

Chapter 1:

THE INFORMATION SYSTEMS STRATEGY TRIANGLE

The information systems strategy triangle highlights the alignment necessary between decisions of business strategy, information systems, and organizational design. This chapter reviews models of business strategy including Porter’s generic strategies, and dynamic models such as hyper competition. It suggests a model for creating a social business strategy and briefly discusses frameworks for designing organizational Strategies including the Leavitt Business Diamond and the Managerial Levers model. It concludes with a simple framework for decoding information systems strategy.

The Information Systems Strategy Triangle presented in Figure 1-1. Successful firms have an overriding business strategy that drives both organizational strategy and IS strategy. The decisions made regarding the structure, hiring practices, vendor policies, and other components of the organizational strategy, as well as decisions have worked

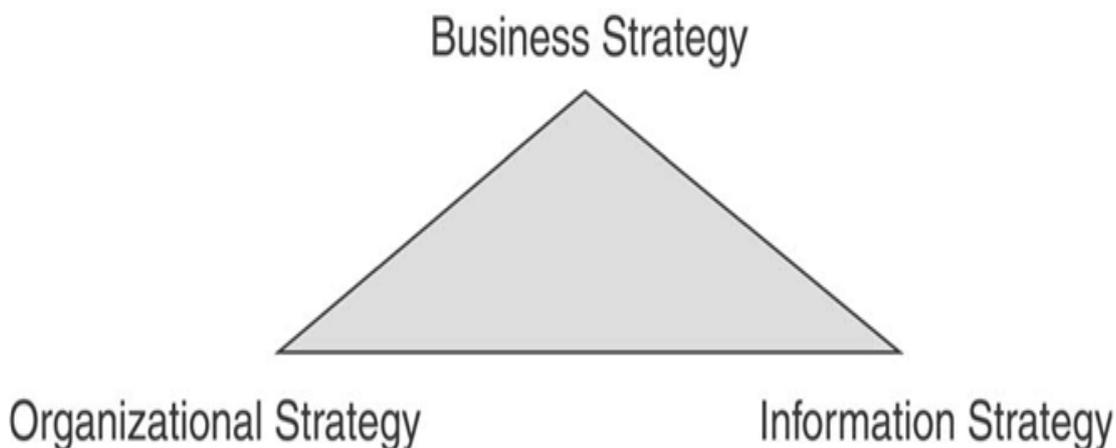


Figure 1-1 . The Information Systems Strategy Triangle

IS Strategy Triangle

- **Business Strategy drives all other strategies.**
- **Organizational and Information Strategy are then dependent upon the Business Strategy.**
- **Changes in any strategy require changes in the others to maintain balance.**
- **IS Strategy is affected by the other strategies a firm uses.**
- **IS strategy always involves consequences.**

BRIEF OVERVIEW OF BUSINESS STRATEGY FRAMEWORKS

A strategy is a coordinated set of actions to fulfill objectives, purposes, and goals. The essence of a strategy is setting limits on what the business will seek to accomplish. Strategy starts with a mission. A mission is a clear and compelling statement that unifies an organization's effort and describes what the firm is all about (i.e., its purpose). For example, Mark Zuckerberg, the CEO of Facebook, noted that he initially built Face book.

as a product but what ended up “after we started hiring more people and building out the team is I began to get an appreciation that a company is a great way to get a lot of people involved in a mission you're trying to push forward. In a few words the mission statement sums up what is unique about the firm.

As show in figure 1-2.

Company	Statement
IBM	At IBM, we strive to lead in the creation, development and manufacture of the industry's most advanced information technologies, including computer systems, software, networking systems, storage devices and microelectronics. We translate these advanced technologies into value for our customers through our professional solutions and services businesses worldwide.
Dell	Dell's mission is to be the most successful computer company in the world at delivering the best customer experience in markets we serve.
Apple	Apple ignited the personal computer revolution in the 1970s with the Apple II and reinvented the personal computer in the 1980s with the Macintosh. Apple is committed to bringing the best personal computing experience to students, educators, creative professionals and consumers around the world through its innovative hardware, software and Internet offerings.

Figure1-2 – Mission statements of computer companies

Generic Strategies Framework

Companies sell their products and services in marketplace populated with competitors.

- Michael Porter describes how businesses can build a sustainable competitive advantage.
- He identified three primary strategies for achieving competitive advantage:
 - Cost leadership – lowest-cost producer.
 - Differentiation – product is unique.
 - Focus – limited scope.

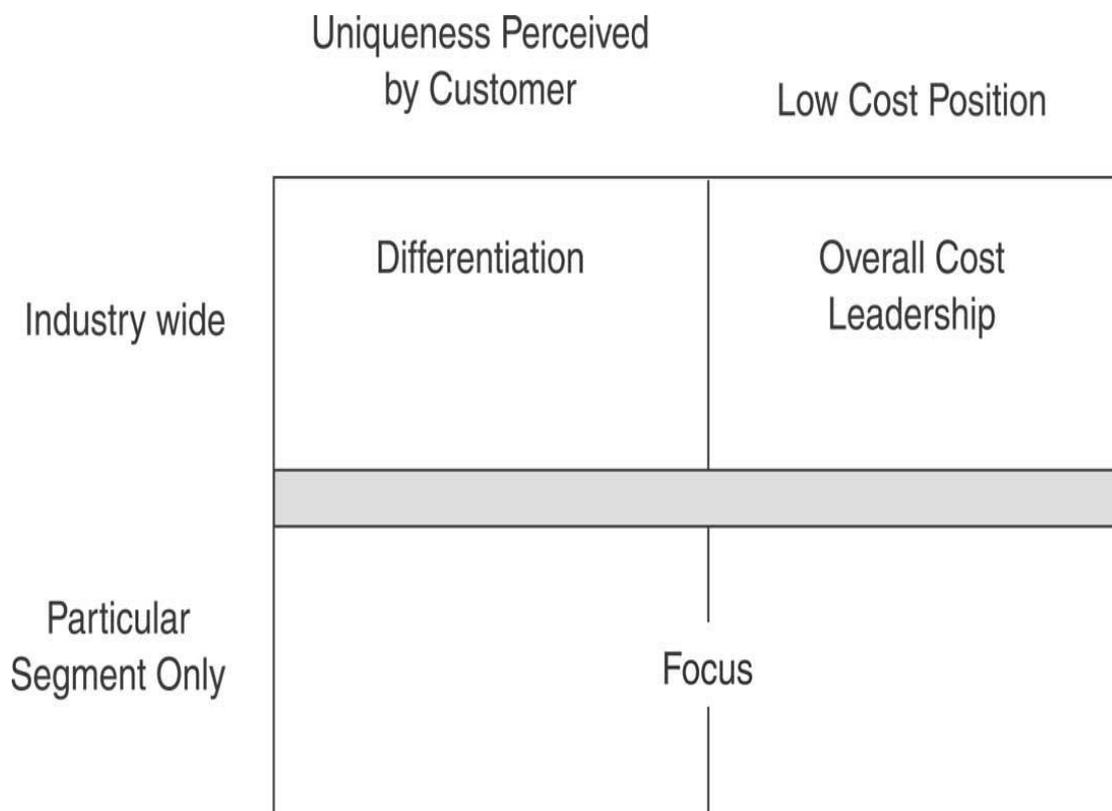


Figure1-3 . three strategies for achieving competitive advantage

Dynamic Environment Strategies

Porter's generic strategies model is useful for diagnostics, or understanding how a business seeks to profit in its chosen marketplace, and for prescriptions, or building new opportunities for advantage. It reflects a careful balancing of countervailing competitive forces posed by buyers, suppliers, competitors, new entrants, and substitute products and services within an industry. As is the case with many models, they offer managers useful tools for thinking about strategy.

Why Are Strategic Advantage Models Essential to Planning for Information Systems?

A general manager who relies solely on IS personnel to make IS decisions may not only give up any authority over IS strategy, but also may hamper crucial future business decisions. For the purposes of our model, the Information Systems Strategy Triangle, understanding business strategy means answering the following questions:

- 1. What is the business goal or objective?**
- 2. What is the plan for achieving it? What is the role of IS in this plan?**
- 3. Who are the crucial competitors and partners, and what is required of a Successful
Player in this market place?**
- 4. What are the industry forces in this marketplace?**

Framework	Key Idea	Application to Information Systems
Porter's generic strategies Framework	Firms achieve competitive advantage through cost leadership, differentiation, or focus	Understanding which strategy is chosen by a firm is critical to choosing IS to complement the strategy
D'Aveni's Hypercompetition Model	Speed and aggressive moves and countermoves by a firm create competitive advantage	IS are critical to achieving the speed needed for moves and countermoves. IS are in a constant state of flux or development.

Figure1-4 Summary of key strategy frameworks

BRIEF OVERVIEW OF ORGANIZATIONAL STRATEGIES

Organizational strategy includes the organization's design as well as the choices it makes to define, set up, coordinate, and control its work processes. The organizational strategy is a plan that answers the question: "How will the company organize to achieve its goals and implement its business strategy?" A few of the many models of organizational strategy are reviewed in this section. A classic framework for understanding the design of an organization is the business diamond, introduced by Harold Leavitt.¹⁴ Shown in Figure1- 5 , the business diamond identifies the crucial components of an organization's plan as its

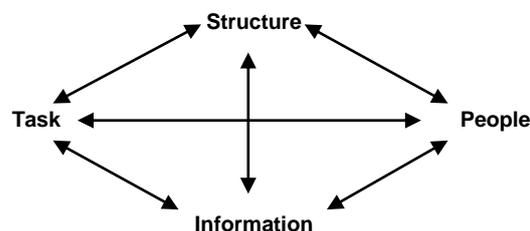


FIGURE1-5 the Leavitt Business Diamond

BRIEF OVERVIEW OF INFORMATION SYSTEMS STRATEGY

IS strategy is the plan an organization uses to provide information services. IS allows a Company to implement its business strategy. JetBlue's vice president for people explains it nicely: "We define what the business needs and then go find the technology to support that."¹⁶ Business

Managerial Levers

- This framework (Figure 1-6) suggests that the successful execution of a business's organizational strategy comprises the best combination of organizational, control, and cultural variables.
- Organizational variables include:
 - decision rights, business processes, formal reporting relationships, and informal networks.
- Control variables include:
 - availability of data, nature and quality of planning, effectiveness of performance measurement and evaluation systems, and incentives to do good work.

Cultural variables comprise the values of the organization

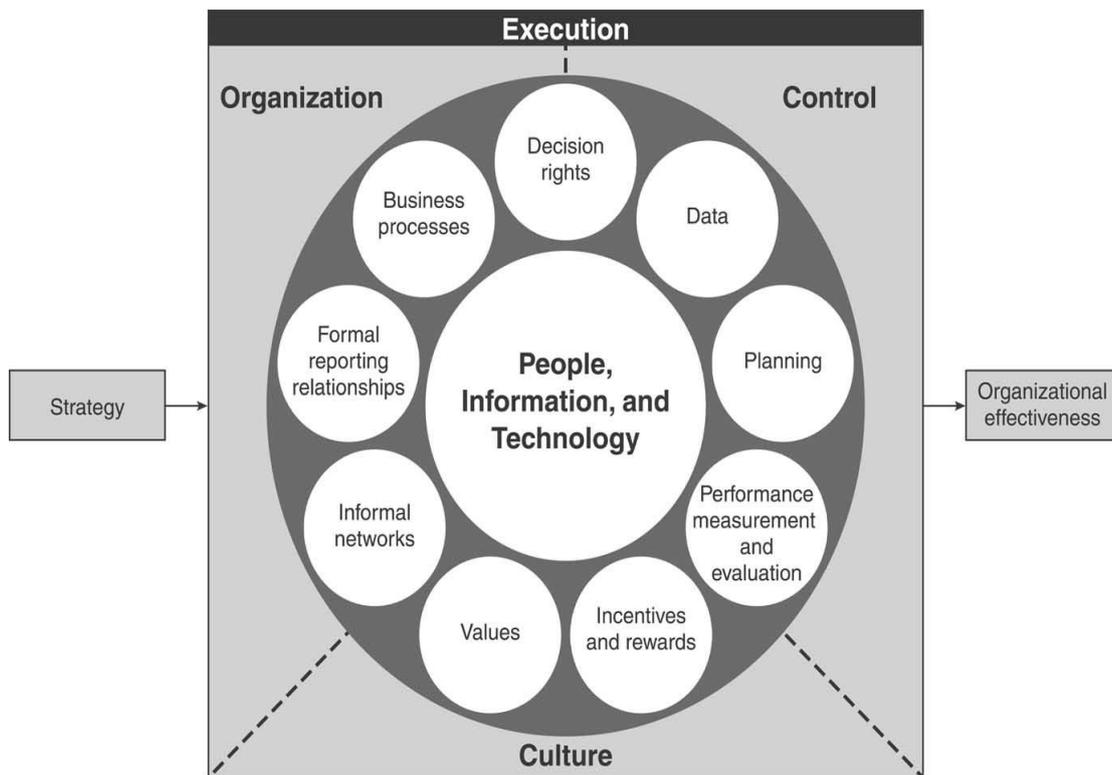


Figure1- 6 Managerial Levers

Chapter2:

STRATEGIC USE OF INFORMATION RESOURCES

This chapter introduces the concept of building competitive advantages using information systems-based applications. It begins with a discussion of the eras showing how the use of information resources has been historically viewed. It then looks at information resources as strategic tools, discussing information technology (IT) assets and IT capabilities.

Learning Objectives

- List the identifying factors of the eras of information usage.
- Know what makes an information resource valuable.
- Explain how information resources are used strategically in context of the 5-forces model.
- Understand how information resources can be used to alter the value chain.
- Explain the importance of strategic alliances.
- Know the risks of information resources.

Real World Examples

- The Spanish manufacturer Zara has a simple business model that provides a significant strategic advantage.
- Their system links demand to manufacturing and manufacturing to distribution.
- Customers visit up to 17 times per year to check on new items that may have arrived.
- Since products are limited customers will immediately purchase products they like.

Loyal and satisfied customer base

EVOLUTION OF INFORMATION RESOURCES

The Eras model shows how organizations have used IS over the past decades. Summarizes this view and provides a road map for a general manager to use in thinking strategically about the current use of information resources within the firm. IS strategy from the 1960s to the 1990s was driven by internal organizational needs. First came the need to lower existing transaction costs.

	1960s	1970s	1980s	1990s	2000+
Primary Role of IT	Efficiency Automate existing paper-based processes	Effectiveness Solve problems and create opportunities	Strategic Increase individual and group effectiveness	Strategic Transform industry/organization	Value creation Create collaborative partnerships
Justify IT expenditure	ROI	Increasing productivity and decision making	Competitive Position	Competitive position	Adding Value
Target of systems	Organization	Individual manager/ Group	Business processes	Business processes ecosystem	Customer, supplier, ecosystem
Information model	Application Specific	Data-driven	User-driven	Business-driven	Knowledge-driven
Dominant technology	Mainframe-based	Minicomputer-based	Microcomputer “decentralized intelligence”	Client-Server “distribution intelligence”	Internet “ubiquitous intelligence”

Figure 2-2 Eras of information usage in organizations

INFORMATION RESOURCES AS STRATEGIC TOOLS

Crafting a strategic advantage requires the general manager to cleverly combine all the firm's resources, including financial, production, human, and information resources, And to consider external resources such as the Internet and opportunities in the global Arena. Information resources are more than just the infrastructure.

- The term information resources is defined as the available data, technology, people, and processes available to perform business processes and tasks.
 - Information resources can be either assets or capabilities.
 - *IT asset* is anything, tangible or intangible, that can be used by a firm in its processes for creating, producing and/or offering its products (IT infrastructure is an asset).

IT capability is something that is learned or developed over time in order for the firm to create, produce or offer it products.

IT Assets

- IS infrastructure:
 - It includes data, technology, people, and processes.
 - The infrastructure provides the foundation for the delivery of a firm's products or services.
- Information repository.
 - Logically-related data that is captured, organized and retrievable by the firm.
- Web 2.0 assets now include resources used but not owned by the firm (eBay, Facebook, etc.).

IT Capabilities

- Three major categories of IT capabilities:
 - Technical skills - applied to designing, developing and implementing information systems.
 - IT management skills - critical for managing the IT function and IT projects.
 - Relationship skills - can either be externally-focused or spanning across departments.

HOW CAN INFORMATION RESOURCES BE USED STRATEGICALLY?

The general manager confronts many elements that influence the competitive environment of his or her enterprise.

The first view uses the five competitive forces model by Michael Porter to look at the major influences on a firm's competitive environment.

The second view uses Porter's value chain model to assess the internal operations of the organization and partners in its supply chain.

The third view specifically focuses on the types of IS resources needed to gain and sustain competitive advantage.

These three views provide a general manager with varied perspectives from which to identify strategic opportunities to apply the firm's information resources.

Using Information Resources to Influence Competitive Forces

- Porter's five forces model show the major forces that shape the competitive environment of the firm.
 1. **Threat of New Entrants**: new firms that may enter a company's market.
 2. **Bargaining Power of Buyers**: the ability of buyers to use their market power to decrease a firm's competitive position
 3. **Bargaining Power of Suppliers**: the ability suppliers of the inputs of a product or service to lower a firm's competitive position
 4. **Threat of Substitutes**: providers of equivalent or superior alternative products
 5. **Industry Competitors**: current competitors for the same product.

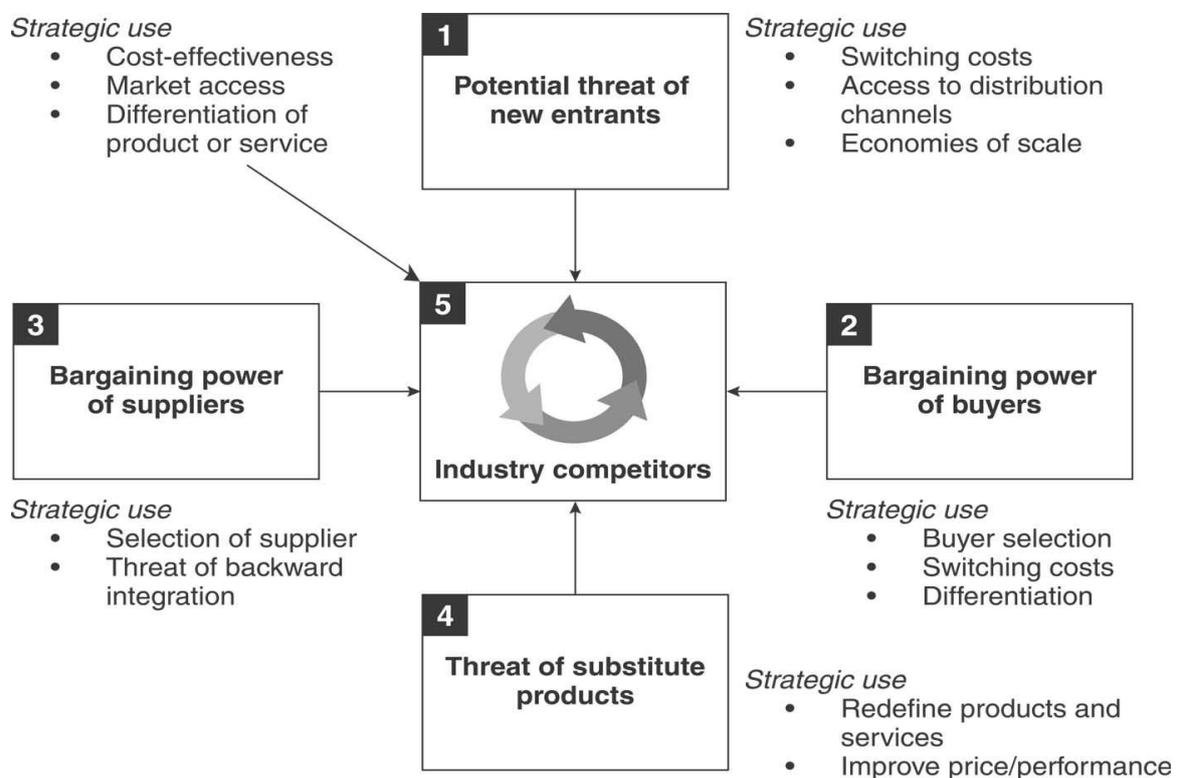


Figure 2-3 Five competitive forces with potential strategic use of information resources

Competitive Force	IT Influence on Competitive Force
Threat of New Entrants	Zara's IT supports its tightly-knit group of designers, market specialists, production managers and production planners. New entrants are unlikely to provide IT to support relationships that have been built over time. Further it has a rich information repository about customers that would be hard to replicate.
Bargaining Power of Buyers	With its constant infusion of new products, buyers are drawn to Zara stores. Zara boasts more than 11,000 new designs a year, whereas competitors typically offer only 2,000 – 4,000. Further, because of the low inventory that the Zara stores stock, the regulars buy products they like when they see them because they are likely to be gone the next time they visit the store. More recently Zara has employed laser technology to measure 10,000 women volunteers so that it can add the measurements of 'real' customers into its information repositories. This means that the new products will be more likely to fit Zara customers.
Bargaining Power of Suppliers	Its computer-controlled cutting machine cuts up to 1000 layers at a time. It then sends the cut materials to suppliers who sew the pieces together. The suppliers' work is relatively simple and many suppliers can do the sewing. Thus, the pool of suppliers is expanded and Zara has greater flexibility in choosing the sewing companies. Further, because Zara dyes 50% of the fabric in its plant, it is less dependent on suppliers and can respond more quickly to mid-season changes in customer color preferences.
Threat of Substitute Products	Industry competitors long marketed the desire of durable, classic lines. Zara forces on meeting customer preferences for trendy, low-cost fashion. It has the highest sales per square foot of any of its competitors. It does so with virtually no advertising and only 10% of stock is unsold. It keeps its inventory levels very low and offers new products at an amazing pace for the industry (i.e., 15 days from idea to shelves). Zara has extremely efficient manufacturing and distribution operations.
Industrial Competitors	Zara offers extremely fashionable lines that are only expected to last for approximately 10 wears. It offers trendy, appealing apparel at a hard-to-beat price.

Figure 2-4 Application of five competitive forces model for Zara

RISKS

As demonstrated throughout this chapter, information resources may be used to gain Strategic advantage, even if that advantage is fleeting.

Many risks that may surface. Some of these risks include the following:

- 1_ Awakening a sleeping giant. A firm can implement IS to gain competitive advantage.
2. _ Demonstrating bad timing. Sometimes customers are not ready to use the technology designed to gain strategic advantage.
- 3-Implementing IS poorly. Stories abound of information systems that fail because they are poorly implemented. .
4. _ Failing to deliver what users want.
- 5_ Mobile-based alternative removes advantages.
6. Running afoul of the law. Using IS strategically may promote litigation if the IS results in the violation of laws or regulations.

Chapter 3:

ORGANIZATIONAL STRATEGY AND INFORMATION SYSTEMS

In order for Information Systems to support an organization in achieving its goals.

This chapter focuses on linking and coordinating the IS strategy with the three components of organizational strategy:

- _ organizational design (decision rights, formal reporting relationships
And structure, informal networks)
- _ Management control systems (planning, data collection, performance
Measurement, evaluation, incentives, and rewards)
- _ Organizational culture (organizational, national)

Real World Examples

- Diamond Technology Partners (DTP).
 - Every consultant has a laptop to permit automatic connectivity
With the corporate intranet.
 - Intense use of computers, shared data, extensive electronic
Communications foster high levels of interaction & fluid, highly adaptable work
arrangements.
- Mrs. Fields IS focused on sales skills not simply production.
 - Implemented a computer system that automated much of the baking and planning
tasks.
 - Employees able to focus on sales not on baking issues.
- IS is fundamental to the way these companies are Organized to do business.
- IS can leverage human resources, capital and materials.

INFORMATION AGE ORGANIZATIONS

Key Characteristics

- 1988 three professors at Harvard Business School predicted what would be key characteristics of information age organizations.
- Their predictions were close to what happened
- These predictions can be related to three categories (Figure 3.1):
 - Organizational structure.
 - Human resources.
 - Management processes.
- Information age organizations use a different organization structures.

INFORMATION TECHNOLOGY AND ORGANIZATIONAL DESIGN

IT & Organizational Structures

- Traditional organizations are hierarchical, flat or matrix in design (Fig. 3.1).
- In hierarchical orgs. middle managers tell subordinates what to do and tell superiors the outcomes. IS supports this hierarchy
- In flat structured orgs. work is more flexible and employee do whatever is needed. IS allows offloading extra work and supports intra-firm communications.
- In matrix organizations, work is organized into small work groups and integrated regionally and nationally/globally.
 - IS reduces operating complexes and expenses by allowing information to be easily shared among different managerial function

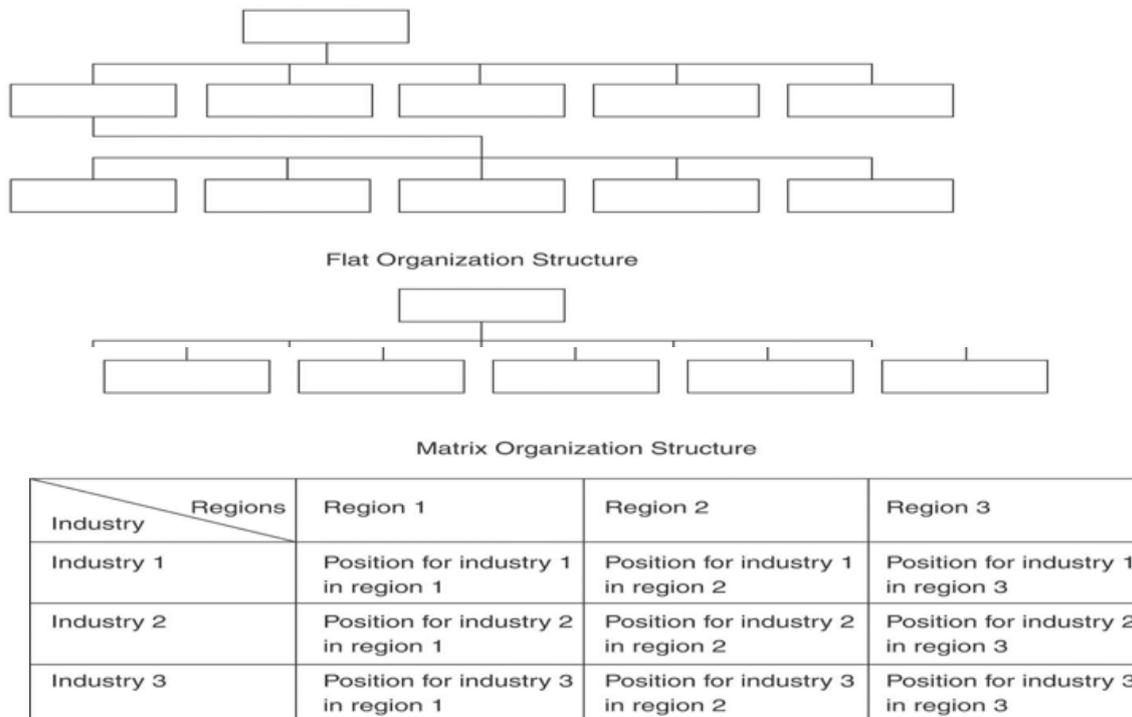


Figure 3.1 Hierarchical, Flat and Matrix Organization Structures

Formal Reporting Relationships and Organization Structures

Organization structure is the way of designing an organization so that decision rights are correctly allocated. The structure of reporting relationships typically reflects the flow of communication and decision making throughout the organization. Traditional organization structures are hierarchical, flat, or matrix. The networked structure is a newer organizational form. A comparison of these four types of organization structures may be found in Figure 3.2

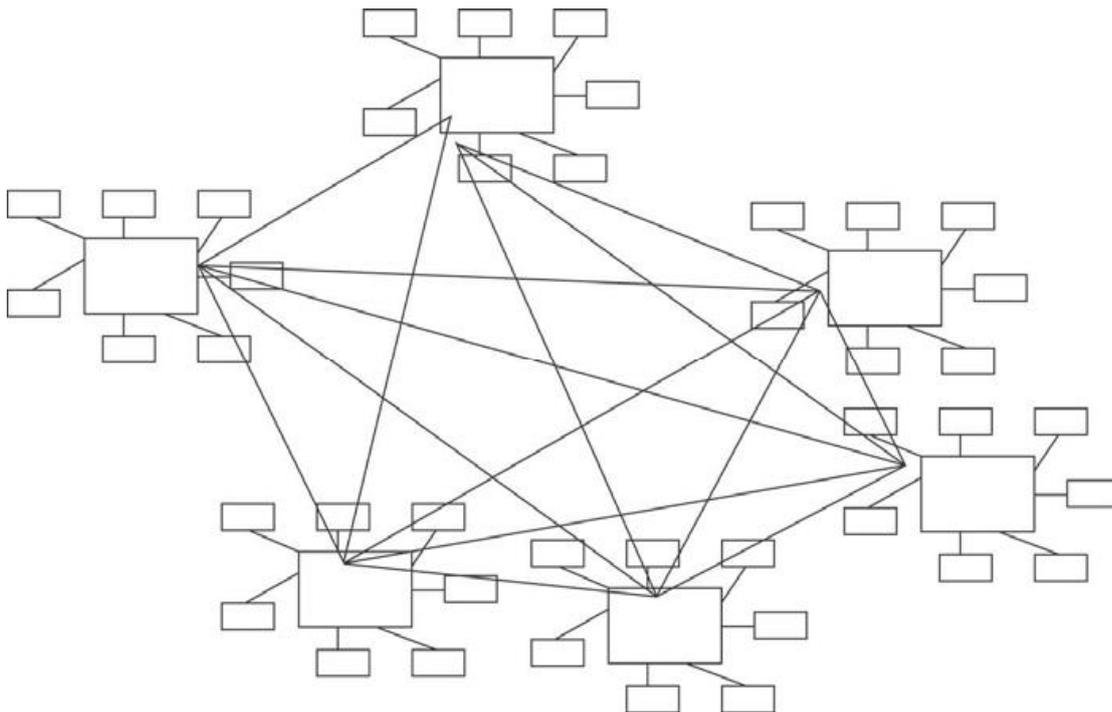


Figure 3.2 The Networked Organization

Informal Networks

- Informal relationships exist and can play an important role in the functioning of an organization.
- Some informal relationships are designed by management:
 - Working on a project.
 - Job rotation program, etc.
- Unintended networks are formed throughout an organization by:
 - Proximity
 - Shared interest
 - Family ties, etc.

- Some even cross organizational boundaries.

INFORMATION TECHNOLOGY AND MANAGEMENT CONTROL SYSTEMS

Management Control

- IT profoundly affects the way managers control their organizations.
- People and processes are monitored in ways that were not possible only a decade ago.
- Managers need to control work done at the process level.
- The organizational structure will determine the level of control that a manager must exercise.
- IS plays three important roles in management control processes:
 - Data collection, Evaluation, and Communication

IT Changes the Way Managers....

- **Monitor:** IS makes possible new ways to track performance and behavior
- **Evaluate:** models are easily built, making it easier to understand progress and performance
- **Provide Feedback:** IS makes rapid feedback possible (e.g., through electronic forms)
- **Compensate & Reward:** team-based efforts can be evaluated and complex formulas used
- **Control Processes:** IS also used extensively in industrial processes, and makes it easier to collect, analyze and move information

CULTURE

- Culture is the third managerial lever.
- Plays an increasingly important role in IS development and use.
- It is defined as a shared “set of values and beliefs about what is desirable and undesirable in a community of people”.
- Culture is not static but always changing.
- Different levels of culture.

National culture differences may affect system development and use.

- Hofstede is one of the best known researchers in the values across national cultures.
- The GLOBE (Global Leadership and organizational Behavior Effectiveness) research program was a team of 150 researchers who have collected data on cultural values and practices and leaderships attributes from over 18,000 managers in 62 countries.
- The GLOBE dimensions and their relationship to Hofstede’s dimensions

CHAPTER 4:

INFORMATION SYSTEMS AND THE DESIGN OF WORK

IT has drastically changed the way we work. A Work Design Framework is used to explore how IT can be used effectively to support these changes and help make workers more effective. The framework answers the “What,” “Who,” “Where,” and “When” of these changes.

Learning Objectives

- Understand how IT has changed the nature of work.
- Define virtual organizations and how they work.
- List the technologies that are used to support communication and collaboration.
- Explain telecommuting and the technologies that support telecommuting.
- Discuss how managers need to manage virtual teams, and the challenges this creates.

Understand how attitudes impact technology acceptance in organizations

WORK DESIGN FRAMEWORK

In this chapter a simple framework is used to assess how emerging technologies may affect work. As is suggested by the Information Systems Strategy Triangle (in Chapter 1), this framework links the organizational strategy with IS decisions. Consider the following questions:

- **What work will be performed?** Understanding what tasks are needed to complete the process being done by the worker requires an assessment of specific desired outcomes, inputs, and the transformation needed to turn inputs into outcomes.
- **Who is going to do the work?** Sometimes the work can be automated.
- **who should that person be?**
- **What skills are needed?**

- **Where will the work be performed?** With the increasing availability of networks,
- **When will the work be performed?**
- **How can IT increase the effectiveness of the workers doing the work?**
- **How can IT help workers communicate with other workers to get the work done?**
- **How can IT support collaboration?**
- **What can be done to increase the acceptance of IT-induced change?**

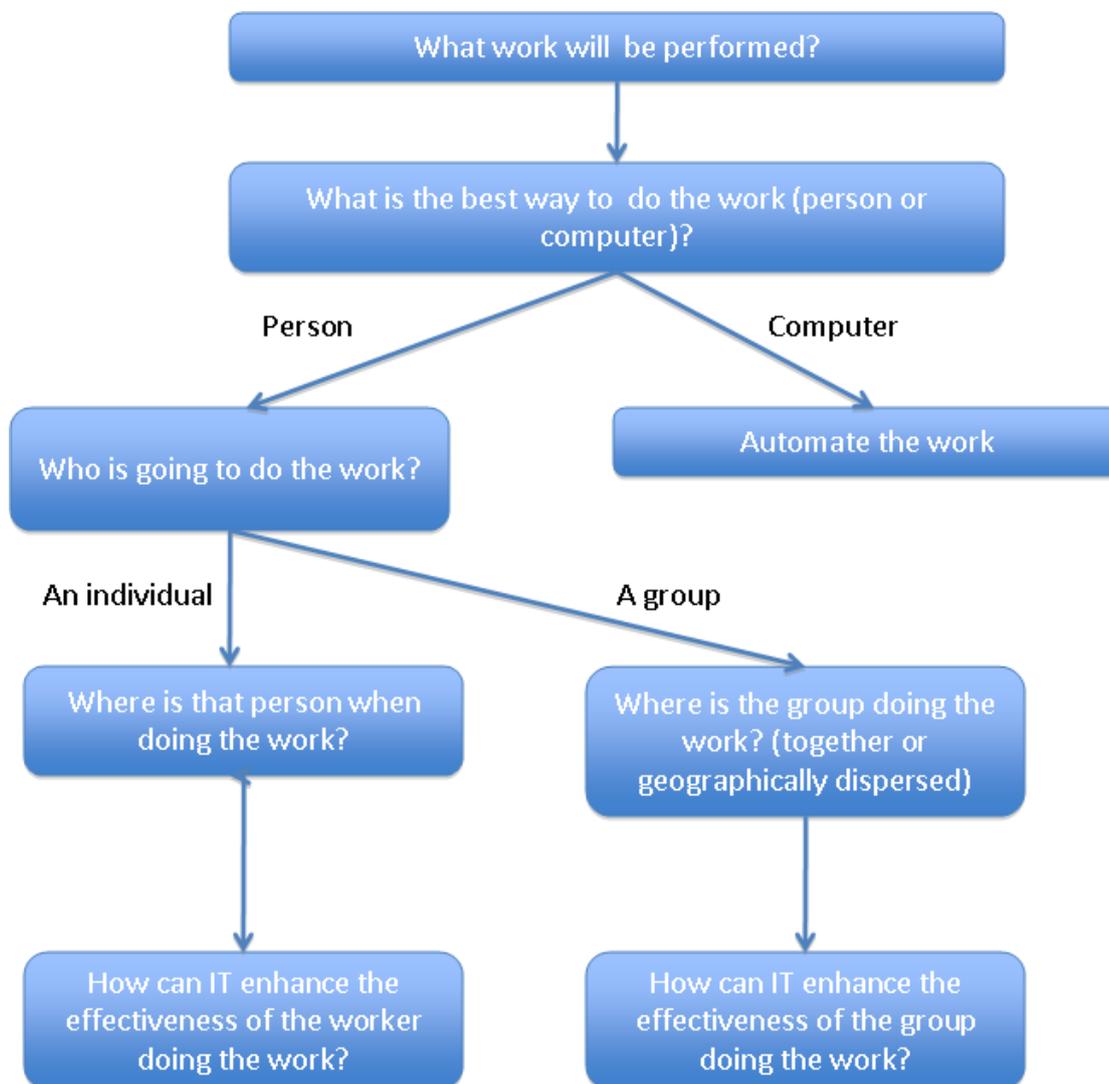


Figure 4.1 Framework for work design

HOW INFORMATION TECHNOLOGY SUPPORTS COMMUNICATION AND COLLABORATION

IT to Facilitate Communication

- **E-mail** - a way of transmitting messages over communication networks.
 - First uses of the Internet.
 - Composed primarily of text but can include other mediums (video, audio, etc.).
 - Mailing list server
- **Intranet** - Looks and acts like the Internet
 - Comprised of information used exclusively within a company
 - Unavailable to the Internet community as a whole.

IT to Facilitate Communication

- **Instant Messaging (IM)** – an IP-based instant communication application.
 - Provides convenient communication between people using computers, cell phones, etc.
 - Can be used to check on telecommuting employees by managers.
- **Voice over IP (VoIP)** - Method enabling telecommunications (phone calls) to be transmitted over an IP based network.
 - Skype is a type of VoIP system that permits users to make free phone calls over the Internet.
 - Very useful for communicating with remote workers.

- **Video Conferencing** - set of interactive telecommunication technologies allowing two or more locations to interact via two-way video and audio transmissions simultaneously.
- **Unified communications (UC)** - an "evolving communications technology architecture which automates and unifies all forms of human and device communications in context, and with a common experience
- **RSS** - refers to a structured file format for porting data from one platform or information system to another.
 - Commonly used to keep up to date data at hand.
- **VPN (Virtual Private Network)** - private data network that leverages the public telecommunication infrastructure.
 - It maintains privacy through the use of a tunneling protocol and security procedures.
 - Very useful for telecommuters.
- **File Transfer** - consists simply of transferring a copy of a file from one computer to another on the Internet.
 - File transfer protocol (FTP), the most common type. Permits transfer of files, of almost any size, to be sent across a company or the globe.
- Thomas Friedman argues that collaboration is the way that small companies can “act big” and flourish in today’s flat world.

IT to Facilitate Collaboration

- **Social networking** - a web-based service that allows its members to create a public profile with their interests and expertise, post text and pictures and all manner of data, list other users with whom they share a connection, and view and communicate openly or privately with their list of connections and those made by others within the system (MySpace, Face Book, etc.).

- **Virtual worlds** - computer-based simulated environments intended for its users to inhabit and interact via avatars (like Second Life).
- **Web logs (Blogs)** - Online journals that link together into a very large network of information sharing.
 - Companies use for a variety of communication purposes.
- **Wikis** - software that allows users to work collaboratively to create, edit and link webpages easily.
- **Groupware** - software that enables group members to work together on a project, from anywhere, by allowing them to simultaneously access the same files.

HOW INFORMATION TECHNOLOGY CHANGES THE NATURE OF WORK

- IT has created many new jobs or redefined existing ones.
- Positions in IT include:
 - Programmers, analysts, IT managers, hardware assemblers, web site designers, software sales personnel, and IT consultants
- The Bureau of Labor Statistics places the number of IT workers at 3.7 million in 2006.
 - But, it is expected to grow by 25.2% to 4.0 million by 2016.

HOW INFORMATION TECHNOLOGY CHANGES WHERE WORK IS DONE AND WHO DOES IT

Telecommuting and Mobile Work

- Telecommuting has been around since the 1970s but has gained popularity since the late 1990S.
- Approximately 45 million Americans telecommuted in some fashion in 2006.
- This number is expected to increase to 100 million by 2010.
- Recent survey revealed that 12% of an organization's workforce is at a remote location.

- Figure 4.3 show factors that are driving this trend.

Driver	Effect
<p>Shafto knowledg e-based work</p>	<p>Eliminates requirement that certain work be performed in a specific place.</p>
<p>Changing demogra phics and lifestyle preferenc es</p>	<p>Provides workers with geographic and time-shifting flexibility.</p>
<p>New technolog ies with enhanced bandwidt h</p>	<p>Makes remotely performed work practical and cost-effective</p>
<p>Reliance on Web</p>	<p>Provides workers with the ability to stay connected to co-workers and customers, even on a 24/7 basis.</p>
<p>Energy oncerns</p>	<p>Reduces the cost of commuting for telecommuters and reduces energy costs associated with real estate for companies</p>

Disadvantages of Telecommuting and Mobile Work

- More difficult for managers to evaluate and compensate performance
- Workers must be extremely self-disciplined
- May end up working more hours.
- Can disconnect them from corporate culture
- Off shoring and outsourcing of software development and computer services enabled by the same technologies is another risk.

FOOD FOR THOUGHT: security with remote workers

Security with Remote Workers

- VA laptop with sensitive, unencrypted information on more than 2.2 million active duty military personnel was stolen from a worker's home.
- Security policies and procedures must be clearly posted, communicated, and enforced.
- A policy should include those rules necessary to protect sensitive and proprietary data.
- It is impossible to make remote workers totally secure, but organizations must do their best to educate and support secure practices.

Chapter 5

Information Technology and Changing Business Processes

Learning Objectives

- List how IT enables business change
- Identify ways in which IT can impede business change
- Understand the problems that are caused by the functional (silo) perspective of a business
- Identify how the process perspective keeps the big picture in view and how IT can be used to facilitate this perspective
- Define TQM and BPR and explain how they are used to transform a business
- Explain an enterprise system and how they are used to implement organizational change

SILO PERSPECTIVE VERSES BUSINESS PROCESS PERSPECTIVE

Silo (Functional) Perspective

- The silo perspective views the business as discrete functions (accounting, sales, production, etc.).
 - Figure 5.1 shows a traditional organizational chart which is how a functional business is organized.
- Each functional area determines its core competencies and focuses on what it does best.

- Advantages:
 - Allows optimization of expertise.
 - Group like functions together for learning.
- Disadvantages:
 - Significant sub-optimization.

Tend to lose sight of overall organizational objectives

Typical Hierarchical Organization Structure

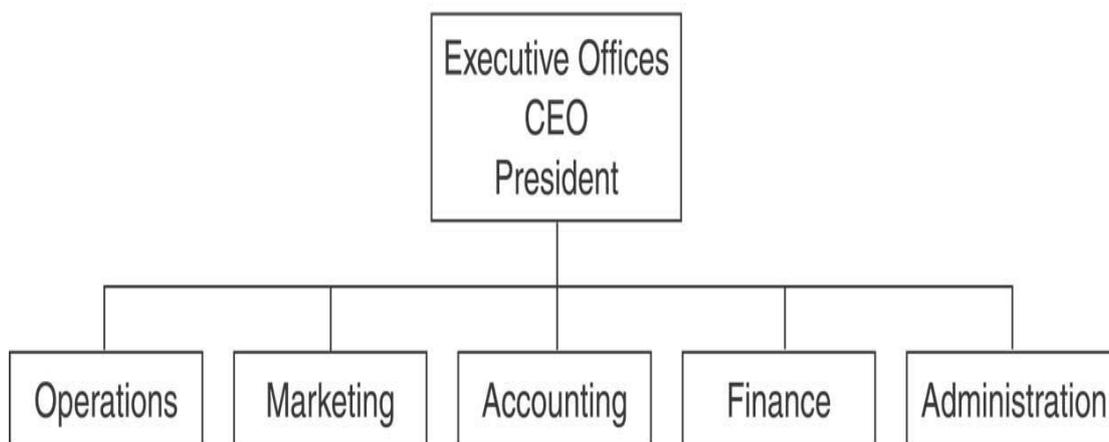


Figure 5.1 Hierarchical Structure

Process Perspective

- Keeps the big picture in view.
- Focuses on work being done to create optimal value for the business.
- Process is defined as an interrelated, sequential set of activities and tasks that turns inputs into outputs, and includes the following:
 - A beginning and an end
 - Inputs and outputs
 - A set of tasks (sub processes) that transform the inputs into outputs
 - A set of metrics for measuring effectiveness

Process Perspective

- Examples of business processes include:
 - customer order fulfillment
 - manufacturing, planning and execution
 - payroll
 - financial reporting
 - procurement (see figure 5.2)

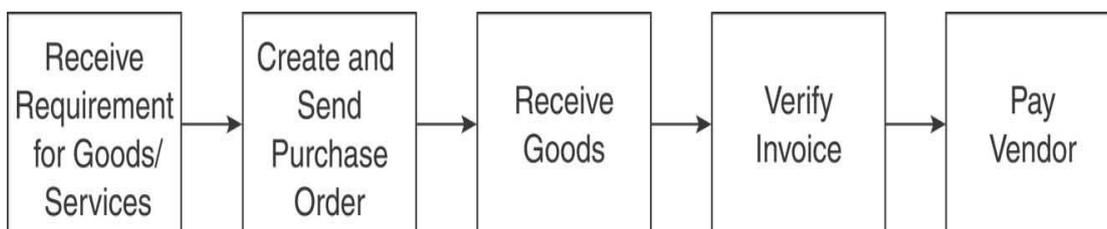


Figure 5.2 – Sample business process

Process Perspective

- Advantages:
 - Helps avoid or reduce duplicate work.
 - Facilitate cross-functional communication.
 - Optimize business processes.
- Figure 5.3 shows the cross-functional view of processes as they cross departments (functions).

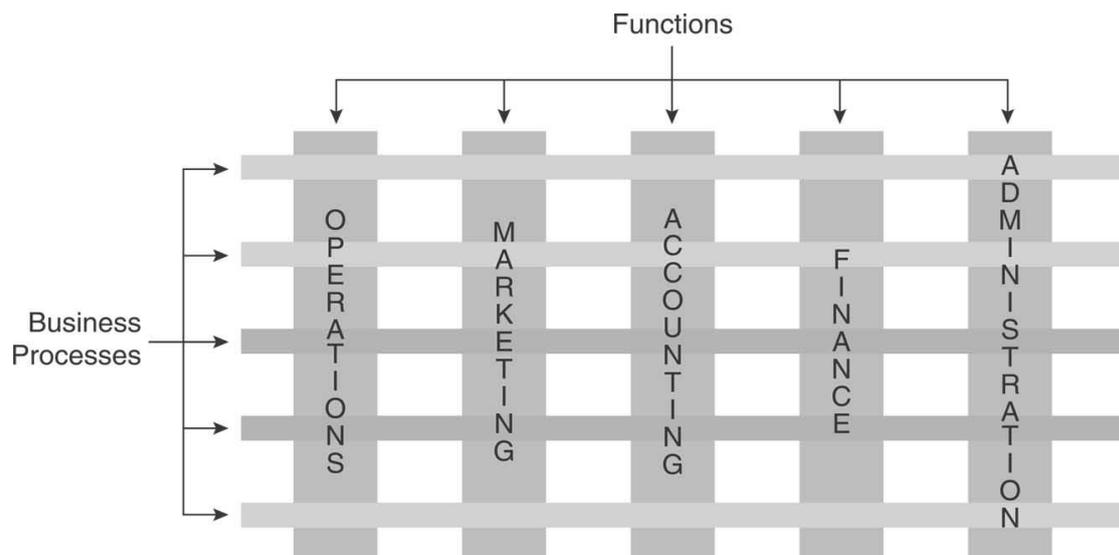


Figure 5.3 Cross-functional nature of business processes

Process Perspective

- When managers gain the process perspective they begin to lead their organizations to change.
 - Question status quo.
 - Don't accept "because we have always done it that way" as an answer to why business is done in a particular way.
 - Allows managers to analyze business's processes in light of larger goals.
- Zara is a good example of a process perspective business (see chapter 2).

	Silo Perspective	Business Process Perspective
Definition	Self-contained functional units such as marketing, operations, finance, and so on	Interrelated, sequential set of activities and tasks that turns inputs into outputs
Focus	Functional	Cross-functional
Goal Accomplishment	Optimizes on functional goals, which might be a suboptimal organizational goal.	Optimizes on organizational goals, or "big picture"
Benefits	Highlighting and developing core competencies; Functional efficiencies	Avoiding work duplication and cross-functional communication gaps ; organizational effectiveness

Figure 5.4 Comparison of Silo Perspective and Business process Perspective

THE TOOLS FOR CHANGE

Incremental Change

- Total Quality Management (TQM) is a tool for change that uses small incremental changes.
- Personnel often react favorably to TQM.
- Greater personnel control and ownership.
- Change is viewed as less of a threat.
- Six-Sigma is one popular approach to TQM

Six Sigma

- **Six Sigma asserts that –**
 - Continuous efforts to achieve stable and predictable process results are of vital importance to business success.
 - Manufacturing and business processes have characteristics that can be measured, analyzed, improved and controlled.
 - Achieving sustained quality improvement requires commitment from the entire organization, particularly from top-level management.
- It seeks to eliminate defects from any process.

Radical Change

- Business Process Reengineering (BPR) is a more “radical” change management tool.
- Attain aggressive improvement goals.
- Goal is to make a rapid, breakthrough impact on key metrics.
- Figure 5.6 shows the difference over time of the radical (BPR) and incremental (TQM) approaches to change.
- Greater resistance by personnel.

Use only when major change is needed

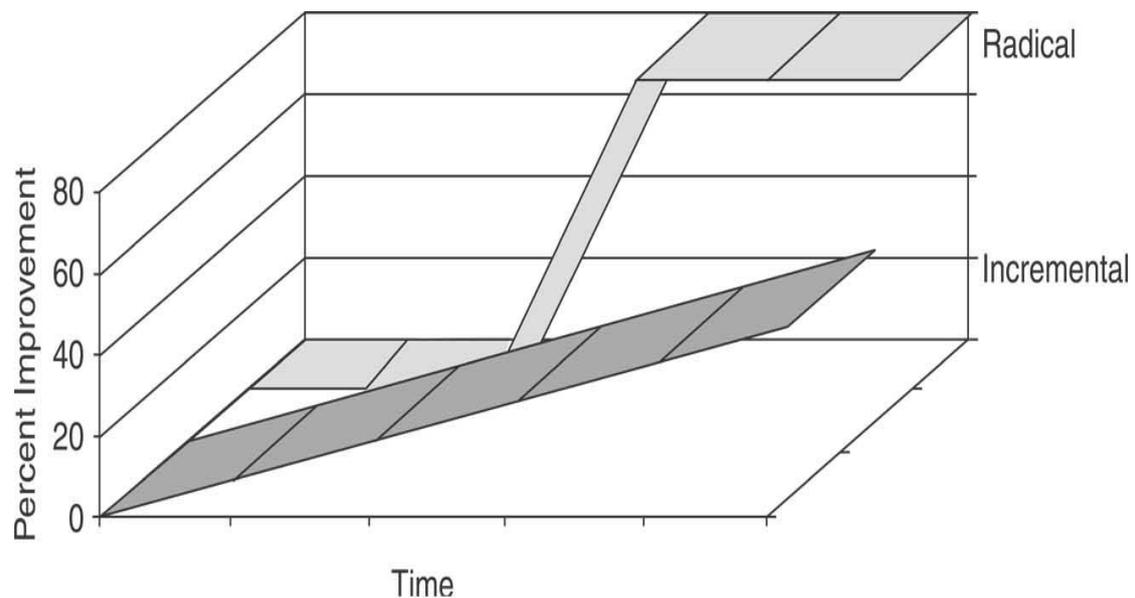


Figure 5.5 Comparison of radical and incremental improvement

Risks of Radical Redesign

- Lack of senior management support.
- Lack of a coherent communications program.
- Introducing unnecessary complexity into the new process design.
- Introducing unnecessary complexity into the new process design.
- Combining reengineering with downsizing

Chapter 6

Architecture and Infrastructure

Learning Objectives

- Understand how strategy drives architecture which then drives infrastructure.
- Identify and define the three configurations for IT architecture.
- Define how business goals can be translated into IT architecture and then into infrastructure.
- Know the different types of frameworks used to design and build the IT architecture and infrastructure.

Understand the importance of knowing the details of the existing architecture and infrastructure of the organization

Real World Examples

- Over the past 10 years Valero Energy (gas/oil refiner) has experienced hyper-growth.
- Revenue has grown from \$29 to \$90 billion.
- This growth came with a mixture of disparate IT systems and applications.
 - Difficult and expensive to manage.
 - Not easily integrated into ERP system.
- IT architecture needed to be redesigned to meet future needs.
 - Flexible in design and able to grow with the company.
 - An SOA system was selected (SAP R/3 ERP).
 - 90 service components were built on the SAP platform.

FROM VISION TO IMPLEMENTATION

- Architecture translates strategy into infrastructure (see Figure 6.1).
- The architect develops plans based on a vision of the customer of the system (or in this example a house) which is a blueprint of the companies systems.
- This “blueprint” is used for translating business strategy into a plan for IS.
- The IT infrastructure is everything that supports the flow and processing of information (hardware, software, data, and networks).

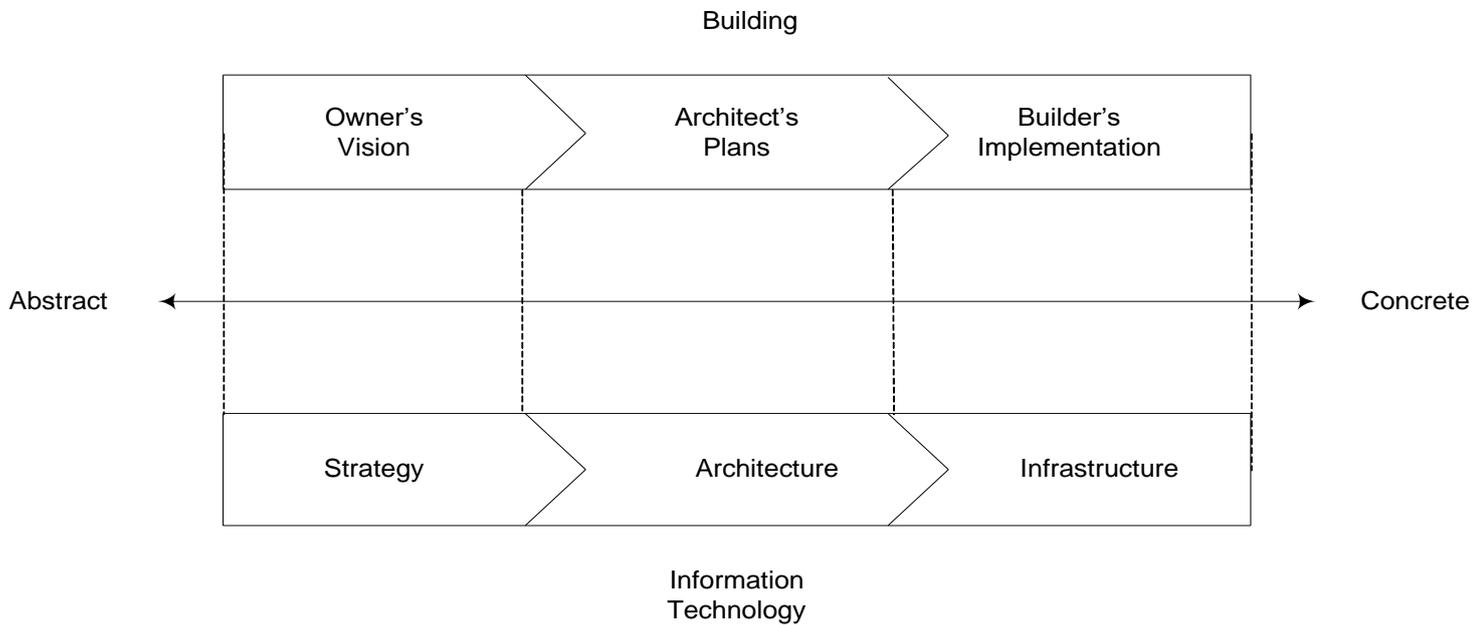


Figure 6.1 from abstract to concrete – building vs. IT

The Manager's Role

- Must understand what to expect from IT architecture and infrastructure.
- Must clearly communicate their business vision.
- May need to modify the plans if IT cannot realistically support them.

Manager **MUST** be involved in the decision making process

THE LEAP FROM STRATEGY TO ARCHITECTURE TO INFRASTRUCTURE

From Strategy to Architecture

- Manager must start out with a strategy.
- This strategy must then be used to develop more specific goals as seen in Figure 6.2.
- Business requirements must be fleshed out for each goal in order to provide the architect with a clear picture of what IS must accomplish.
- Figure 6.3 shows how this detailed process is accomplished.

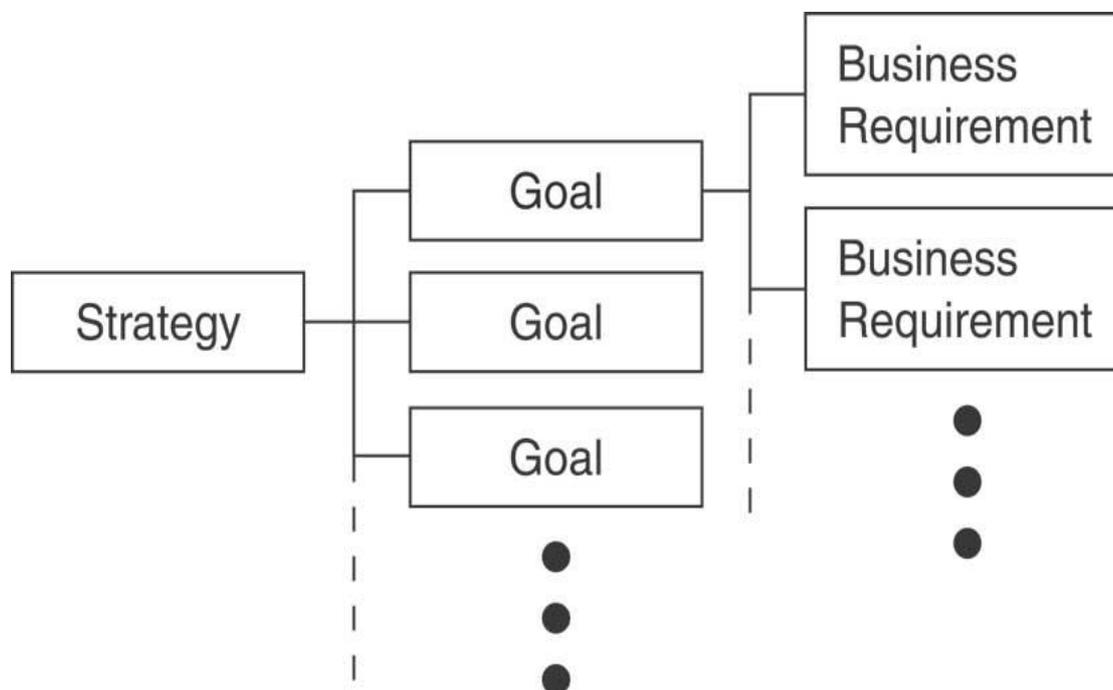


Figure 6.2 – From Strategy to Business Requirements

From Architecture to Infrastructure

- This stage entails adding more detail to the architectural plan.
- This detail comprises the actual hardware, software, data, and networking.
 - Figure 6.2 shows this phase.
- These components must be combined in a coherent fashion.
- Global level – focus at the enterprise level; Inter-organizational level – focus on communications with customers, suppliers or other stakeholders.

A Framework for the Translation

- Consider the following when developing a framework for transforming business strategy into architecture and then infrastructure:
 - Hardware – physical components.
 - Software – programs.
 - Network – software and hardware.
 - Data – quantity and format of data is of utmost concern.
- The framework that guides analysis of these components is found in Figure 1.9.
- Figure 6.3 contains questions that typify those asked in addressing architecture and infrastructure issues associated with each component.
- Managers must begin with an overview that is complete.
- The framework must answer the what, who and where questions for each infrastructure component.
 - What is the specific type of technology?
 - Who is involved (individuals, groups, departments)?
 - Where is everything located?

Table 6.3 shows the connections between strategy and systems

Component	What		Who		Where	
	Architecture	Infrastructure	Architecture	Infrastructure	Architecture	Infrastructure
Hardware	Does fulfillment or our strategy require thick or thin clients?	What size hard drives do we equip our thick clients with?	Who knows the most about servers in our organization?	Who will operate the server?	Does our architecture require centralized or distributed servers?	Must we hire a server administrator for the Tokyo office?
Software	Does fulfillment or our strategy require ERP software?	Shall we go with SAP or Oracle applications?	Who is affected by a move to SAP?	Who will need SAP training?	Does our geographical organization require multiple database instances?	Does Oracle provide the multiple-database functionality we need?
Network	What kind of bandwidth do we need to fulfill our strategy?	Will 10BaseT Ethernet suffice?	Who needs a connection to the network?	Who needs an ISDN line to his or her home?	Does our WAN need to span the Atlantic?	Shall we lease a cable or use satellite?
Data	Do our vendors all use the same EDI format?	Which VAN provides all the translation services we need?	Who needs access to sensitive data?	Who needs encryption software?	Will backups be stored on-site or off-site?	Which storage service shall we select?

Figure 6.3 Infrastructure and architecture analysis framework with sample questions

Architecture Examples

- Three common configurations of IT architecture.
 - Mainframe – employs a large centralized computer that handles all of the functionality of the system.
 - Client/server - widely used and relies on clients that request services and servers that respond to these requests. The workload is shared and distributed.
 - SOA (Service Oriented Architecture) – where larger software programs are broken down into services which are then connected to each other (services could be web based, or in completely different physical locations).
- Managers must be aware of each one's trade-offs.
- Figure 6.7 summarizes the characteristics of each of the architectures.
- The process includes four steps:
 - **Step 1:** Define the Strategic Goals
 - **Step 2:** Translate Strategic Goals to Business Requirements
 - **Step 3:** Apply Strategy-Architecture-Infrastructure Framework
 - **Step 4:** Translate Architecture to Infrastructure (see Fig 6.6 & 6.7).
 - **Step 5:** Evaluate Additional Issues

Hardware	Software	Network	DATA
3 servers: <ul style="list-style-type: none"> • Sales • Manufacturing • Accounting Storage systems	ERP system with modules for: <ul style="list-style-type: none"> • Manufacturing • Sales • Accounting • Inventory Enterprise Application Integration (EAI) software	Cable modem to ISP Dial-up lines for backup Routers Hubs Switches Firewalls	Database: <ul style="list-style-type: none"> • Sales • Manufacturing • Accounting

Figure 6.7 TennisUP’s infrastructure components

FOOD FOR THOUGHT: CLOUD COMPUTING CLOUD COMPUTING

- Cloud computing – replaces locally managed stacks of hardware and software with an Internet-based utility.
- Provides availability of entire computing infrastructure over the Internet.
- Initially were SaaS applications built with commodity technologies and open systems, but were too proprietary or application dependent (not widely adopted).
- Today the vision is a build-out of IT infrastructure that is increasingly useful.
 - Salesforce.com, Google, and Amazon.com.
- Users purchase computing capacity on-demand.
- Utility computing – where computing can be purchased as need arises or decreases.
- Managers can choose between using the architecture, a platform, or an entire application (like SAP).
- Provides significant incentives for handling peak or new computing needs.
- Business case for using includes:
 - Better managed server costs
 - Energy costs
 - Staff costs
- Managers must also understand the risks.