

# Information Technology and the Design of Work

(Part 2)

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# OUTLINE

- Introduction
  - Virtual organizations
- Work design framework
- How IT supports communication & collaboration
- HOW INFORMATION TECHNOLOGY CHANGES THE NATURE OF WORK
- HOW INFORMATION TECHNOLOGY CHANGES WHERE WORK IS DONE AND WHO DOES IT
- VIRTUAL TEAMS
- GAINING ACCEPTANCE FOR IT-INDUCED CHANGE
- SUMMARY



# HOW IT CHANGES THE NATURE OF WORK

# Creating New Types 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 in USA at 3.7 million in 2006
  - But, it is expected to grow by 25.2% to 4.0 million by 2016.

# New Ways to Do Traditional Work

- Changing the way work is done
  - Many traditional jobs are now done by computers
  - The introduction of IT into an organization can greatly change the day-to-day tasks performed by the workers in the organization
  - The cost and time needed to access information is dramatically lower
  - The Internet enables changes in many types of work

# New Ways to Do Traditional Work

- Changing Communication Patterns
  - Cell phones and other portable communication devices have changed our communication environment
  - IT is changing the communication patterns of workers
  - Some workers do not need to communicate with their co-workers on a regular basis
  - But, many need access to up-to-date information and communications between co-workers, customers, and suppliers
  - For example Wal-Mart connects its truck drivers with a radio and satellite to maximize their efficiency.

# New Ways to Do Traditional Work

- Changing Organizational Decision Making and Information Processing
  - IT changes the decision making process, it also changes the information used in making those decisions
  - IT has increased the flow of information to upper level management, reducing the ranks of middle managers

# New Ways to Do Traditional Work

- Changing Collaboration

- An increasing amount of work being performed by teams is more fluid
- IT helps make work more team-oriented and collaborative
- Workers can more easily share information with their teammates
- The Internet greatly enhances collaboration, especially through Web 2.0 technologies



# New Ways to Do Traditional Work

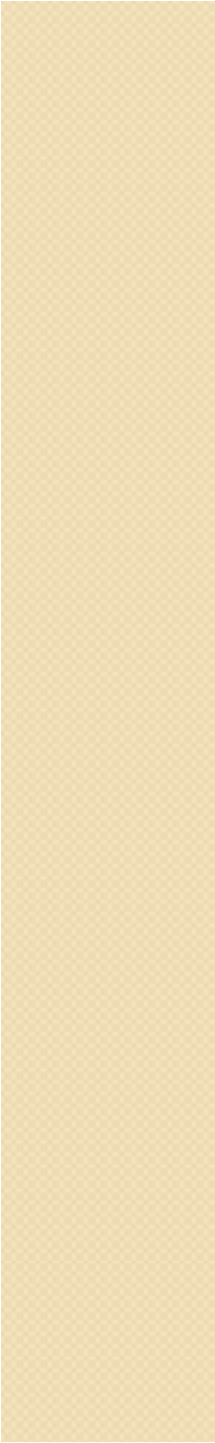
- Organizations face the challenge of managing a work force that is no longer in a single location
- Work is more team oriented, making it more difficult to assess individual contributions
- One solution is to use electronic employee monitoring systems automating supervision
  - This can possibly hurt morale and undermine efforts to encourage workers to contribute their ideas to the organization

	<b>Traditional Approach: Subjective Observation</b>	<b>Newer Approach; Objective Assessment</b>
<b>Supervision</b>	Personal and informal. Manager is usually present or relies on others to ensure that employee is present and productive.	Electronic, or assessed by deliverable. As long as the employee is producing value, he does not need formal supervisions
<b>Evaluation</b>	Focus is on process through direct observation. Manager sees how employee performed at work. Subjective (personal) factors are very important.	Focus is on output by deliverable (e.g., produce a report by a certain date) or by target (e.g., meet a sales quota). As long as deliverables are produced and/or targets achieved, the employee is meeting performance expectations adequately. Subjective factors may be less important and harder to gauge.
<b>Compensation and Rewards</b>	Often individually-based.	Often team-based or contractually spelled out
<b>Hiring</b>	Personal with little reliance on computers. Often more reliance on clerical skills	Often electronic with recruiting websites and electronic testing. More informed work that requires a higher level of IT skills.

Figure 4.2. - Changes to supervision, evaluation, compensation, and hiring<sup>10</sup>

# New Ways to Do Traditional Work

- Hiring is different because of IT
  - Workers must know how to use the technology for their job or be trainable
  - IT affects the array of non-technical skills needed in an organization
  - IT has become an essential part of the hiring process for many firms (online job postings, online applications, etc.)
    - Companies often look at potential employees social networking sites when considering them for a position
  - Employees must maintain their IT skills or risk becoming unemployable
  - IT has drastically changed the landscape of work today



HOW IT 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 shows factors that are driving this trend

Driver	Effect
Shift to knowledge-based work	Eliminates requirement that certain work be performed in a specific place
Changing demographics and lifestyle preferences	Provides workers with geographic and time-shifting flexibility
New technologies with enhanced bandwidth	Makes remotely performed work practical and cost-effective
Reliance on Web	Provides workers with the ability to stay connected to co-workers and customers, even on a 24/7 basis
Energy concerns	Reduces the cost of commuting for telecommuters and reduces energy costs associated with real estate for companies

**Figure 4.3** Driving factors of telecommuting and virtual teams

## Factors Driving Telecommuting and Mobile Work

- Several factors support the growth of telecommuting:
  - First, work is increasingly knowledge-based so workers don't need to be "at work" to do their jobs
  - Second, telecommuting enables workers to shift their work to accommodate their lifestyles, esp. parenting or living in locations far from the office.
  - Third, more powerful PCs + cheap, high speed telecom (ADSL, cable modem) mean telecommuters can connect to corporate network efficiently
  - Fourth, the increasing reliance on web-based technologies by all generations (particularly younger generations)
  - Fifth, the mounting emphasis on conserving energy

## 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
- Offshoring and outsourcing of software development and computer services enabled by the same technologies is another risk



Employee Advantages of Telecommuting	Potential Problems
<p>Reduced stress due to increased ability to meet schedules, heightened morale, and lower absenteeism</p> <p>Geographic flexibility</p> <p>Higher personal productivity</p> <p>House-bound individuals can join the workforce</p>	<p>Harder to evaluate performance, Increased stress from inability to separate work from home life</p> <p>Employee may become disconnected from company culture</p> <p>Telecommuters are more easily replaced by electronic immigrants</p> <p>Not suitable for all jobs or employees</p>

Figure 4.4 Advantages and disadvantages of telecommuting

# Managerial Issues In Telecommuting and Mobile Work

- Planning, business and support tasks must be redesigned to support mobile and remote workers
- Training should be offered so all workers can understand the new work environment
- Employees selected for telecommuting jobs must be self-starters
- Managers must find new ways to evaluate and supervise those employees without seeing them every day in the office



# VIRTUAL TEAMS

# Virtual Teams

- Virtual Teams are geographically and/or organizationally dispersed coworkers assembled using telecommunications and IT to accomplish an organizational task
- Factors Driving Virtual Teams:
  - The same drivers for telecommuting can be applied to virtual teams
  - Follow the sun – teams in different parts of the world can cooperate to get work done faster due to time zone differences

# Disadvantages and Challenges of Virtual Teams

- Different time zones
- Security is harder to ensure
- Electronic communications may not allow the person to convey the nuances that are possible with face-to-face conversation
- Trust may be slower to form
- Diversity of team members (language, culture, etc.)
- Considerable number of challenges could turn into disadvantages

Challenges	Virtual Teams	Traditional Teams
<b>Communications</b>	<p>Multiple Zones can lead to greater efficiency but can lead to communication difficulties.</p> <p>Communication dynamics such as non-verbal are altered.</p>	<p>Teams are collocated in same time zone. Scheduling is less difficult.</p> <p>Teams may use richer communication media.</p>
<b>Technology</b>	<p>Team members must have proficiency across a wide range of technologies.</p> <p>Technology offers electronic repository.</p> <p>Work group effectiveness may be more dependent on alignment of group &amp; technologies used.</p>	<p>Technology is not critical and tools not essential for communications.</p> <p>Electronic repositories are not typically used.</p> <p>Task technology fit may not be as critical.</p>
<b>Team Diversity</b>	<p>Members typically come from different organizations and/or cultures which makes it:</p> <ul style="list-style-type: none"> <li>-Harder to establish a group identity.</li> <li>-Necessary to have better com. skills</li> <li>-More difficult to build trust, norms ...</li> </ul>	<p>Because members are more homogeneous, group identity is easier to form.</p> <p>Because of commonalities, communications are easier to complete successfully.</p>

Figure 4.5 Comparison of challenges facing virtual and traditional teams.

# Managerial Issues in Virtual Teams

- Require different style and type of management
- Observation is less likely to occur
- Performance is more likely to be based on output
- Providing feedback is important
- Compensation should be based heavily on the team's performance
- Align reward systems with achievement of team goals

# Managerial Issues in Virtual Teams

- **Communication challenges** – managers must learn to keep the lines of communication open
  - Frequent communication is essential to success
  - Need appropriate technological support (video teleconferencing, interactive groupware, etc.)
- **Technology challenges** – all team members must have the same or similar technologies at their locations
  - Policies and norms for use must be provided
- **Diversity Challenges** – different cultures have different perceptions on time and task importance
  - Providing the appropriate technologies for each culture is key





# GAINING ACCEPTANCE FOR IT-INDUCED CHANGE

# Gaining acceptance for IT-induced change

- To avoid resistance to change, system implementers and managers must actively manage the change process
- The Technology Acceptance Model (TAM) (Figure 4.7) suggests that employee attitudes may change if they think the new system will help them to do more or better work for the same effort, and that it's easy to use
- Employee participation in the system's design and implementation also helps

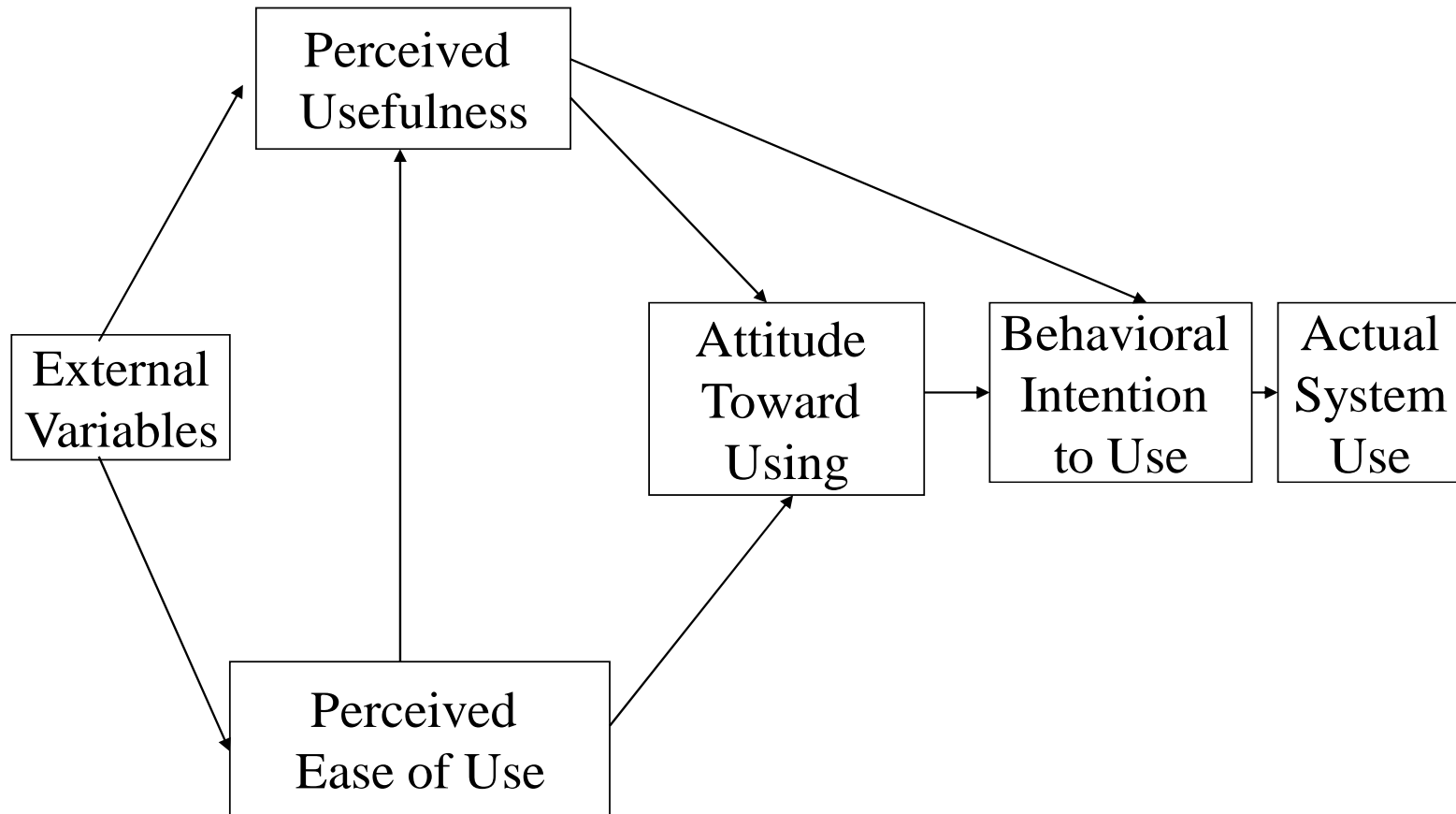


Figure 4.6 Technology Acceptance Model

## FOOD FOR THOUGHT: 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

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- Next lecture: How might IS enable business transformation?