Managing Operations

Chapter 8
Information Systems Management In Practice 7E
McNurlin & Sprague
PowerPoints prepared by Michael Matthew
Visiting Lecturer, GACC, Macquarie University – Sydney Australia

Introduction

• Due to mergers, the Internet, e-commerce, and the September 11 terrorist attacks, the subject of computer operations has been receiving a lot of attention

• Systems operations are important because:
  – If they are not professionally run:
    • A company could suffer a computer or network crash that could shut down their business for some period of time

Introduction cont.

• Poorly run IS shops cause IS executives to end up ‘fighting fires’ instead of setting policy
  OR

• They find themselves looking for a job!

Introduction cont.

The main change in operations is the shift in viewpoint towards managing operations (Figure 8-1):

• Traditionally – managing inward, i.e.: managing one’s own operations staff
• Today – just as likely to mean managing outward = managing relationships with (external) service providers
  – Outsourced IT service providers who have taken over the day-to-day operational work

What Are Operations? Why Talk About Operations?

• A Typical MIS Department Budget:
  – 33% Systems and Programming
    • 70% Maintenance
    • 30% New Development
  – 10% Administration and Training
  – 57% Operations
    • Involve more $$$ than any other part of the IS department
    • Very involved (difficult), challenging and rewarding area
What Are Operations?
Solving Operational Problems

Operational problems are obvious to the entire company:
- Response times are slow
- Networks are down
- Data isn’t available
- Data is wrong

What Are Operations?
Solving Operational Problems cont.

- Three strategies to improve operations:
  1. Buy more equipment
  2. Continuously fight fires and rearrange priorities, getting people to solve the problems at hand
  3. Continually document and measure what you are doing, to find out the real problems, not just the apparent ones. Then set standards and manage to them.

What Are Operations?
Operational Measures

- External: What the customer sees:
  - System uptime
  - Response time
  - Turnaround time
  - Program failures
  - = Customer Satisfaction
- Internal: Of interest to systems people:
  - Computer usage as % of capacity
  - Disk storage used
  - Job queue length etc.
- Problems reported by external measures can be explained by deviations in internal measures

What Are Operations?
The Importance of Good Management

- The corporate culture created by IS management must recognize and value good operations
- Skills of an Operations manager = similar to that needed in e.g. a factory
  - Manager must schedule work to
    - meet delivery dates,
    - monitor performance
    - respond quickly to problems
- The key to managing operations is the same as in any management job:
  - Set standards
  - Then manage to those standards

What Are Operations?
What’s New in Operations?

- Companies have ‘cleaned their operational house’
  - Y2K and the Internet forced this
  - Now = most in relatively good shape
- More Operations managers are Managing outward – BUT CIOs must not relinquish responsibility for Operations
  - Ensure their people are properly managing relationships

What Are Operations?
The Focus of CIOs in Operations is Changing

- Their attention used to be focused on ensuring they had the in-house expertise to keep systems and networks up and tuning
- Their attention is now toward determining where best to perform the various kinds of operations:
  - In house or with a third party (or permutations and/or combinations thereof)
  - Then manage it accordingly
OUTSOURCING INFORMATION SYSTEMS (IS) FUNCTIONS

• Outsourcing means turning over a firm’s computer operations, network operations, or other IT function to a vendor for a specified time.

• CIOs are expected to at least to ‘prove’ that their in-house operations are as efficient and effective as if they were outsourced.

Outsourcing IS Functions: Driving Forces Behind Outsourcing

• Focus on core businesses: In the 1980s, this led to huge amount of merger and acquisition activity.

• Shareholder value: Companies were “priced” based on their shareholder value, that is, their discounted cash flow, as a result of high-yield bonds that allowed a few people to buy a company and leverage it with debt.
  – Drivers is $$$

Outsourcing IS Functions: Changing Customer-Vendor Relationships

• Relationships have expanded from buying professional services, to buying products and transactions, to integrating systems, to outsourcing.

• In this evolution:
  – CIOs have increasingly lost control
  – More activities turned over to outsiders
  – Providers take on more risks
  – As they move to (options on) the right of Figure 8-2
  – Provider’s margins increase
  – Importance of choosing the right provider becomes more important.

Outsourcing IS Functions: Outsourcing’s History

• In 1989 only (full) IT outsourcing was available
  – Essentially began with ‘big-bang’ deals.
  – The goal was purely financial.
  – Problems occurred – ‘us VS them’ and culture clash.

• Note: ‘Outsourcing’ existed in many other areas and had for years e.g. trucking.

• Early 1990s: Transitional outsourcing
  – Two routes outsourcing legacy systems
  – Maintenance of their legacy systems – hence – staff concentrate on building new client server systems
  – Client server development to specialists & keep maintenance in-house

• Mid to late ’90s = Best-of-breed outsourcing
  – Selective outsourcing began
  – ‘Collaborative outsourcing’ – one company prime contractor and secondary external service providers.

Outsourcing IS Functions: Outsourcing’s History cont.

• Shared services
  – “in-sourcing” to shared service groups-
  – Improved efficiencies &
  – Saved money

• Business process outsourcing
  – As IT Outsourcing ‘matured’ it became a commodity service
    – Profit margins dropped
    – Competitive rose
    – Quality Vs. Cost Vs. $$$ Vs. Pressure
    – Higher margins in specialized specific areas
    – Business process of which IT was a significant component
E-business outsourcing
- With the arrival of business use of the Internet, outsourcing has been one way that companies can quickly get Websites up and handling business
- In dot-coms and Internet-based operations
  - Preferred mode of operation
  - Even with the dot-com crash = still a legitimate way to mobilize for e-business
  - Allows a company to move fast
  - Companies can remain flexible
  - Does not tie up $$$ in computer and networking equipment

Preferred mode of operation
- Even with the dot-com crash = still a legitimate way to mobilize for e-business
- Allows a company to move fast
- Companies can remain flexible
- Does not tie up $$$ in computer and networking equipment

Outsourcing IS Functions:
Outsourcing’s History cont.

Utility Computing
- Also known as on-demand computing, virtual data centers and grid computing
- Idea = computing power can be treated like electricity: You plug in and only pay for what you use
- Numerous vendors, especially IBM, HP and Sun are promoting access rather than ownership
  - Selling the idea of turning clients’ fixed IT costs into variable costs

Outsourcing IS Functions:
Outsourcing’s History cont.

Managing Outsourcing:
1. Organizational Structure

- Managing outsourcing is different from managing internal staff
  - One reason = it is a joint effort between parties that may not have the same goals

- Typically, parties establish layers of joint teams.
  - Top-level team: final word in conflict resolution
  - Operational team: oversees day-to-day functioning
  - Joint special purpose teams: created from time to time to solve pressing issues
  - Committees: oversee the use of formal change management procedures
  - Relationship Manager(s): look after the ‘relationship’

Managing Outsourcing:
2. Governance

- The foundations of governing an outsourcing relationship are laid in the (LARGE) contract(s)
- Service Level Agreement (SLA)
  - Spells out responsibilities, performance requirements, penalties, bonuses
  - Another important component of SLAs is metrics. An SLA needs to be measurable to be of use
  - It is only when trust in one another breaks down that they turn to the contract. (Fig 8-4: Governance rules)

Managing Outsourcing:
3. Day-to-Day Working

- Recommendations to manage day-to-day interactions:
  - Manage expectations, not staff
    - Facilitation becomes the mode of working. Rather than say “do this”, the approach becomes “how can we solve this together”
    - Realize that informal ways of working may disappear
  - Loss of informal ways of working may add rigor
  - Integration of the two staffs requires explicit actions
    - Does not happen naturally
    - Explicit policies are likely to be needed
      - Don’t unduly restrict outsourcing staff access
      - Joint celebrations
    - Invite each other to meetings
  - The best way to manage day-to-day is communicate frequently
    - Preferably ‘face to face’!
Managing Outsourcing:
4. Supplier Development

- Topic that is receiving increased attention
- Buying parts and services that go into one’s own products and services
- Assisting one’s suppliers to improve their product and services by generally improving their processes

HONDA MOTOR COMPANY
Case Example: Supplier Development

- Not an IT related example (manufacturing) but a good one!
- This automobile manufacturer conducted pioneering work in improving suppliers’ capabilities by pairing Honda engineers with a supplier’s engineers to drastically lower the cost of one part supplied to Honda
- The results are like “walking around picking money up off the floor.”

Offshoring

- To round out our discussion of outsourcing, we turn to a topic receiving much attention today: sending work offshore
  - Now = a big political issue

Offshoring cont.

- Offshore outsourcing differs in some unique ways from domestic outsourcing
  - Some areas to be considered:
    1. Offshoring options are broadening
    2. Both parties need cultural training to bridge cultural differences

Offshoring cont.

- Offshore outsourcing differs from domestic
  - Some areas to be considered cont.
    3. Communication issues need to be addressed from the outset
      - “Yes” = “I hear what you are saying”
      - West = “I can do what you ask” or “I agree with you”
    - Tips
      - Avoid colloquialisms such as sporting analogies
      - Use short, concise sentences with common words
      - Have the provider write a ’statement of work’ to gauge understanding
      - Get all commitments in writing
      - Include on your team someone who know their culture
    - Communication issues continue throughout offshore relationships
  4. Country laws need to be followed

Information Security
The Threats

- Threats are numerous
- Websites are particularly vulnerable
- Political activism is one motivation for Website defacement
- Theft of proprietary information is a major concern
- Financial fraud is still a significant threat
  - Especially credit card information
  - No data of any value should be stored on web servers
Information Security

The Threats cont.

- Losses are increasing dramatically because companies have rushed into e-commerce, often with applications that do not have security built into the architecture or procedures
  - People think security can be added later but it really can’t be bolted on as an afterthought
  - Best security = designed into applications via checks during processing and at data transfer points

- It is easier to guard a bank vault than to guard every house in town
  - That’s why many companies are outsourcing their data center operations to data center specialists with vault-like security

Information Security

The Threats cont.

- The ‘hacker community’ (public club?)

- Approaches hackers use:
  1. Cracking the password
  2. Tricking someone (social engineering = ‘cute’ term!)
  3. Network sniffing
  4. Misusing administrative tools
  5. Playing middeeman
  6. Denial of service
  7. Trojan horse
  8. Viruses
  9. Spoofing/Masquerading

Information Security: Security’s Five Pillars

1. Authentication: verifying the authenticity of users
2. Identification: identifying users to grant them appropriate access privileges
3. Privacy: protecting information from being seen
4. Integrity: keeping information in its original form
5. Nonrepudiation: preventing parties from denying actions they have taken

Information Security: Technical Countermeasures

- The trend in computer security is toward defining security policies and then centrally managing and enforcing those policies via security products and services or policy-based management

Information Security: Technical Countermeasures

- The trend in computer security is toward defining security policies and then centrally managing and enforcing those policies via security products and services or policy-based management
Three techniques used by companies to protect themselves
1. **Firewalls**: Control access between networks
   - Used to separate intranets and extranets from the Internet so that only employees and authorized business partners can access
   - Implementation
     - Packet filtering to block “illegal” traffic, which is defined by the security policy… or
     - By using a proxy server, which acts as an intermediary

2. **Encryption**: to protect against sniffing, messages can be encrypted before being sent e.g. over the Internet
   - Two classes of encryption methods are used today:
     - Secret Key encryption
       - Data Encryption Standard (DES)
     - Public Key encryption
       - RSA
       - Needs public and private key
       - Incorporated into all major Web browsers and is the basis for secure socket layer (SSL)

3. **Virtual Private Networks (VPN)**: maintains data security as it is transmitted by using:
   - **Tunneling**: creates a temporary connection between a remote computer and the CLEC’s or ISP’s local data center. Blocks access to anyone trying to intercept messages sent over that link
   - **Encryption**: scrambles the message before it is sent and decodes it at the receiving end

Three ways to use VPNs:
1. **Remote Access VPNs**: give remote employees a way to access an enterprise intranet by dialing a specific ISP
2. **Remote Office VPNs**: give enterprises a way to create a secure private network with remote offices. The ISP’s VPN equipment encrypts all transactions
3. **Extranet VPNs**: give enterprises a way to conduct e-business with trading partners

Security is as much a human problem as a technical problem

**PRACTICE SAFE COMPUTING!!!!!**
Planning for Business Continuity
Using Internal Resources

- Organizations that rely on internal resources for IT disaster recovery generally see this planning as a normal part of systems planning and development. They use:
  - Multiple data centers
    - Move to have all computing in ‘one location’ = now under question
  - Distributed processing
  - Backup telecommunication facilities
  - Local area networks
    - One LAN can be used to backup servers for other networks

Planning for Business Continuity
Using External Resources

- Cost Vs. Risk may not justify permanent resources so companies use the services of a disaster recovery firm:
  - Integrated disaster recovery services
  - Specialized disaster recovery services
  - Online and off-line data storage facilities

Conclusion

- The subject of managing computer operations is, perhaps surprisingly, at an all-time high because of:
  - The emergence of e-commerce
  - The increasing use of outsourcing
  - News-grabbing viruses
  - Attacks on major websites, and
  - The terrorists acts on September 11th, October 12th etc.

Conclusion cont.

- As enterprises increasingly rely on computing and telecom to work closely with others, they open themselves up to more threats by electronic means
- Companies must be increasingly vigilant to outside threats
- In short, the view of operations is shifting from managing inward to managing outward
- It’s ‘essential’ but often ‘forgotten’ and it’s not easy. Key = MANAGEMENT