

2022/23 Semester 2

IS3103 Information Systems Leadership and Communication

Lecture 3

Business Strategy and IS Strategy

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NUS School of Computing



Click on any of the Skills and Competencies to view a detailed description

Technical Skills & Competencies	Proficiency Level
Budgeting	6
Business Continuity	6
Business Risk Management	6
Business Performance Management	5
Cyber and Data Breach Incident Management	6
Cyber Risk Management	6
Disaster Recovery Management	6
Enterprise Architecture	6
Infrastructure Design	6
Infrastructure Strategy	6
IT Governance	6
IT Standards	6
IT Strategy	6
Learning and Development	6
Networking	5
Organisational Analysis	6

Click on any of the Skills and Competencies to view a detailed description

Technical Skills & Competencies	Proficiency Level
Budgeting	6
Business Agility	6
Business Continuity	6
Business Risk Management	6
Change Management	6
Data Ethics	6
Data Governance	6
Data Strategy	6
Partnership Management	6
People and Performance Management	5
Performance Management	6
Stakeholder Management	6
Strategy Planning	5
Sustainability Management	5

Click on any of the Skills and Competencies to view a detailed description

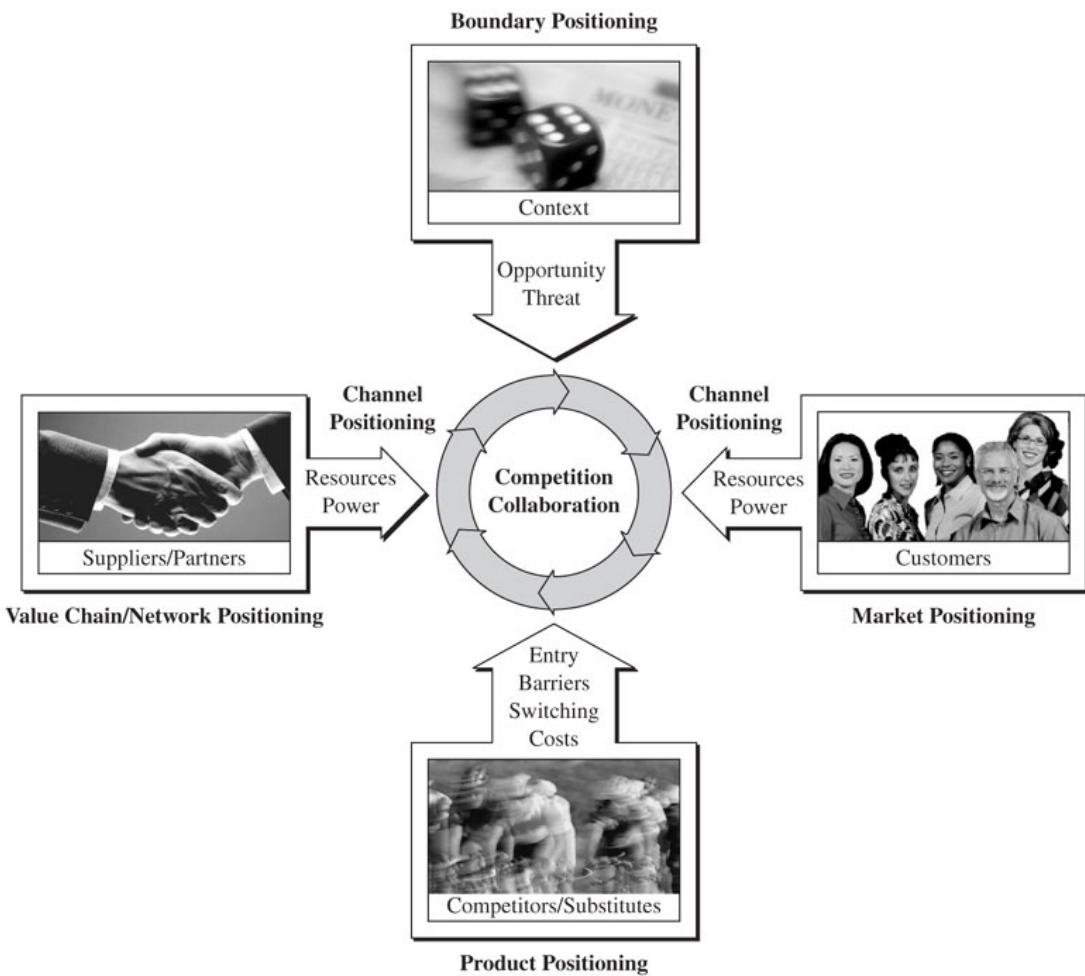
Technical Skills & Competencies	Proficiency Level
Audit and Compliance	5
Budgeting	6
Business Continuity	6
Business Needs Analysis	5
Business Performance Management	6
Business Risk Management	6
Cyber Forensics	6
Cyber and Data Breach Incident Management	6
Cyber Risk Management	6
Disaster Recovery Management	6
Emerging Technology Synthesis	6
IT Standards	6
Learning and Development	6
Manpower Planning	5
Network Security	5
Networking	5
Partnership Management	6
People and Performance Management	5
Security Architecture	5
Security Governance	6
Security Strategy	6
Stakeholder Management	6
Strategy Planning	6
Threat Analysis and Defence	6
Threat Intelligence and Detection	6

Generic Skills & Competencies (Top 5)

Generic Skills & Competencies (Top 5)	Proficiency Level
Leadership	Advanced
Global Mindset	Advanced
Decision Making	Advanced
Transdisciplinary Thinking	Advanced
Sense Making	Advanced

Generic Skills & Competencies (Top 5)	Proficiency Level
Problem Solving	Advanced
Communication	Advanced
Interpersonal Skills	Advanced
Leadership	Advanced
Service Orientation	Advanced

Business Strategy



- ▶ A **business strategy** is a well-articulated vision of where a business seeks to go and how to get there
- ▶ Strategic positions include four choices
 - ▶ Boundary Positioning
 - ▶ Market positioning
 - ▶ Product positioning
 - ▶ Value Chain/Network Positioning

Business Strategy

- ▶ **Boundary Positioning**
 - ▶ Markets, products, and businesses that you will not pursue
- ▶ **Market positioning**
 - ▶ Who are our customers
 - ▶ What are their needs and expectations
 - ▶ How to reach them
- ▶ **Product positioning**
 - ▶ What products or services to offer
 - ▶ What product/service features to offer
 - ▶ What price to charge
- ▶ **Value Chain/Network Positioning**
 - ▶ What roles and activities to perform within the extended network of suppliers, producers, distributors and partners



Four Frameworks to Analyze the Impact of IT on Business Strategy

Business Strategy Frameworks

- Industry and Competitive Analysis
 - To analyze competition *within an industry* (externally-focused)
 - “Five Forces Model”
 - By Michael Porter (1979)
- Value Chain Analysis
 - To analyze the operations *within a company* (internally-focused)
 - By Michael Porter (1985)
- Resource-based View
 - To determine the strategic resources a firm can exploit to achieve sustainable competitive advantage (internally-focused)
 - By Jay Barney (1991)

Business-IT Strategy Framework

- Strategic Grid Analysis
 - To analyze the dependence of an organization on IT
 - By Warren McFarlan et al. (1983)



Industry and Competitive Analysis

- ▶ Five forces shape the competitive environment within an industry
- ▶ As competition increases profit margin drops and makes the industry less attractive
- ▶ These forces are:
 - ▶ Industry Competitors
 - ▶ Threat of New Entrants
 - ▶ Threat of Substitutes
 - ▶ Bargaining Power of Buyers
 - ▶ Bargaining Power of Suppliers



Industry and Competitive Analysis

- ▶ Rivalry Among Existing Competitors
 - ▶ Current competitors for the same product or market
 - ▶ More competitors lead to higher competition and lower profit margin
- ▶ Threat of New Entrants
 - ▶ A high entry barrier deters new companies from entering a company's market
 - ▶ E.g. Oil and gas exploration
 - ▶ As the entry barrier drops, more and more new firms may enter the market
 - ▶ E.g. e-Retailing



Industry and Competitive Analysis

- ▶ Threat of Substitutes Products
 - ▶ Substitute products/services are products/services that provide equivalent functionality or service
 - ▶ E.g. Air travel vs. travel by hi-speed train
 - ▶ E.g. Traditional phone service Vs. Internet-based phone service
 - ▶ More substitutes, cheaper substitutes means more competition and lower profit margin



Industry and Competitive Analysis

▶ Bargaining Power of Buyers

- ▶ The ability of buyers to use their market power to *decrease* a firm's competitive position
- ▶ A single buyer will have more bargaining power
 - ▶ E.g. Customized military supplies
- ▶ Low switching cost will increase the bargaining power of buyers
 - ▶ E.g. e-Retailing, Private-hire cars/taxi, food delivery
 - ▶ How to use IT to increase switching cost?



Industry and Competitive Analysis

▶ Bargaining Power of Suppliers

- ▶ The ability of suppliers of inputs of a product or service to *lower* a firm's competitive position
- ▶ A single supplier will have more bargaining power
 - ▶ E.g. Ownership of natural resources, such as oil by OPEC countries
 - ▶ E.g. Ownership of patents
- ▶ Finding alternate suppliers will lower their bargaining power





Value Chain Analysis

- ▶ A company's **value chain** comprises of a set of distinct but interdependent activities that it performs to create, deliver, and support its product or service
- ▶ The value a company creates is the amount buyers are willing to pay for its product or service
- ▶ A business is profitable if:
 - ▶ value it creates > cost of performing these activities
- ▶ Value chain analysis allows us to analyze the value chain to identify inefficiencies and opportunities for improvement



Value Chain Analysis

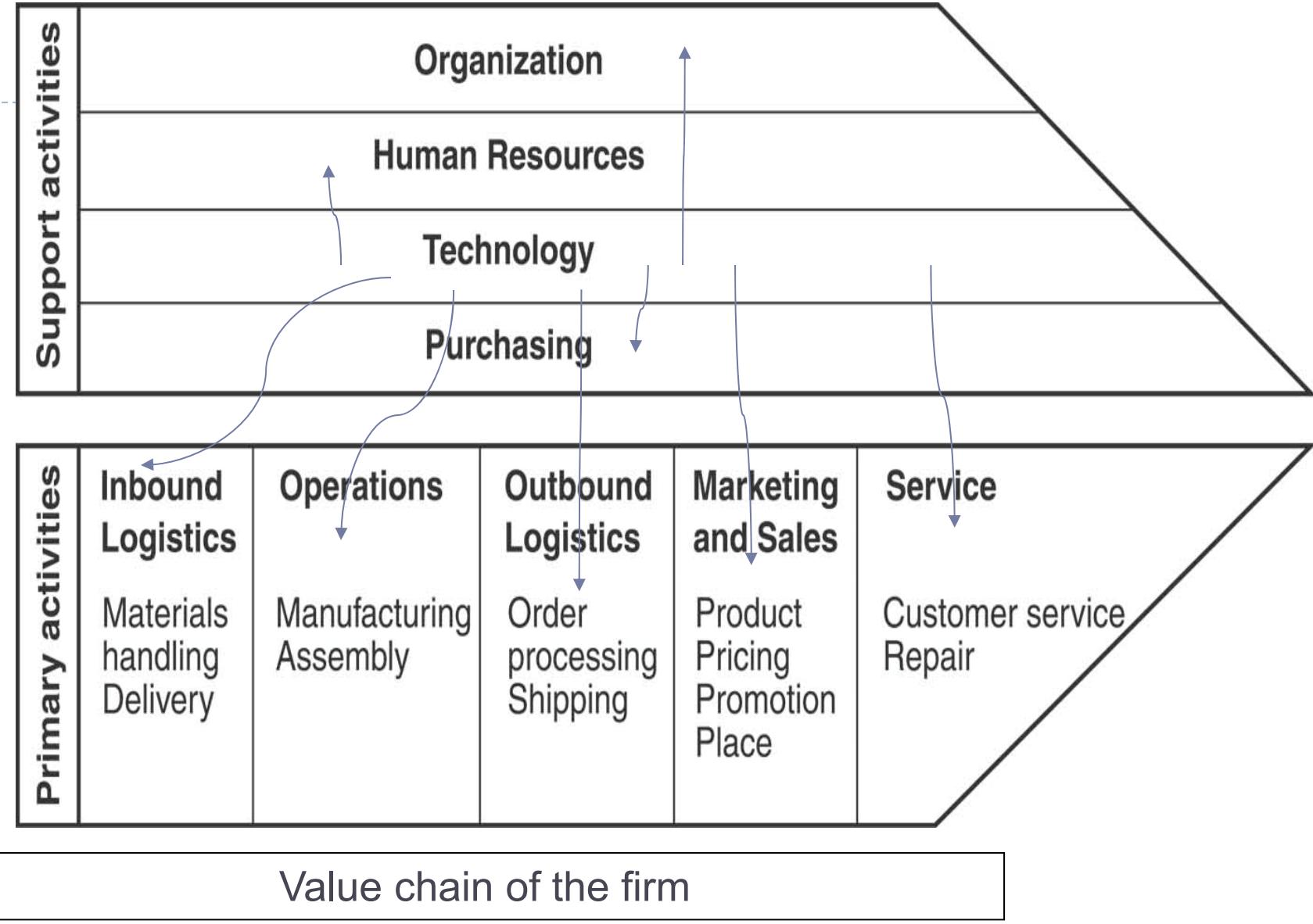
- ▶ A company's value activities fall into nine generic categories organized into two broad classes
 - ▶ Primary activities – relate directly to the value created in a product or service
 - ▶ Support activities – make it possible for the primary activities to exist and remain coordinated



Value Chain Analysis

- ▶ Linkages reflect how one value activity impacts the cost or performance of another activity.
- ▶ Linkages can be exploited to improve performance through better coordination
 - ▶ E.g. Coordination between procurement and production in JIT manufacturing leads to lower inventory level.
- ▶ IT can be used to improve coordination among activities
 - ▶ E.g. ERP, CRM, SCM



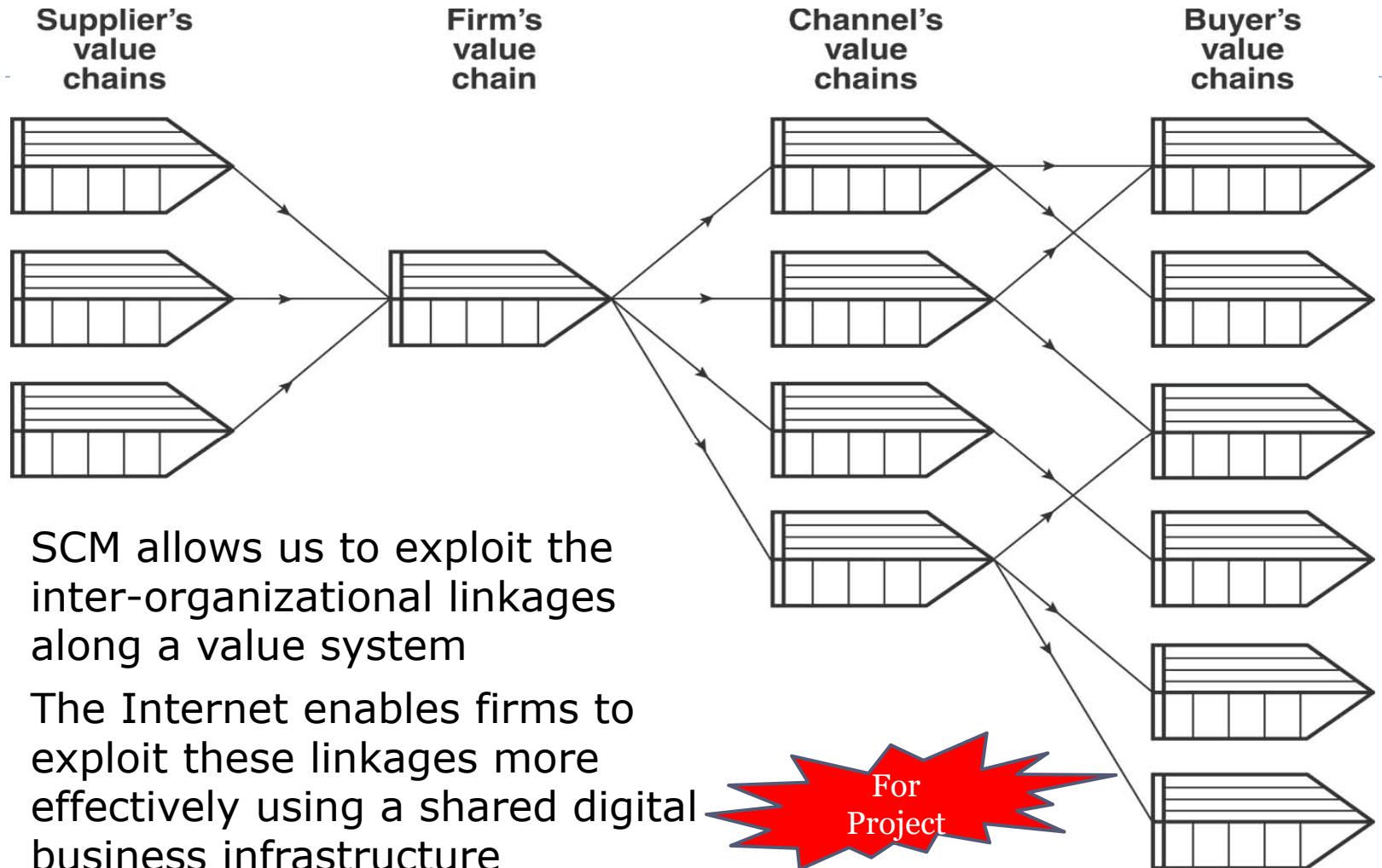


Value Chain across Organizational Boundary

- ▶ The value chain model can be extended by linking many value chains into a **value system**.
- ▶ IT can enhance coordination and communication throughout the value system connecting multiple business partners
 - ▶ E.g. A firm's procurement and inbound logistics interacts with its supplier's order entry system.



The value system connecting the organization to its partners



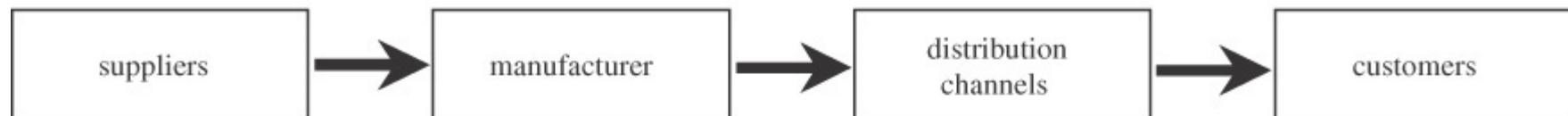
Case of Virtual Integration at Dell

Dell uses shared information along with technology to eliminate the boundaries in the value chain among its suppliers, manufactures, and customers

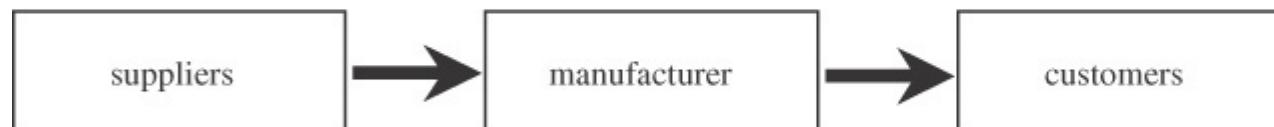
- allowed coordination between the company's individual segments such as strategy-customer focus, supplier partnerships, mass customization, and just-in-time manufacturing



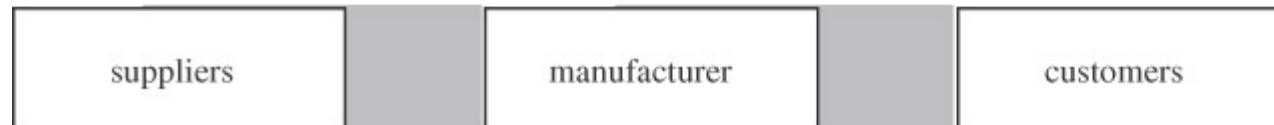
The dominant model in the personal computer industry—a value chain with arm's-length transactions from one layer to the next:



Dell's direct model eliminates the time and cost of third-party distribution:



Virtual integration works even faster by blurring the traditional boundaries and roles in the value chain:



IT's role as a strategic resource

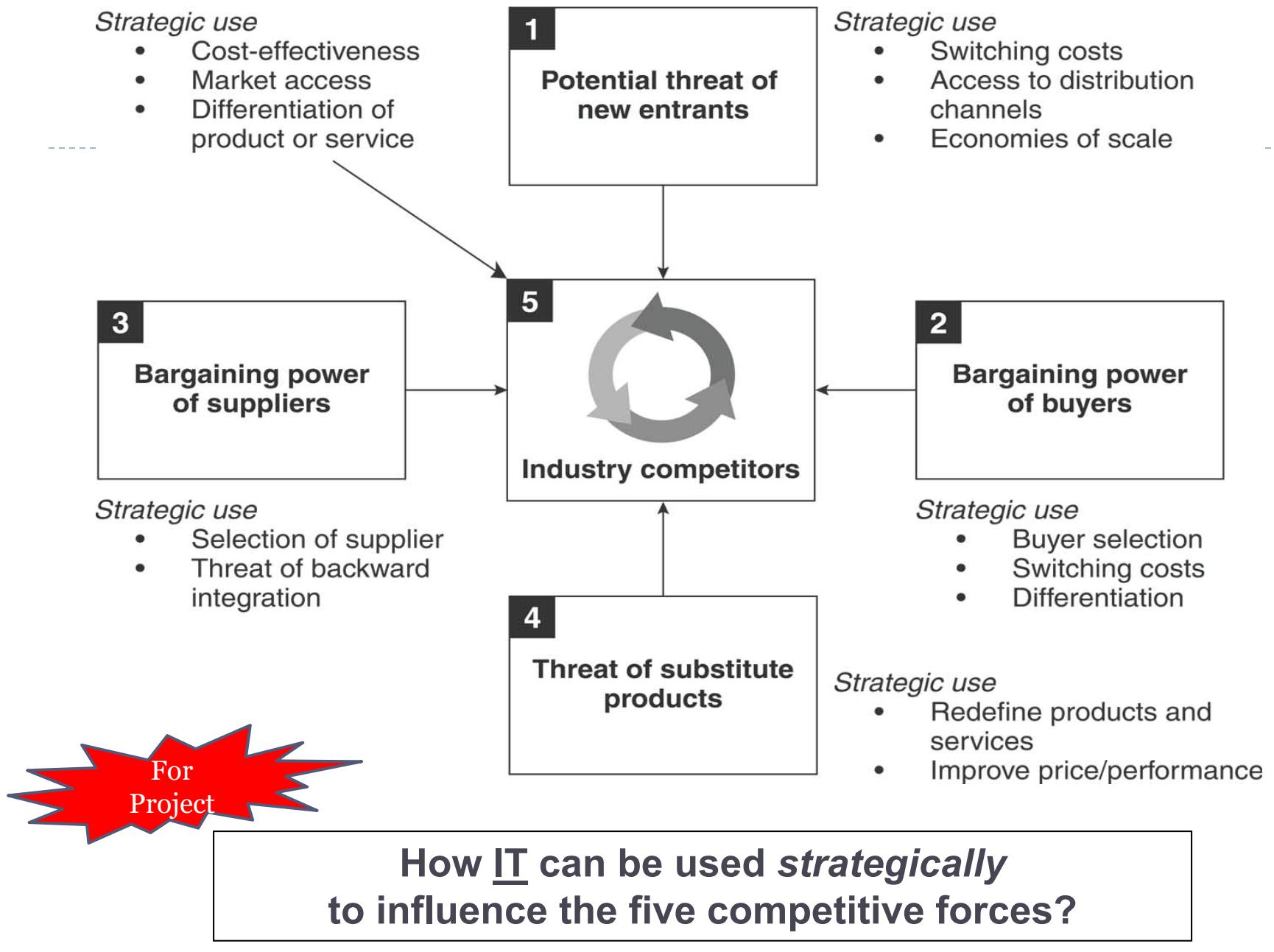
- ▶ American Hospital Supply Corporation (AHSC) and American Airlines (AA) were two early examples (1960s) of how IT could be used to reengineer value activities and change the basis of competition
 - ▶ Pioneered the use of IT to link their business partners' operations with their respective internal IS
 - ▶ AHSC enabled purchasing clerks in hospitals to place orders electronically
 - ▶ AA allowed travel agents access to its airline schedules posted in its internal reservation system
 - ▶ *Proprietary technologies* of the mainframe era were difficult and expensive to duplicate, thus creating entry barriers



IT's role as a strategic resource

- ▶ *Open Internet technologies*, however, significantly lower the entry barrier for all players in online markets
- ▶ In 2003, Walmart requiring its top 100 suppliers to use RFID tags
 - ▶ Who has more bargaining power?
 - ▶ IT can be used to create value added products that offer convenience to customers and increase switching costs (using data and embedded smart technologies)





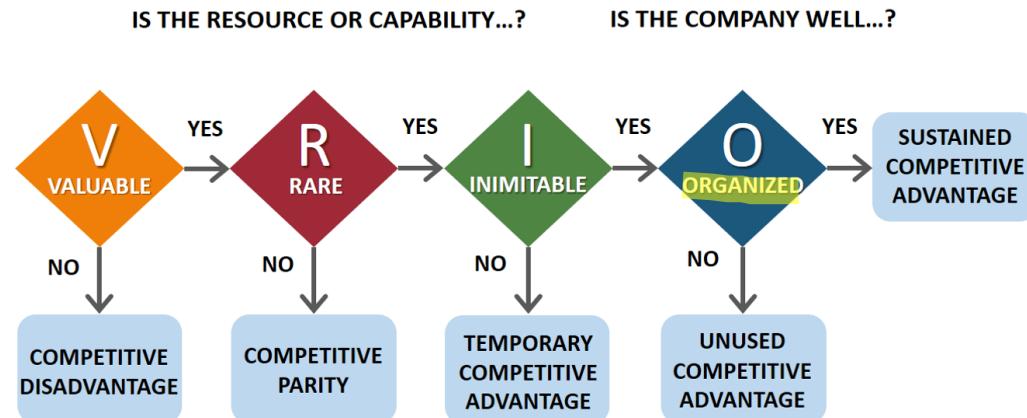
Resource-based View (RBV) of Strategy

▶ VRIN Model

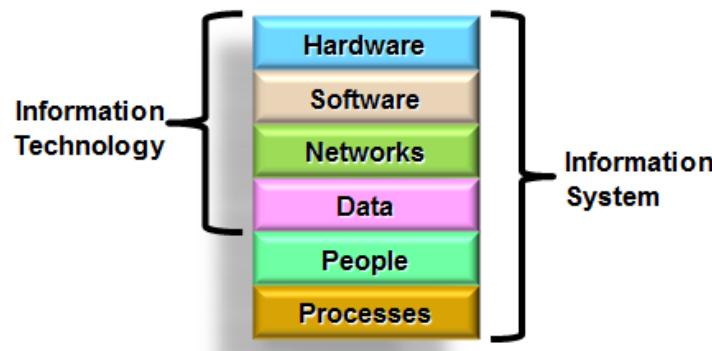
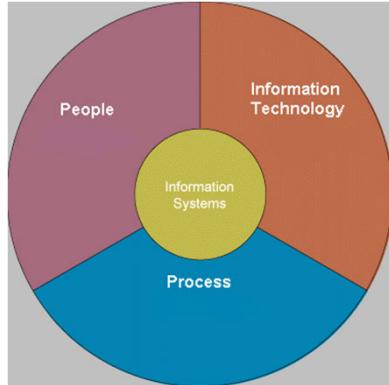
- ▶ **Valuable:** It involves value creating strategies which can help one outperform its competitors or reduce its weakness by improving its effectiveness and increase in efficiencies.
- ▶ **Rare:** It includes all resources which are rare and not be available to the competitor.
- ▶ **Inimitable:** It means that value of that particular resource would be governed by only one firm and others can't duplicate the resource for its use.
- ▶ **Non-substitutable:** It means that the resources can't be substituted by any other available resources.

▶ VRIO Model

How can IT help to develop VRIN resources?



IS Strategy



- ▶ **IS Strategy** articulates the plan to provide information systems and services
 - ▶ IT architecture
 - ▶ High level plan of information assets
 - ▶ IS infrastructure
 - ▶ Hardware, software, network, data, people, processes
 - ▶ **IS governance**
 - ▶ In-house vs. Outsourcing
 - ▶ Centralization vs. decentralization



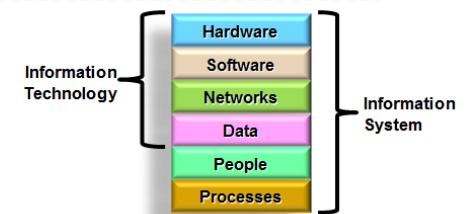
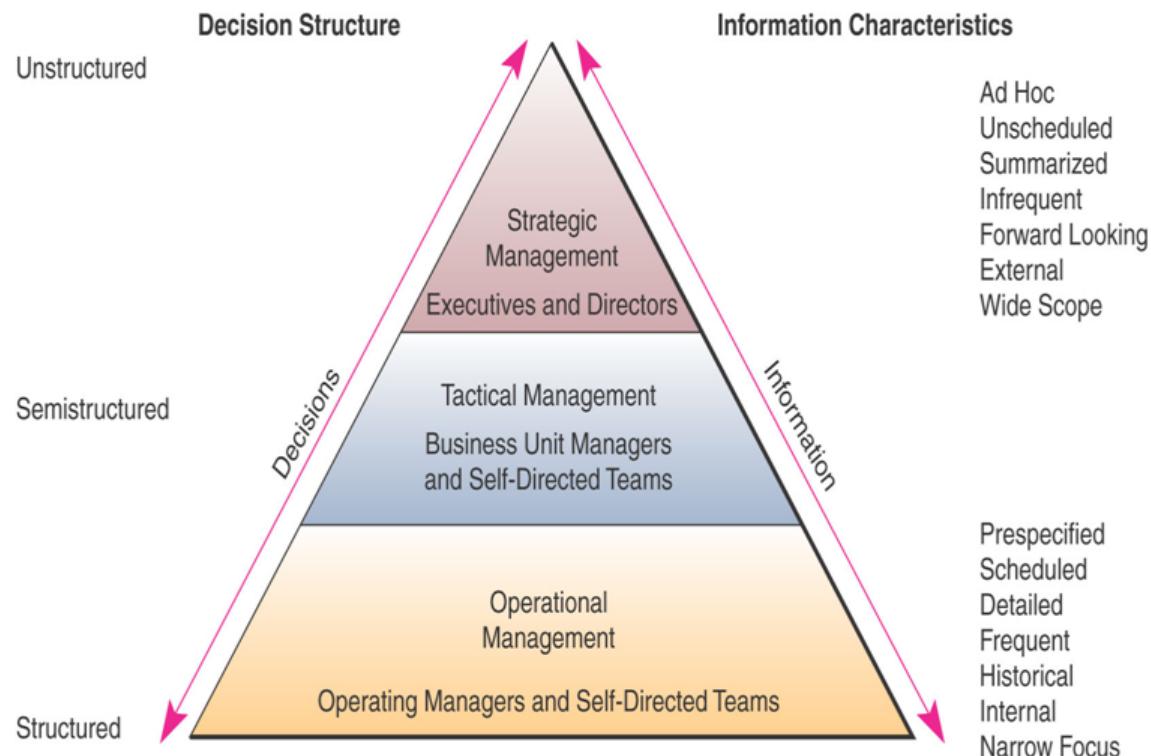
Why the Need to Align IS Strategy with Business Strategy?

- ▶ IT is an **enabler** of business strategy
- ▶ Strategic alignment results from structuring the IT organization around the needs of the business
 - ▶ Alignment between IS and business strategy is essential for the success of a business venture
 - ▶ Lack of alignment will result in failure in implementing business strategy



Information Required at Different Management Levels (Data / People / Processes)

for the presentation



A Classification of Information Systems

- ▶ Information systems (IS) are classified based on the organizational levels they serve
- ▶ The three organizational levels are:
 - ▶ Operational level
 - ▶ Comprises of junior management and supervisory staff who are responsible for managing day-to-day operations
 - ▶ Tactical level (Management level)
 - ▶ Includes middle managers who are responsible for implementing organizational policies and monitoring performance
 - ▶ Strategic level
 - ▶ Senior managers (**leaders**) responsible for monitoring external environment, strategy formulation and long term goals



A (Traditional) Classification of Information Systems

- ▶ Four kinds of IS
 - ▶ Transaction Processing Systems
 - ▶ Operational Level
 - ▶ Management Information Systems
 - ▶ Tactical Level
 - ▶ Decision Support Systems
 - ▶ Tactical Level
 - ▶ Executive Support Systems
 - ▶ Strategic Level

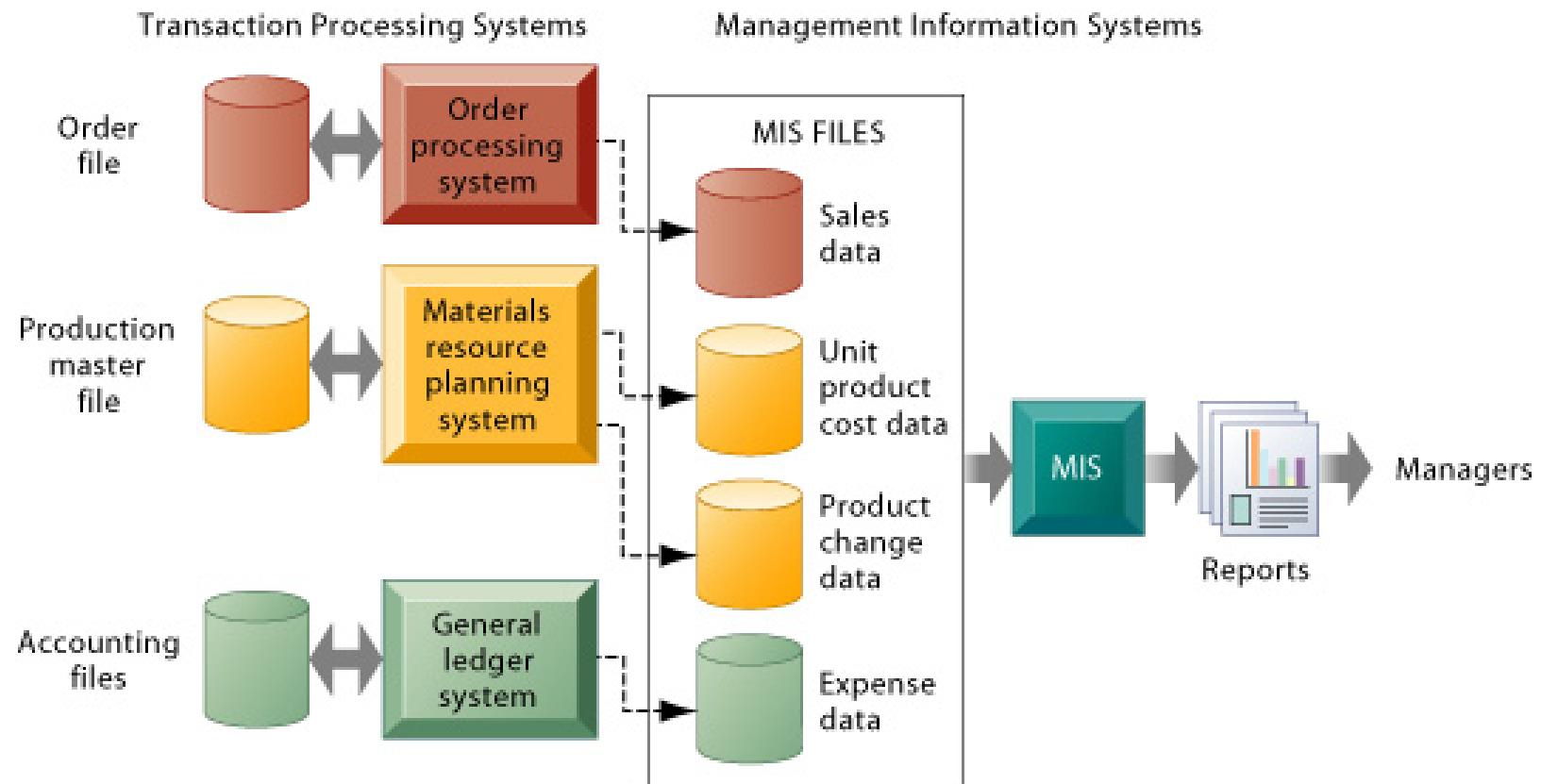


A Classification of Information Systems

- ▶ **Transaction Processing Systems (TPS)**
 - ▶ Performs and records daily routine transactions to conduct business
 - ▶ Example: Point-of-sales, Sales order entry, Payroll, ..
 - ▶ Require high reliability and accuracy
- ▶ **Management Information Systems (MIS)**
 - ▶ Use the data generated by TPS to produce weekly, monthly, and annual reports
 - ▶ Primarily targeted at mid-level managers to help them track and monitor organizational performance
 - ▶ Example: Weekly sales summary, Monthly sales report by regions



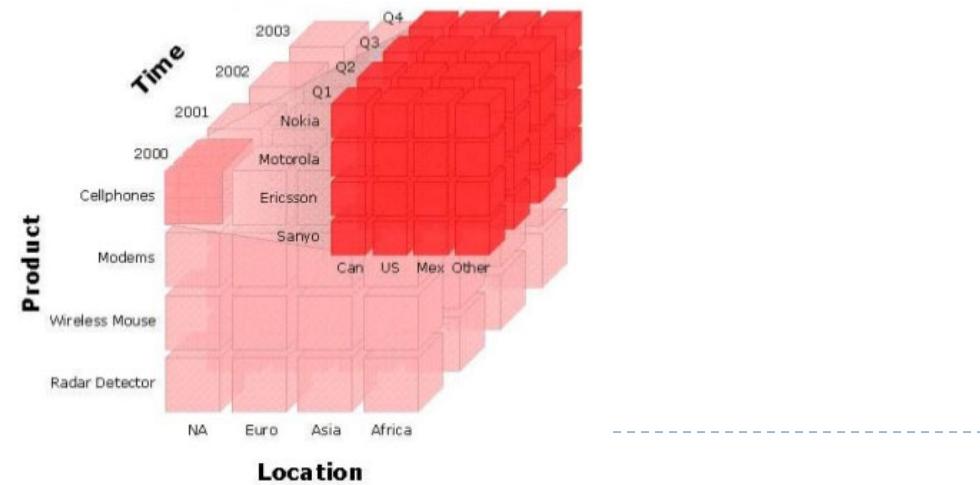
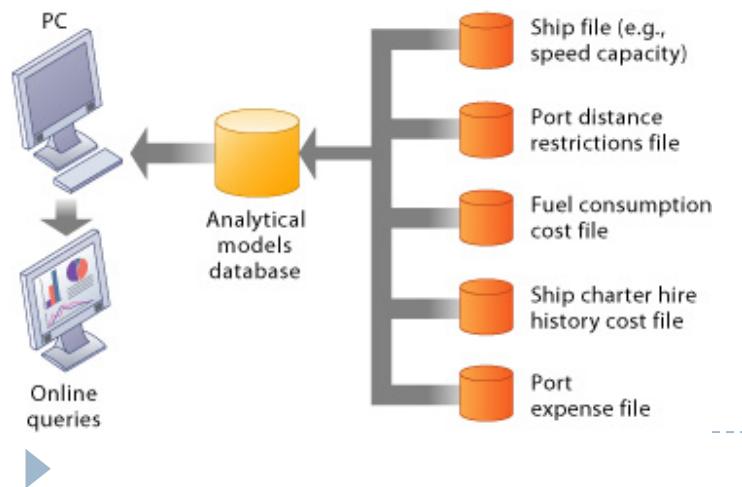
TPS and MIS



A Classification of Information Systems

▶ Decision Support Systems (DSS)

- ▶ Interactive systems that use analytical tools and operational data to help managers evaluate alternatives and make decisions
- ▶ Perform *what-if* analysis
 - ▶ Example: A DSS to develop bids on shipping contracts, ...
- ▶ Simulation model – calculates the simulated outcome of tentative decisions and assumptions
- ▶ Optimization model – determine optimal decisions based on criteria supplied by the user, mathematical search techniques, and constraints
- ▶ Data mining :the use of analysis tools to find patterns in large transaction databases
- ▶ Online analytical processing (OLAP) :the use of data analysis tools to explore large databases of transaction data to generate business insights



A Classification of Information Systems

- ▶ **Executive Support Systems (ESS) or Executive Information Systems (EIS)**
 - ▶ Primarily used by senior managers to monitor organizational performance and make strategic decisions
 - ▶ These systems use both internal (about the organization) and external (about the environment) data sources
 - ▶ Use advanced graphics software for presentation
 - ▶ Easy to use interface
 - ▶ E.g., Dashboards for performance monitoring

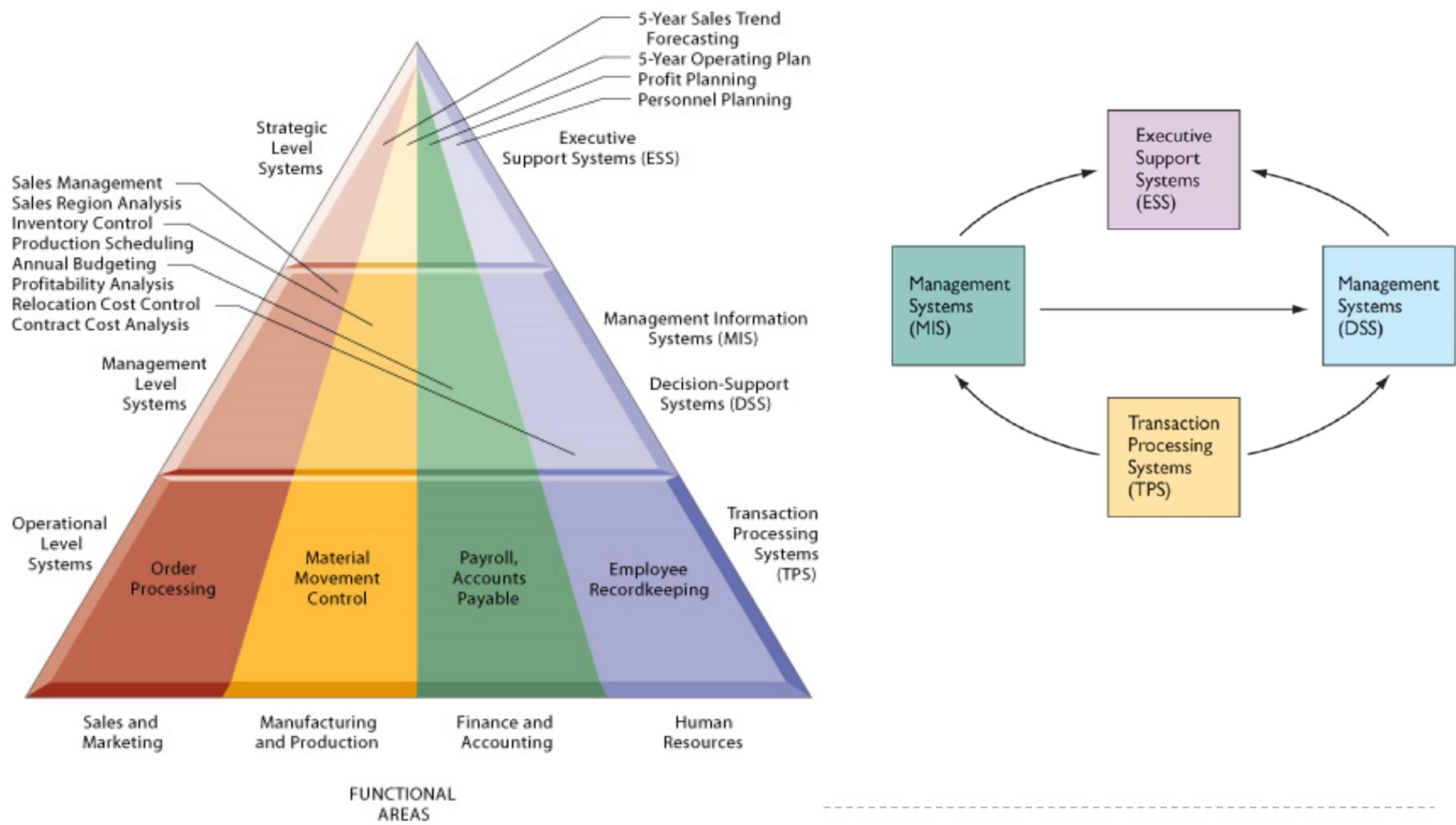


Characteristics of IS – A Summary

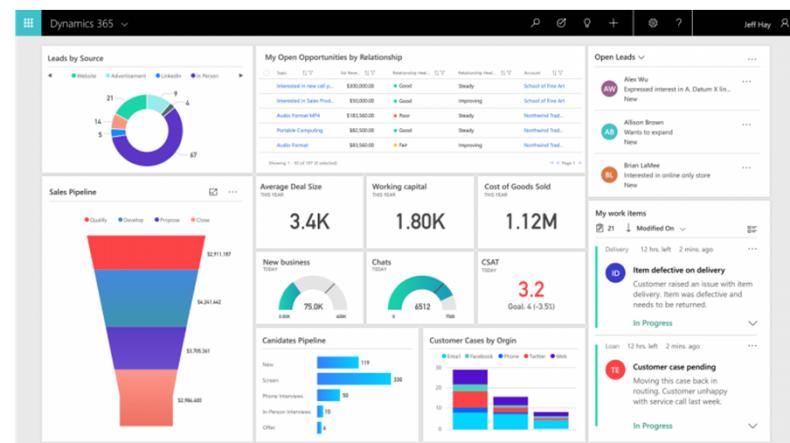
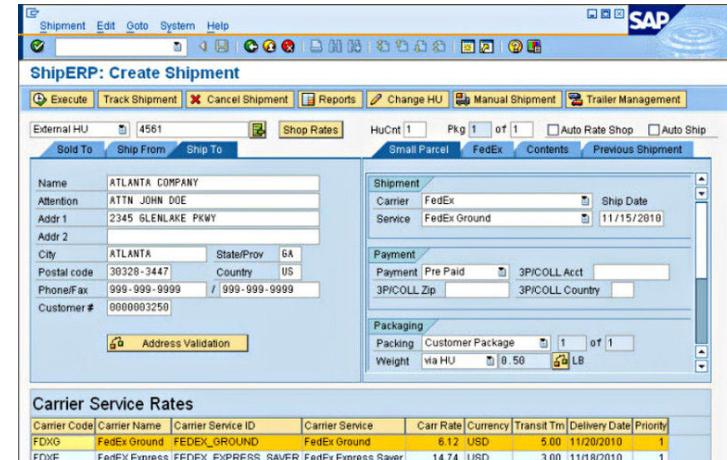
Type of System	Information Inputs	Processing	Information Outputs	Users
ESS	Aggregate data; external, internal	Graphics; simulations; interactive	Projections; responses to queries	Senior managers
DSS	Low-volume data or massive databases optimized for data analysis; analytic models and data analysis tools	Interactive; simulations; analysis	Special reports; decision analyses; responses to queries	Professionals; staff managers
MIS	Summary transaction data; high-volume data; simple models	Routine reports; simple models; low-level analysis	Summary and exception reports	Middle managers
TPS	Transactions; events	Sorting; listing; merging; updating	Detailed reports; lists; summaries	Operations personnel; supervisors



(Generic) Classification and Inter-relationships of Information Systems



Enterprise Systems (ES)

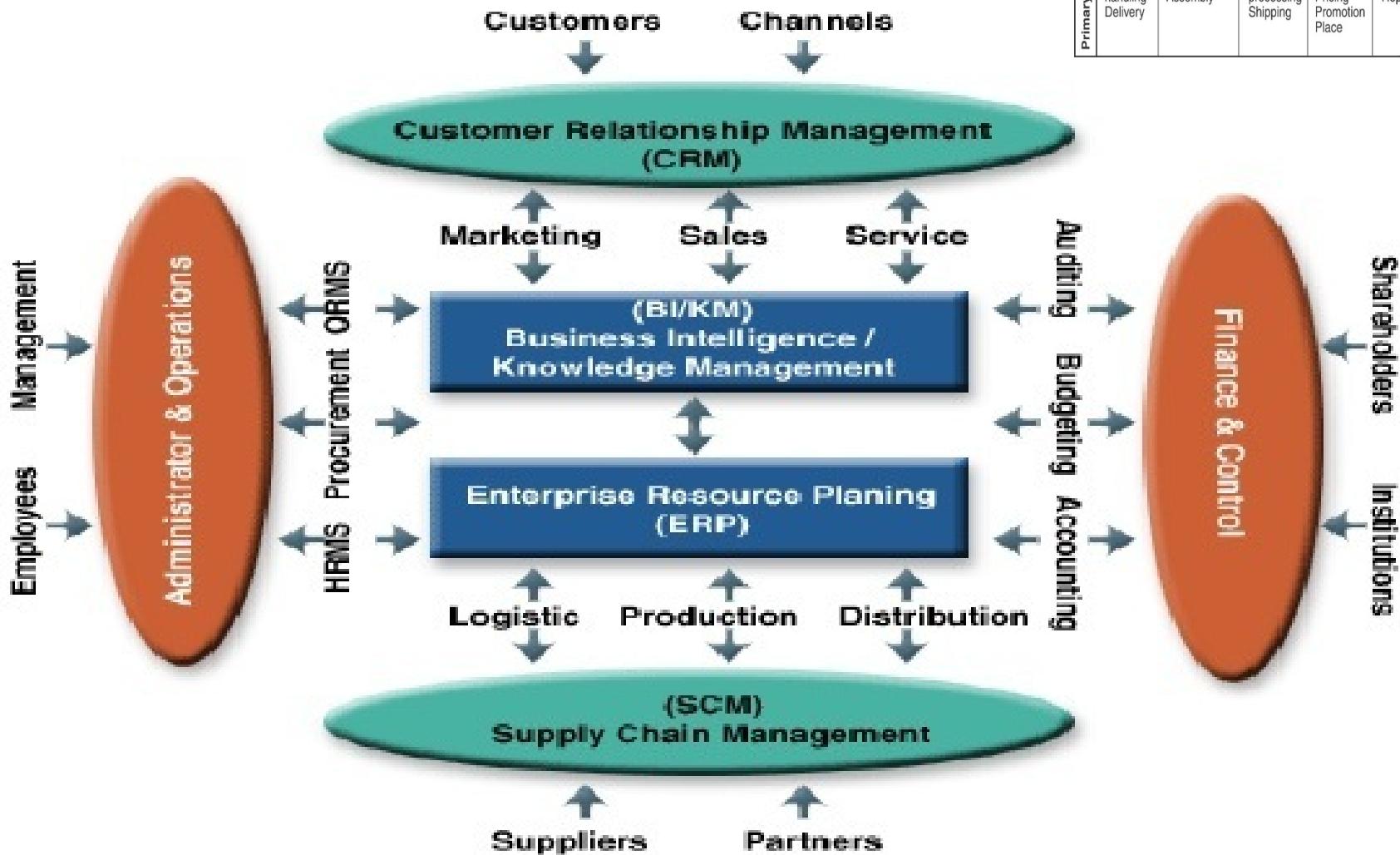
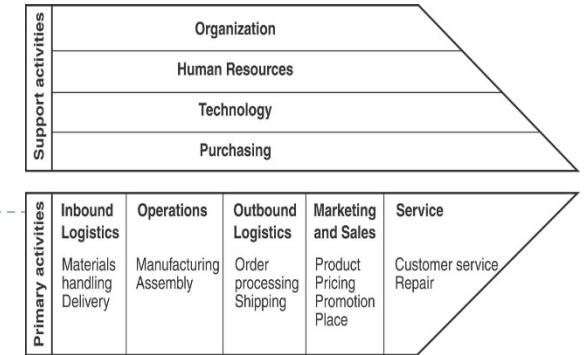


Enterprise Systems (ES)

- Commercial software packages that enable the integration of *transactions-oriented data* and *business processes* throughout an organization
- Characteristics
 - Integration
 - seamless integration of all the information flowing through a company—financial and accounting information, human resource information, supply chain information, and customer information
 - Best practices
 - built with industry best practices to allow organizations to adopt them without modification
 - built to support generic business processes that may differ quite substantially from the way any particular organization does business
 - Commercial packages
 - purchased or leased from software vendors rather than being developed in-house from scratch
 - may be further customized after purchase
 - some assembly required with computing platform on which it runs

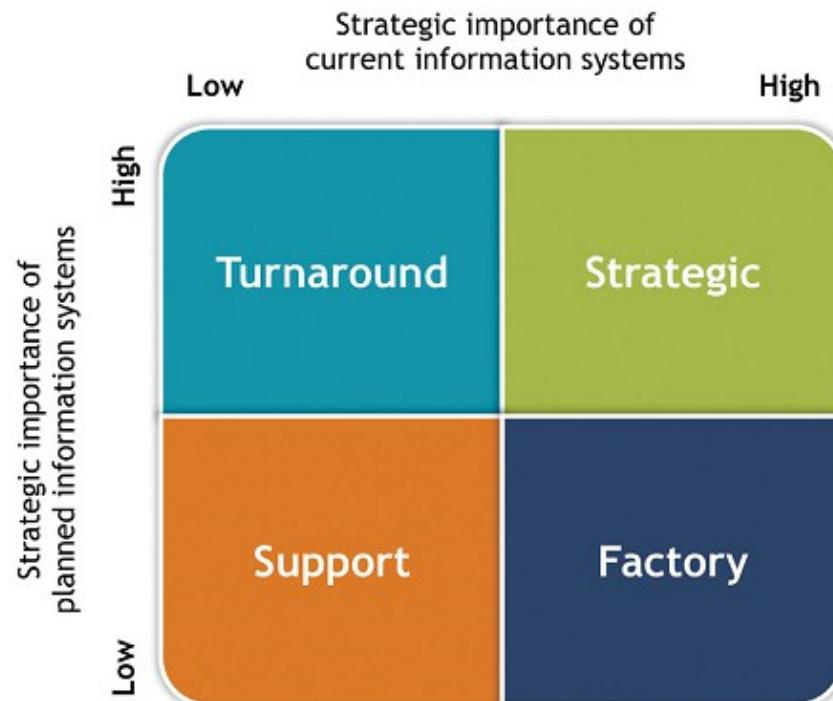


Types of Enterprise Systems



McFarlan's Strategic Grid Analysis (1983)

- ▶ Strategic Grid Analysis analyzes the strategic impact of IT on a firm on two dimensions
 - ▶ Its day-to-day operations (current)
 - ▶ Its business strategy (planned)



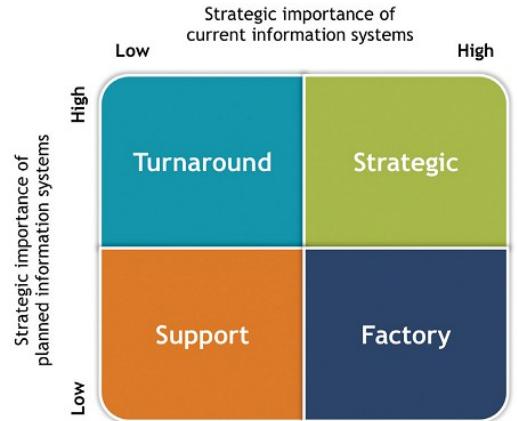
Strategic Grid Analysis

- ▶ IT is critical to a firm's day-to-day operations when it heavily depends on online transaction processing (OLTP) applications
 - ▶ Ex. Airlines, Courier services, e-commerce Web sites
- ▶ IT is not critical to a firm's operations when there is lack of automation or firm is reliant on batch-oriented applications
 - ▶ Ex. Hair salon, small trading company
- ▶ IT's impact on business strategy depends on the company's business plan.
 - ▶ E.g. Walmart uses IT to drive down cost
 - ▶ E.g. Sands Casino use to improve customer loyalty



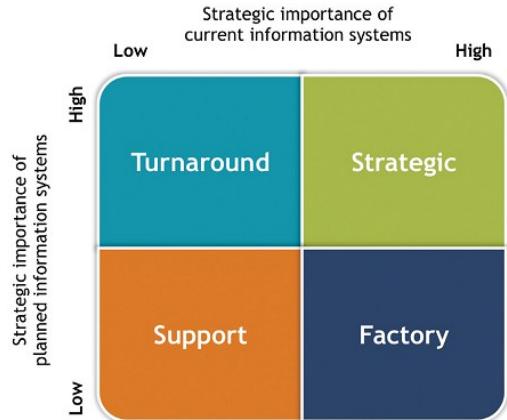
Strategic Grid Analysis

- ▶ Quadrant 1: Support
 - ▶ IT does not play an important role in either the company's day-to-day operations or its business strategy
 - ▶ E.g. Corner grocery store
- ▶ Quadrant 2: Factory
 - ▶ The company depends heavily on IT for its day-to-day operations but does not depend on it to implement its business strategy
 - ▶ E.g. Grocery chain uses Point-Of-Sale system



Strategic Grid Analysis

- ▶ Quadrant 3: Turnaround
 - ▶ The company does not depend on IT for its day-to-day operations but relies on it heavily to implement its business strategy
 - ▶ E.g. Global consulting firm
- ▶ Quadrant 4: Strategic
 - ▶ IT is crucial for this company in both its daily operations and long-term strategy
 - ▶ E.g. Dell, Walmart, Airlines

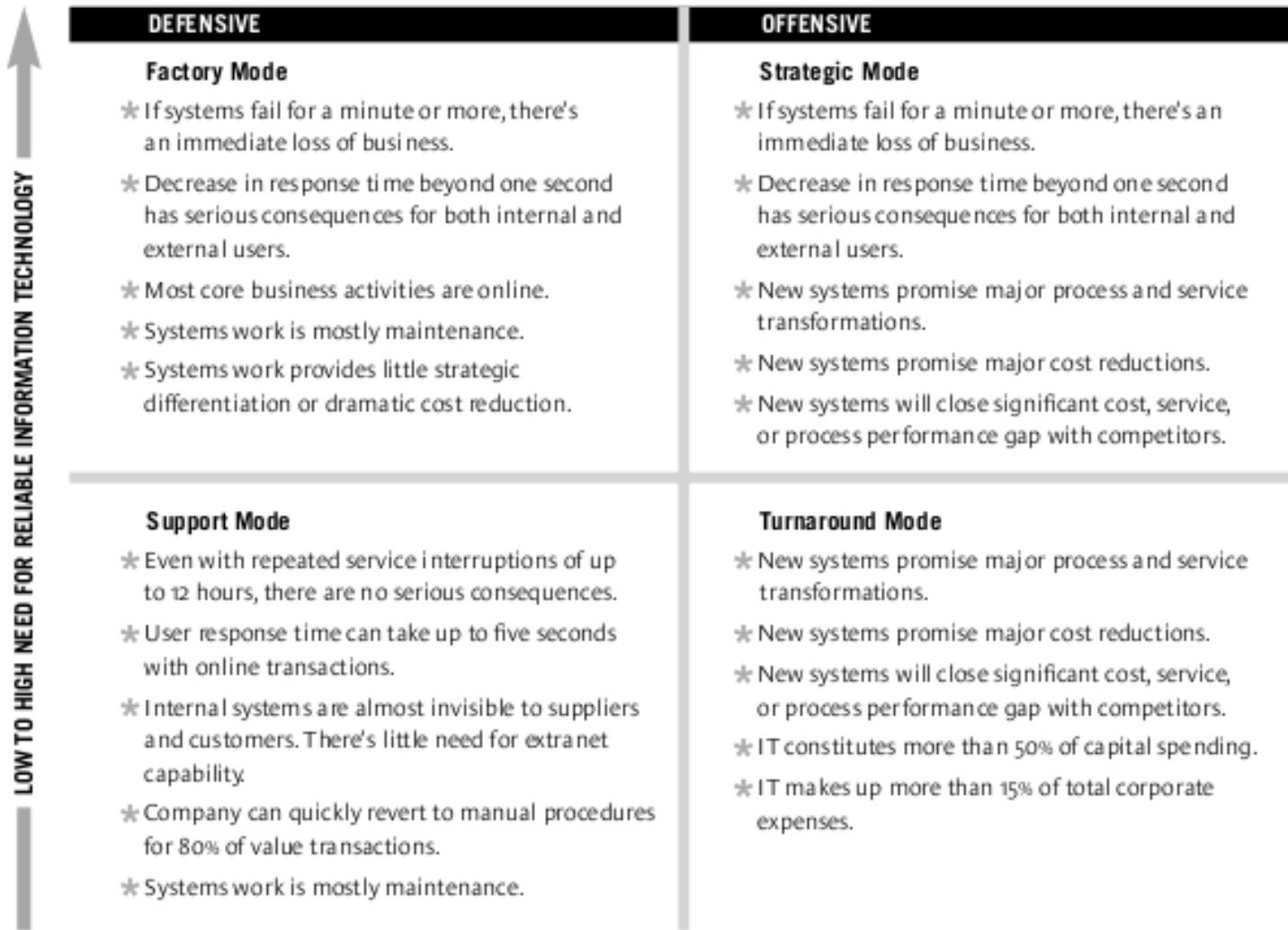
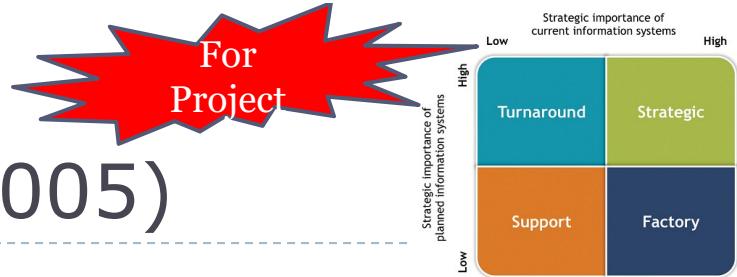


Strategic Grid Analysis

- ▶ A firm's position on the strategic grid may change as its business strategy changes
- ▶ Its position on the grid is an indicator of the criticality of its IT function
 - ▶ A firm in the strategic quadrant must have its top IT executive be part of its top management team
 - ▶ An organization in the Factory/ Strategic quadrant must pay close attention to the security and reliability of its IT infrastructure



Nolan & McFarlan's IT Strategic Impact Grid (2005)



Practical Use of the Strategic Grid Analysis

- ▶ Can be used at organizational or business unit, or individual IS level
- ▶ Besides classify own's organization OVERALL use of IT....
- ▶ List all the IS within the organization
- ▶ Assess each IS along the two dimensions and fit into the quadrant (or location)
- ▶ Get an overview of the organization's IS Portfolio and competing resource demands
 - ▶ Is the IS Strategy aligned with Business Strategy?
 - ▶ Need to re-prioritize?
 - ▶ Need to shift to another quadrant on the grid?
 - ▶ In-house or outsourced?



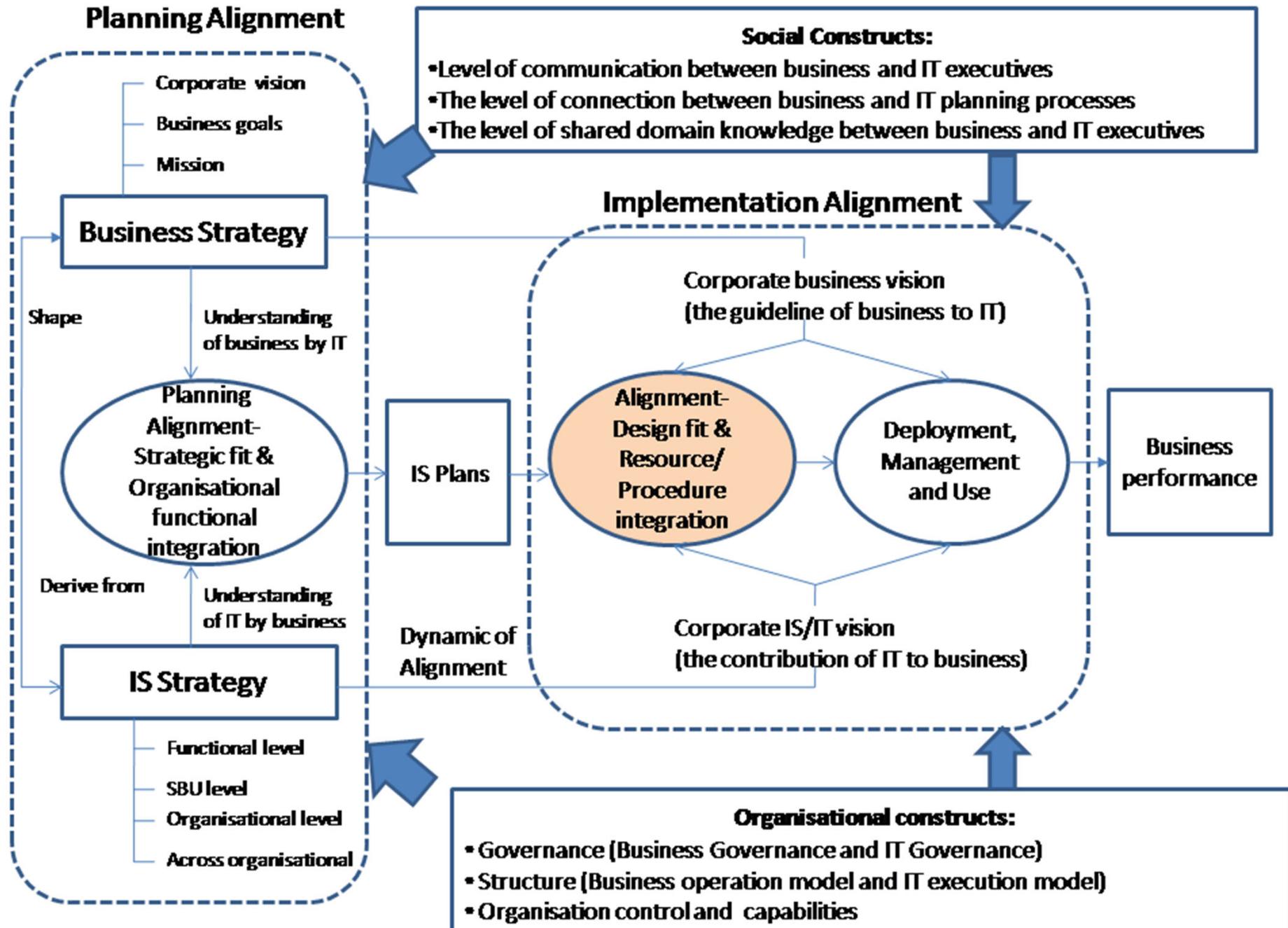


For
Project

TECH INITIATIVES DRIVING IT INVESTMENT IN 2020

	Heads of IT	LOB
Data/Business Analytics	1 37%	1 20%
Security/Risk Management	2 34%	1 20%
Customer Experience Technologies (chatbots, mobile apps, etc.)	3 28%	14%
Machine Learning / Artificial Intelligence (AI) / Robotic Process Automation (RPA)	4 24%	12%
Application / Legacy Systems Modernization	5 23%	7%
Collaboration Tools & Platforms	21%	10%
Cloud (non-SaaS)	20%	4 16%
SaaS Migrations	19%	6%
Infrastructure Consolidation/Virtualization	18%	4 16%
Business Process Management	18%	3 17%





Key Takeaways and Reflection Points from Lecture 3

- ▶ How can you apply strategy frameworks to understand and analyze the impacts of IT on business strategy?
- ▶ What are the elements of IS strategy?
- ▶ Why is IS-Business strategic alignment important?
- ▶ How to apply the Strategic Grid Analysis method effectively?

