ORGANIZING FOR INNOVATION

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Agenda

- Why is the organizational structure of a firm important for creating and developing innovation?
- What are the different types of organizational structures?
- What are the advantages and disadvantages of the different types of organizational structures?
- When can modularity aid in innovation?
- What specific challenges can firms encounter when managing innovation across borders?

Why is structure important?

- Firms are made of people
  - Different goals
  - Different skills
  - Different beliefs
- To enable innovation, a firm has to
  - Specialize
  - Govern
  - Coordinate

An age old process innovation: Adam Smith's Pin Factory

- **Factory #1**
  - **Four workers.**
  - **Each worker makes the entire pin.**
- **Factory #2**
  - **Worker A cuts wire.**
  - **Worker B sharpens ends.**
  - **Worker C stamps heads.**
  - **Worker D solders heads.**

Which factory produces more pins in a day?

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Division of labor is particularly essential for innovation

- **The vast amount of knowledge requires specialization and development of expertise**
  - **Depth can be more important than breadth**
- **Much more productive than if they do the whole process**
  - **Easily trained**
  - **Easily replaced**
  - **Become very efficient**
  - **Specialized knowledge & skills**
- **Similar at the level of groups of workers**

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Back to modern times—the importance of modularity for innovation

- What is modularity?
  - The extent to which a system's components may be separated and recombined
- Modular vs. non modular systems
  - The IBM System/360
    - Each model of computer had its own operating system, processors, peripherals, and software
    - Changing one meant changing all
  - IKEA
    - Each component has standardized connectors, and comes in a range of standard sizes
    - Mix and match multiple shelves to customize furniture

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Modularity

- Modules designed independently, but function as integrated whole
- Visible design rules and hidden design parameters
- Architectures
  - What are the modules and what are their functions?
- Interfaces
  - How will the modules interact, fit together, communicate?
- Standards
  - How do we test conformity and performance?

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Advantages of modularity

- Speed of operations
  - Architectural standards enable fast assembly
- Flexibility in suppliers
  - Loosely coupled organizations
- Autonomous innovation
  - Use other firm's resources & capabilities
- Many "experiments"
  - Creates real options
- Competition among suppliers
  - Reduces supplier power…probably

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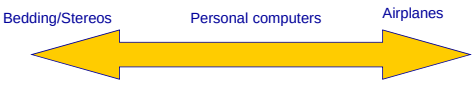
Modularity and consumer variety

- Preset packages (appliances) versus mix-and-match
- Innovation through new products or new attributes
- Networks of *competitors*
- Provides value to compatibility



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Modularity has a critical disadvantage…

- Radical innovations are less likely
- Integrated systems enable better coordination
- Back to the pin factory
  - Producing the right number of pin parts at the right time
  - Making sure pin heads fit on pin wires
- Difficulties in coordinating
  - Understanding what needs to be coordinated
  - Timely communication
  - Communicating across disciplines
  - Communicating across distance

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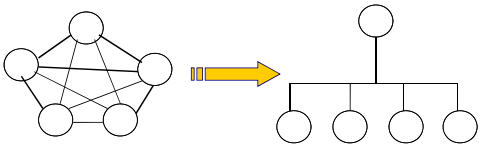
Structuring the firm: the modern firm evolves

	The business environment	Strategic changes	Organizational consequences
Early 19th century	Local markets Transport slow Limited mechanization	Firms specialized & focused on local markets	Small firms. Simple manage-ment structures
Late 19th century	Introduction of railroads, telegraph industrialization	Geographical and vertical expansion	Functional struct-ures. Line/staff distinction. Accou-nting systems
Early 20th century	Excess capacity in distribution. Growth of financial institut-ions & world trade	Product & multinational diversification	Development of multidivisional corporation

Hierarchy in the M-form



- Improves coordination by reducing the need for communication
- Allows greater specialization
- Allows flexibility
- Allows for growth and bigger size
- Enables economies of scale and scope

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Options for Development of Hierarchy

- Divisions can be based on different criteria
  - Product line
  - Geographic scope
  - Functional expertise
- Firms may also use a hybrid approach
  - Depending on size and scope of firm, divisions can be created across multiple criteria
- What criteria did Proctor and Gamble use?
  - Prior to "Organization 2005"
  - After the launch of "Organization 2005"
- What are the advantages and disadvantages of each?

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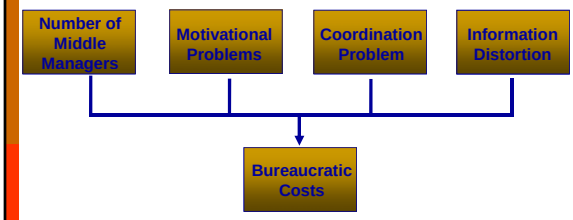
The M-form comes with costs…



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Is bigger better for innovation?

- In 1940s, Schumpeter argued that large firms would be more effective innovators
  - Better able to obtain financing
  - Better able to spread costs of R&D over large volume
- Large size may also enable…
  - Greater economies of scale and learning effects
  - Taking on large scale or risky projects

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Yes, but…

- Large firms may be disadvantaged at innovation because…
  - R&D efficiency might decrease due to loss of managerial control
  - Large firms have more bureaucratic inertia
  - More strategic commitments tie firm to current technologies
- Small firms often considered more flexible and entrepreneurial
- Many big firms have found ways of "feeling small"
  - Break overall firm into several subunits
  - Can utilize different culture and controls in different units

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Procter & Gamble's "Organization 2005"

- In 2003 Procter & Gamble was the world's largest household and personal products company, with $43.4 billion in net revenues. It had almost 7,500 scientists working in 20 technical centers on four continents.
- In 1999, P&G's CEO Durk Jager had initiated a major reorganization, "Organization 2005," intended to accelerate innovation.
  - New product development would be more decentralized, conducted in both U.S. and foreign markets.
  - Products would be tested in U.S. and foreign markets simultaneously.
  - Regional business units were replaced with global business units based on product lines.
  - Business services would be centralized.
- By 2000, stockholders had become impatient for results, and Jager was pressured to step down.

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Discussion questions

1. What are some of the advantages and disadvantages of replacing P&G's regional divisions with with global product divisions? What impact was this likely to have on P&G's innovation processes?
2. What are some of the advantages and disadvantages of centralizing P&G's business services?
3. What are some of the challenges of changing the culture of a company as big as P&G?
4. Was Organization 2005 a good idea? Should P&G's board of directors have given Jager more time?

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Structural Dimensions of the Firm

- **Formalization**: The degree to which the firm utilizes rules and procedures to structure the behavior of employees.
  - Can substitute for managerial oversight, but can also make firm rigid.
- **Standardization**: The degree to which activities are performed in a uniform manner.
  - Facilitates smooth and reliable outcomes, but can stifle innovation.
- Both dimensions make knowledge more "**codified**"
  - Facilitates learning within the organization, but can also accelerate imitation by competitors

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Centralization

- The degree to which decision-making authority is kept at top levels of the firm **OR** the degree to which activities are performed at a central location.
  - ***Centralized authority*** ensures projects match firm-wide objectives, and may be better at making bold changes in overall direction.
  - ***Centralized activities*** avoid redundancy, maximize economies of scale, and facilitate firm-wide deployment of innovations.
  - But, centralized authority and activities might not tap diverse skills and resources, and projects may not closely fit needs of divisions or markets.
- Some firms have both centralized and decentralized R&D activities.

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Size and Structural Dimensions of the Firm

- **Centralized and Decentralized R&D Activities**

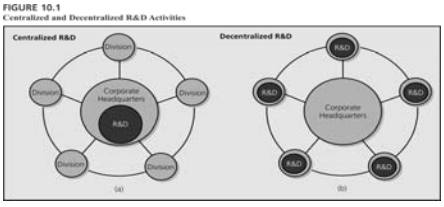

FIGURE 10.1
Centralized and Decentralized R&D Activities

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Centralization versus decentralization is a particularly important issue for multinational firms

- Foreign markets offer diverse resources, and have diverse needs.
- Innovation tailored to local markets might not be leveraged into other markets.
  - Customization might make them poor fit for other markets.
  - Divisions may be reluctant to share their innovations.
  - Other divisions may have "not invented here" syndrome.

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Managing Innovation Across Borders

- **Center-for-global**: all R&D activities centralized a single hub
  - Tight coordination, economies of scale, avoids redundancy, develops core competencies, standardizes and implements innovations throughout firm.
- **Local-for-local**: each division does own R&D for local market
  - Accesses diverse resources, customizes products for local needs.
- **Locally leveraged:** each division does own R&D, but firm attempts to leverage most creative ideas across company.
  - Accesses diverse resources, customizes products for local needs, improve diffusion of innovation throughout firm and markets.
- **Globally linked:** Decentralized R&D labs but each plays a different role in firm's strategy and are coordinated centrally.
  - Accesses diverse resources, improve diffusion of innovation throughout firm and markets, may help develop core competencies.

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Transnational Approach

- Resources and skills anywhere in firm can be leveraged to exploit opportunities in any geographic market.
- Very difficult to implement
  - Local responsiveness coupled with global cost effectiveness
  - Requires
    - Reciprocal interdependence among divisions
    - Strong integrating mechanisms such as personnel rotation, division-spanning teams, etc.
    - Balance in organizational identity between national brands and global image

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Shifting Structures at 3M

- Under **McKnight** 3M had both a central research laboratory and decentralized R&D labs. His "grow and divide" philosophy encouraged divisions to be split into small, independent and entrepreneurial businesses.
- **Lou Lehr** consolidated the 42 divisions and 10 groups into 4 business sectors. He also established a three-tiered R&D system: central research laboratories for basic research, sector labs for core technologies, and division labs for projects with immediate applications.
- **Jake Jacobsen** encouraged more disciplined project selection and shifted focus from individual entrepreneurs to teams.
- **"Desi" Desimone** eased company back toward a looser, more entrepreneurial focus with less centralization.

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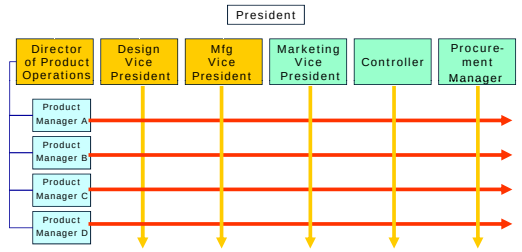
Matrix Organization—An Alternative to M-form



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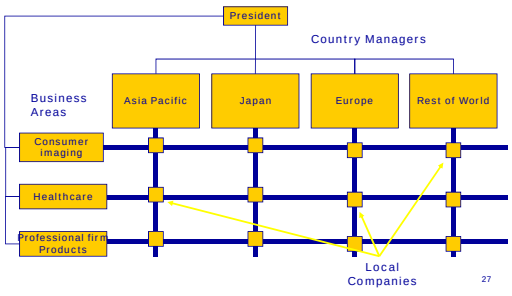
Global Matrix Structure



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Advantages of matrix

- Adapt to demands along two dimensions of the environment
- Flexible sharing of human resources (Kodak in Japan)
- Suited to complex decisions involving multiple factors
- Allows development of individuals along both functional and product dimensions
- Best in medium-sized organizations with multiple products

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Disadvantages of matrix arrangement

- Two bosses
- Many meetings
- Conflicting goals
- Maintaining balance is hard

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"Organic" Structure—Moving away from M-form and matrix organization

FEATURE	*MECHANISTIC*	*ORGANIC*
Task definition	Rigid & highly specialized	Flexible; less specialized
Coordination & control	Rules & directives imposed from above	Mutual adjustment. Cultural control
Communication	Mainly vertical	Horizontal & vertical
Commitment & loyalty	To immediate superior	To the organization & its goals & values
Environmental context	Stable with low tech-nologival uncertainty	Dynamic, ambiguous, technologically uncertainty

The ambidextrous organization

- **The Best of Both Worlds?**
  - Some divisions (e.g., R&D, new product lines) may be small and organic.
  - Other divisions (e.g., manufacturing, mature product lines) may be larger and more mechanistic.
  - Can also alternate through different structures over time.

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Key Takeaways

- A firm's size and structure will impact its rate and likelihood of innovation.
- Some structures may foster creativity and experimentation; others may enhance efficiency and coherence across the firm's development activities.
- There may also be structures that enable both simultaneously.
- Some structural issues are even more significant for the multinational firm.

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