms with Poor IT Governance Alignment</td>
<td>-0.088 (0.057)</td>
<td>0.278 (0.725)</td>
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*** Significant at 5% level.
Good IT Governance = Misalignment less than one standard deviation from average
Poor IT Governance = Misalignment greater than one standard deviation above average.

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**Centralization of IT Decision Making**

- Centralization – decisions are made at the corporate level regarding IT.
  - Promotes:
    - Efficiency
    - Economies of Scale
    - Buying power
    - Standardization
    - Consistency
    - One Face Initiatives
    - Corporate Level Reporting

Conventional Wisdom:
*Centralize decisions regarding infrastructure, platforms, networks where there is no real advantage to customization to meet local needs.*
Decentralization of IT Decision Making

- Decentralization – decisions are made in the business units regarding IT.
- Promotes:
  - Responsiveness
  - Innovation
  - Customization
  - Business Autonomy

Conventional Wisdom:
Decentralize decisions regarding applications and business processes to align with local business requirements.
### Factors Influencing IS/IT Structure

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<th>Factor</th>
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Environmental Uncertainty &
IT Decentralization

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<td>Demand for Coordination</td>
<td>Customer Synergy Operations/Supply Side</td>
<td>Centralize</td>
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<td>Regulatory Pressure</td>
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Evidence of Centralization in IT

- Managing IS/IT Operations
- Managing Technology Assets
- Managing Human Resources
- Managing Financial Resources
- Strategic IS/IT Decisions
- Managing IS/IT Demand Use
- Assessing IS/IT Performance
- Defining/Prioritizing Projects
- Improving/Changing Business Processes
- Managing Projects

Locus of IS/IT Decision Making

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Examples of IT Centralization

- One Face Initiatives
- Customer Experience/Cross Selling
- Projects Leveraged Across Business Units
- Supply Chain Integration

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Recent Forces Driving IT Centralization

Why is this structure suddenly different than what we would expect? What are the environmental forces that have changed?

- Technology Affordances
- Demand Drivers
- Knowledge Economy
- Supply Chain
- Sarbanes-Oxley

Demand for Coordination

STANDARDIZATION

CENTRALIZATION

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Cost of Coordination?

Coordination Innovation

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**Types of Organizational Coordinating Mechanisms**

**Hierarchy**
- Fast, efficient, myopic

- Standards
  - Processes
  - Outputs/Work Products
  - Inputs/Resources
- Empowerment with Constraints

**Mutual Adjustment**
- Slow, expensive, comprehensive

Source: Mintzberg, 1980.

**Culture**
- Goals, Shared Values

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**Organizing Logic**

**Integration Architectures**
- Coordination & Identity

**Relational Architectures**
- Intra- and Inter-organizational Relationships

**IT Capabilities**
- Value Innovation
- Knowledge Work Leverage
- IT-Enabled Business Platform
- Operational Excellence
- Value-Chain Extension
- Solutions Delivery

Principles & Models for Organizing the IT Function

- Functional Level
  - 8 Base IT Capabilities – Hierarchical
  - Sourcing Network – Mutual Adjustment

- Firm-Level
  - Co-Evolution Alignment – Hierarchical
  - Visioning Network – Hierarchical
  - Innovation Network – Mutual Adjustment

- Archetypes
  - Partner Model
  - Platform Model
  - Scalable Model

Source: Agarwal & Sambamurthy, MIS Quarterly Executive, 2002

Principles & Models for Organizing the IT Function

The Partner Model
Collaborator
IT as Proactive Partner in Innovation Process

- Focus on Innovation Networks
- Co-evolution via interaction of CIO, DIO and Business executives.

Source: Agarwal & Sambamurthy, MIS Quarterly Executive, 2002
Principles & Models for Organizing the IT Function

The Platform Model
Enabler
Enterprise-wide Platform & Capabilities

- Mix of Innovation and Sourcing Networks.
- Innovation led by IT knowledgeable business executives.
- World-class IT infrastructure.

Source: Agarwal & Sambamurthy, MIS Quarterly Executive, 2002
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Principles & Models for Organizing the IT Function

The Scalable Model
Adapter
Strategic Flexibility through Sourcing

- Focus on Sourcing Network.
- Leverage External Partners.

Source: Agarwal & Sambamurthy, MIS Quarterly Executive, 2002
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**Matrixed Approach to IT Governance**

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<th>Archetype</th>
<th>Who Makes IT Decisions?</th>
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<td>Business Monarchy</td>
<td>Most centralized; senior business executives and maybe CIO.</td>
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<tr>
<td>IT Monarchy</td>
<td>Decisions made by CIO or group of IT executives.</td>
</tr>
<tr>
<td>Federal</td>
<td>Collaboration between C-level executives, business management and IT.</td>
</tr>
<tr>
<td>IT Duopoly</td>
<td>IT executives and a group of business leaders representing operating units.</td>
</tr>
<tr>
<td>Feudal</td>
<td>Localized decisions made by each business leader or group.</td>
</tr>
<tr>
<td>Anarchy</td>
<td>No IT governance; each individual decides what is in his/her best interest.</td>
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**Matrixed Approach to IT Governance**

- Five IT Decision Areas
  - IT Principles
  - IT Architecture
  - IT Infrastructure Strategies
  - Business Application Needs
  - IT Investment & Prioritization

- Variation in Performance Goals
  - Profit
  - Asset Utilization
  - Growth

Linking Mechanisms

- Project Level
- Steering Committees, IT Councils.
- Mutual Adjustment Mechanism to Emphasize Alignment

Requires Culture with Strong Shared Values

Source: Fonstad & Robertson, MIS Quarterly Executive, 2006

Cost of Coordination?

Coordination  Innovation

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But...do standardization and centralization diminish innovation?

INNOVATION = Innovative Idea + Execution

Standardization

Questions and Comments?
Thank you!

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