

Managing Business Systems


Presented by
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Sharing Moment

- Do you need to use a computer system at work? If yes, what does the system physically look like?
- In the case study I-6, what are the choices available to make a decision? 

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Using IOS to Create Competitive Advantage

- **Comparative Efficiency:** allows an organization to produce its goods or services more cheaply than its competitors through internal efficiency and interorganizational efficiency.
 - **Improving internal efficiency:**
 - Lower inventory costs by allowing "JIT" delivery.
 - Encourage standardization of data representation, making data easier to manipulate and analyze internally.
 - Capture data more quickly, leading to faster analysis and shorter response time.

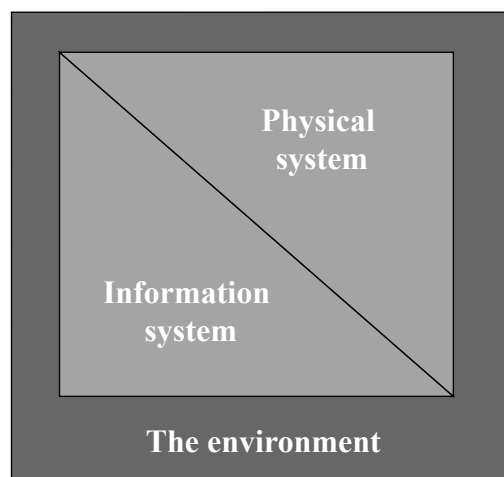
Learning Objectives

- What is a business system?
- What is an enterprise model?
- How did the ERP evolve since 1970s?
- How do we implement an ERP system?
- How does IT support SCM?
- How does IT support CRM?
- How does IT support MkIS?

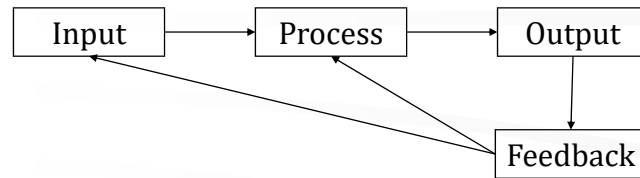
What Is a Business System?

- A business system consists of physical and information systems with components interconnected to carry out the mission of an organization.
- **Information system** is concerned with "how something is being accomplished." It processes the data and produces the information for the users.
- **Physical system** is the process itself and is concerned with "what is going on." It processes the materials and produces the final products or services for the customers.

Business System Components

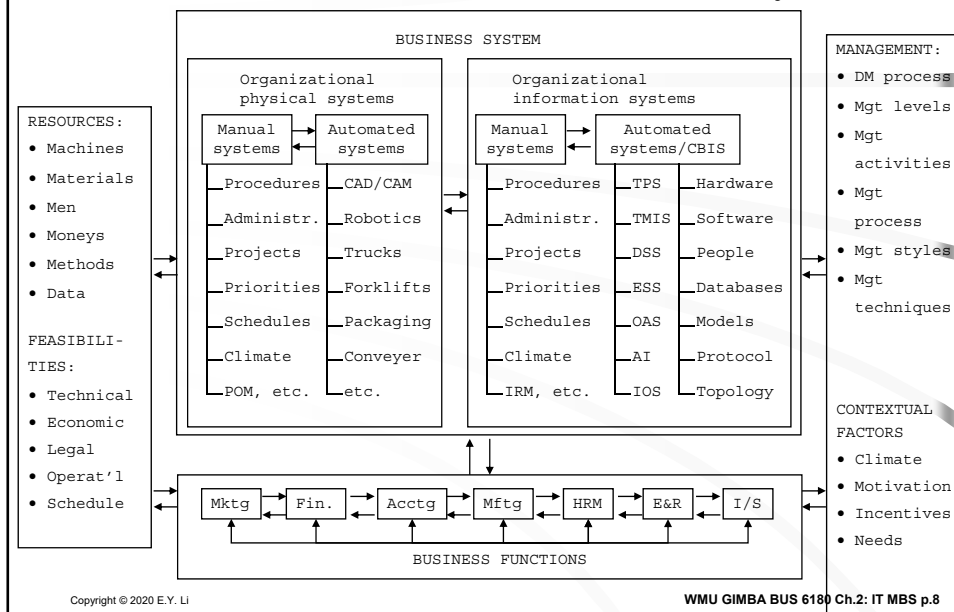


A Fundamental Business System

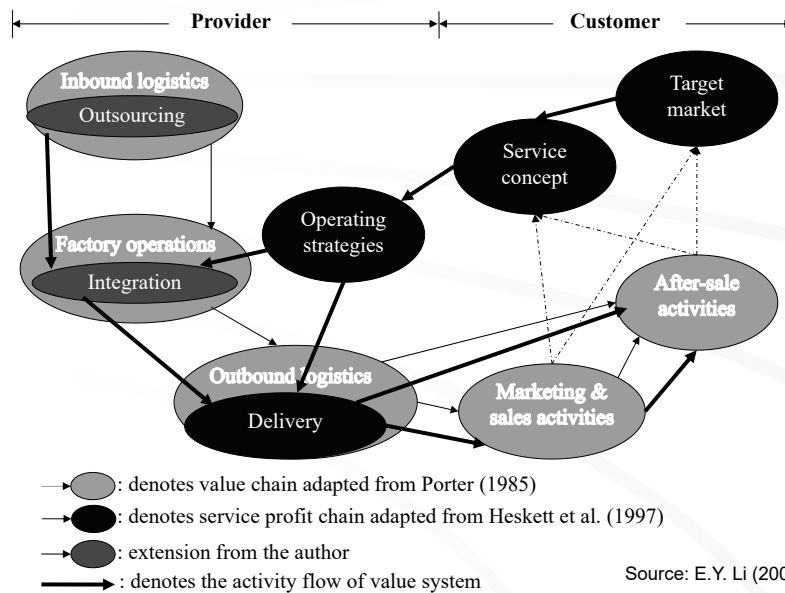


- A fundamental business system consists of Input, Process, Output, and Feedback (I-P-O-F). It is the primitive unit of all business systems. Each business process, e.g., payroll, purchasing, etc. is a part of a fundamental business system with its unique input and output.

The Framework of Business System

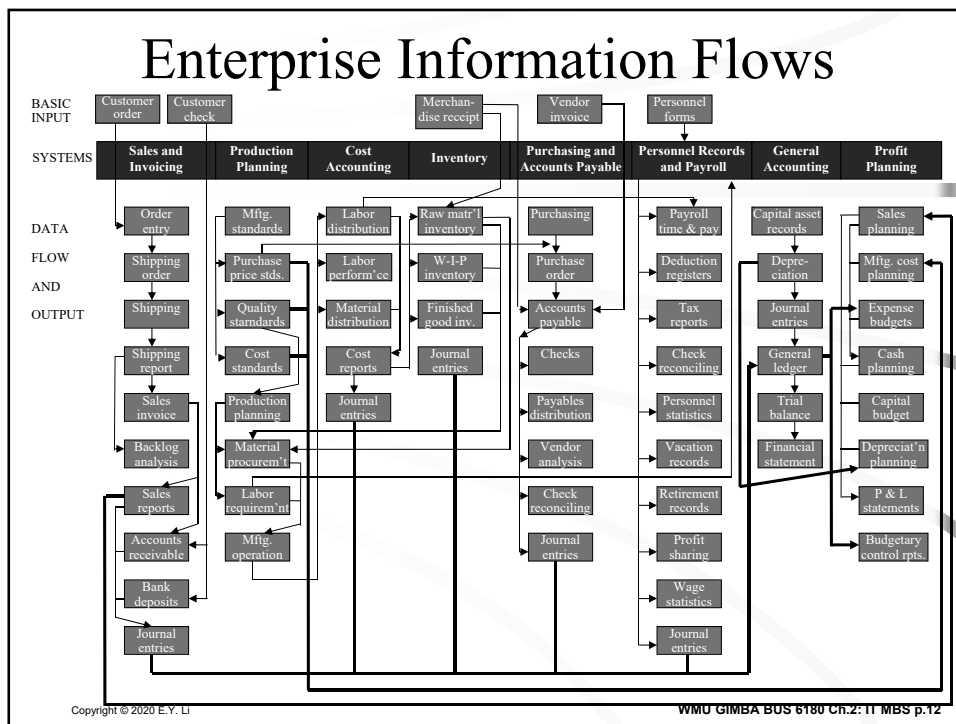
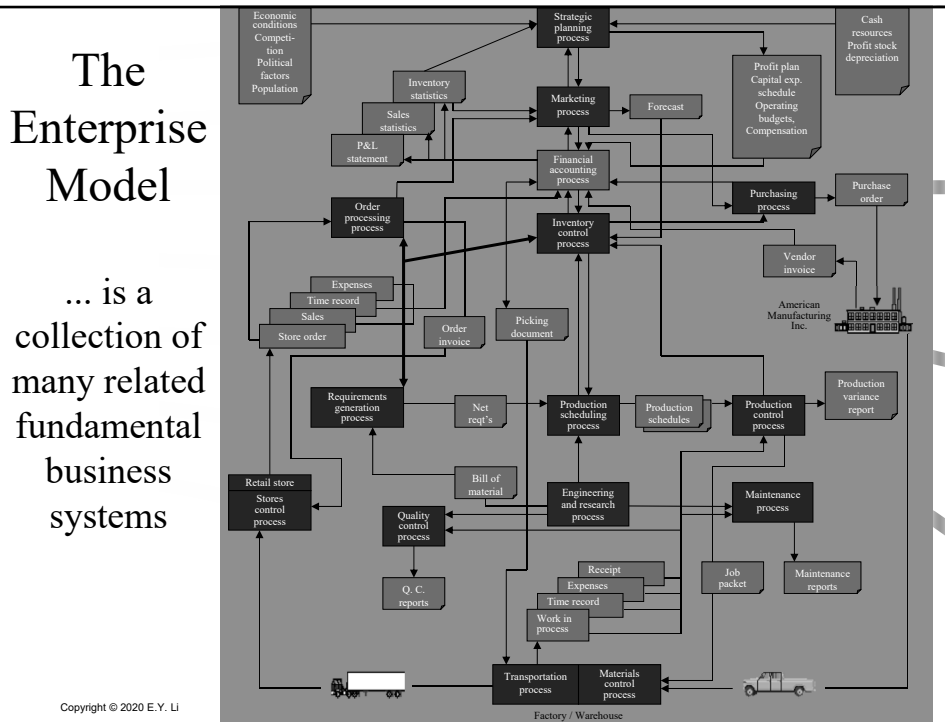


The Value Creation System of a Company



What is an Enterprise Model?

- An enterprise model is a conceptual tool that contains a big set of elements and their relationships and allows expressing the business logic of a specific firm. It is a description of the value a company offers to one or several segments of customers and of the architecture of the firm and its network of partners for creating, marketing, and delivering this value and relationship capital, to generate profitable and sustainable revenue streams. (Osterwalder, Pigneur and Tucci, 2005)



What is a Business Process/Function?

- A **business process** is a set of linked activities that create value by transforming an input into a more valuable output. Both input and output can be artifacts and/or information and the transformation can be performed by human actors, machines, or both.
- A **business function** is a high level grouping of related business processes and capabilities that carry out a part of the organization's mission.

Business Functions and Processes

SUPPORTIVE FUNCTIONS

Marketing

- Sales analysis
- Sales forecasting
- Advertising
- Sales administration

Strategic Planning

- Econometric models
- Market models
- Simulation
- Decision theory
- Investment analysis
- Facilities planning

Engineering and Research

- Design automation
- Project control
- Numerical control
- Configuration management
- Industrial engineering
- Bill of material generation

MAINSTREAM FUNCTIONS

Sales Order Processing

- Customer billing
- Order filling
- Transportation

Inventory Reporting and Control

- Stock status reporting
- Statistical replenishment

Requirements Generation

- Gross requirements generation
- Net requirements generation

Production Scheduling / Control

- Fabrication and assembly scheduling
- Shop loading
- Issuance of job packets
- Performance vs. plan analysis
- Variance reporting

Purchasing

Receiving

Quality Control

Maintenance

ADMINISTRATIVE FUNCTIONS

Financial

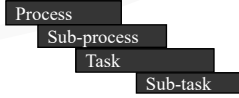
- Accounts receivable
- Accounts payable
- General ledger
- Cost accounting
- Fixed asset accounting
- Budgeting
- Financial models
- Key rated analysis
- Profit and loss statements

Personnel

- Payroll
- Payroll reports
- Wage and compensation analysis
- Performance appraisals

Legal

Enterprise Business Chart



Mainstream:

- Sales order processing
- Customer billing
-
- Order filling
-
- Transportation
-
- Inventory management
- Stock status reporting
-
- Statistical replenishment
-
- Purchasing
- Evaluate vendors
- Select vendor
- Generate purchase orders
- Process invoices
-
- Receiving
-
- Warehousing
-

Mainstream:

- Requirements generation
- Gross requirements generation
- Update master schedule
-
- Explode master schedule
-
- Net requirements generation
-
- Production scheduling
- Fabrication and assembly scheduling
-
- Shop loading
-
- Issuance of job packets
-
- Production control
- Performance vs. plan analysis
-
- Variance reporting
-

Mainstream:

- Quality control
-
- Maintenance
-

Supportive:

- Marketing
-
- Strategic planning
-
- Engineering and research
-

Administrative:

- Finance and accounting
-
- Personnel
-
- Legal
-

Mainstream Processes

Process	Type of function	Major management focus	Cycle	Form of processing	Processing complexity	Data base	Type of data	Time demand	Transaction volume	Typical mode of operation	Frequency of implementation	Difficulty of implementation
Customer billing	Main-stream	Oper't'g	Daily	Highly struc.	Low	Customer file	Internal	High	Heavy	On line	High	Low
Order filling	Main-stream	Oper't'g	Daily	Highly struc.	Low	Customer file	Internal	High	Heavy	On line	High	Low
Transportation	Main-stream	Oper't'g	Daily	Highly struc.	Med.	Cust. & vehicle	Internal	High	Heavy	On line	Med.	Low
Stock status reporting	Main-stream	Oper't'g & middle	Daily	Highly struc.	Low	Inventory file	Internal	Med.	Heavy	On line	High	Low
Statistical replenishment	Main-stream	Oper't'g	Daily	Structured	High	Inventory file	Internal	Med.	Heavy	On line	Med.	Med.
Gross requirements generation	Main-stream	Oper't'g	Daily	Highly struc.	Med.	Inv. & product file	Internal	Med.	Med.	Batch	Med.	Med.
Net requirements generation	Main-stream	Oper't'g	Daily	Highly struc.	Med.	Inv. & Prod file	Internal	Med.	Med.	Batch	Med.	Med.
Fabrication & assembly scheduling	Main-stream	Oper't'g	Daily	Structured	High	Inv. Prod. & facil. file	Internal	Med.	Med.	Batch	Low	High
Shop loading	Main-stream	Oper't'g	Daily	Structured	High	Inv. prod. & facil. file	Internal	High	Med.	On line	Low	High
Issuance of job packets	Main-stream	Oper't'g	Daily	Structured	Med.	Inv. prod. & facil. file	Internal	High	Med.	On line	Med.	Med.
Performance vs. plan analysis	Main-stream	Oper't'g & middle	Weekly	Structured	Med.	Inv. work in process	Internal	Med.	Low	On line	Med.	Med.
Variance reporting	Main-stream	Oper't'g & middle	Weekly	Structured	Med.	Inv. work in process	Internal	Med.	Low	On line	Med.	Med.
Purchasing	Main-stream	Oper't'g	Daily	Highly struc.	Med.	Vendor file	Internal	Med.	Med.	On line	Med.	Med.
Receiving	Main-stream	Oper't'g	Daily	Highly struc.	Low	Inventory file	Internal	High	Med.	On line	Med.	Low
Quality control	Main-stream	Oper't'g & middle	Weekly	Structured	Med.	Product & facilities	Internal	Med.	Med.	On line	Low	Med.
Maintenance	Main-stream	Oper't'g & middle	Weekly	Structured	Med.	Prod. & facil. file	Internal	Med.	Med.	On line	Low	Med.

Administrative Processes

Process	Type of function	Major management focus	Cycle	Form of processing	Processing complexity	Data base	Type of data	Time demand	Transaction volume	Typical mode of operation	Frequency of implementation	Difficulty of implementation
Accounts receivable	Admin. finan.	Oper't'g	Daily	Highly struc.	Low	Customer	Internal	Med.	Heavy	Batch	High	Low
Accounts payable	Admin. finan.	Oper't'g	Daily	Highly struc.	Low	Vendor	Internal	Med.	Med.	Batch	High	Low
General ledger	Admin. finan.	Oper't'g	Weekly	Highly struc.	Low	Acct'g	Internal	Low	Low	Batch	Low	Low
Cost accounting	Admin. finan.	Oper't'g & middle	Weekly	Structured	Med.	Inv. & general ledger	Internal	Med.	Low	Batch	Med.	Med.
Fixed asset accounting	Admin. finan.	Oper't'g & middle	Weekly	Highly struc.	Low	General ledger	Internal	Med.	Low	Batch	High	Low
Budgeting	Admin. finan.	All levels	Monthly	Structured	Med.	General ledger	Internal external	Med.	Low	Batch	Med.	Med.
Financial models	Admin. finan.	Middle & top	Monthly	Structured	High	General ledger	Internal external	Low	Low	Batch	Low	High
Key ratio analysis	Admin. finan.	Middle & top	Monthly	Structured	Med.	General ledger	Internal	Low	Low	Batch	Low	High
Profit and loss statements	Admin. finan.	Middle & top	Monthly	Structured	Low	General ledger	Internal	Low	Low	Batch	Med.	Med.
Pay roll	Admin. pers'l	Oper't'g	Weekly	Highly struc.	Low	Personnel file	Internal	Med.	Med.	Batch	High	Low
Pay roll reports	Admin. pers'l	Oper't'g	Weekly	Highly struc.	Low	Personnel file	Internal	Med.	Med.	Batch	High	Low
Skills inventory	Admin. pers'l	Oper't'g & middle	Weekly	Structured	Low	Personnel file	Internal	Low	Med.	Batch	Low	Med.
Wage and compensation analysis	Admin. pers'l	Oper't'g & middle	Weekly	Structured	Low	Personnel file	Internal	Low	Med.	Batch	Low	Med.
Performance appraisals	Admin. pers'l	Oper't'g & middle	Weekly	Structured	Low	Personnel file	Internal	Low	Med.	Batch	Low	Med.
Legal	Admin. legal	Middle & top	Weekly	Structured	Low	Specially prepared	Internal external	Low	Med.	Batch	Low	Med.

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Supportive Processes

Process	Type of function	Major management focus	Cycle	Form of processing	Processing complexity	Data base	Type of data	Time demand	Transaction volume	Typical mode of operation	Frequency of implementation	Difficulty of implementation
Sales analysis	Mktg. supp.	Oper't'g & middle	Weekly	Structured	Low	Customer & sales files	Internal	Medium	Heavy	Batch	High	Low
Sales forecasting	Mktg. supp.	Middle	Monthly	Structured	High	Sales history	Internal	Low	Heavy	Batch	Med.	Med.
Advertising	Mktg. supp.	Middle	Monthly	Unstructured	High	Sales history	Internal external	Low	Light	Batch	Low	High
Sales administration	Mktg. supp.	Oper't'g & middle	Daily	Highly struc.	Med.	Customer & inven.	Internal	Med. to high	Heavy	Online & batch	High	Low
Econometric models	Plan'g supp.	Middle & top	Monthly	Structured	High	General ledger, account'g	Internal external	Low	Light	Batch	Low	Med.
Market models	Plan'g supp.	Middle & top	Monthly	Unstructured	High	Sales history	Internal external	Low	Med.	Batch	Low	High
Decision theory	Plan'g supp.	Middle & top	Weekly	Unstructured	High	As needed	Internal	Med.	Low	Batch	Med.	High
Investment analysis	Plan'g supp.	Middle & top	Monthly	Structured	Med.	General ledger, account'g	Internal	Low	Low	Batch	Low	Med.
Facilities planning	Plan'g supp.	Middle & top	Monthly	Structured	Low	General ledger, account'g	Internal	Low	Low	Batch	Low	Med.
Design automation	Eng'g supp.	Oper't'g & middle	Daily	Structured	High	Product file	Internal	High	Med.	On line	Low	High
Project control	Eng'g supp.	All levels	Weekly	Structured	Low	As needed	Internal	High	Med.	On line	Med.	Med.
Numerical control	Eng'g supp.	Oper't'g	Weekly	Structured	High	Product file	Internal	High	Med.	On line	Low	High
Configuration management	Eng'g supp.	Oper't'g & middle	Weekly	Structured	Low	Product file	Internal	Low	Med.	Batch	Low	Med.
Industrial engineering	Eng'g supp.	Oper't'g & middle	Daily	Structured	Med.	Product file	Internal	Med.	Med.	Batch	Low	Med.
Bill of Mat'l generation	Eng'g supp.	Oper't'g	Daily	Highly struc.	Med.	Product file	Internal	Med.	Heavy	Online & batch	Med.	Med.

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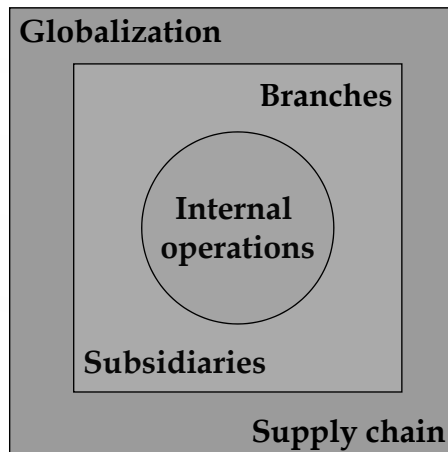
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Enterprise Resource Management

What Is ERP?

- Enterprise Resource Planning (ERP) is the concept of building applications that are fully integrated and can be used to automate many of the routine functions of running a company and to integrate the data across a company.
- It provides global companies an opportunity to consolidate and integrate data from all over the world into a single corporate system.

ERP Integrates



ERP Applications

Industry Segment	Basic Applications	Advanced Applications
Discrete Manufacturing	<ul style="list-style-type: none"> • accounting • order processing • purchasing • inventory control 	<ul style="list-style-type: none"> • forecasting • numerical control • production scheduling • design automation
Process Manufacturing	<ul style="list-style-type: none"> • accounting • order processing • purchasing • inventory control 	<ul style="list-style-type: none"> • mix formulation • process control • simulation • revenue models
Banking and Finance	<ul style="list-style-type: none"> • demand deposit accounting • check processing • proof and transit operations • cost control 	<ul style="list-style-type: none"> • online savings • centralized file system • portfolio analysis • cash flow analysis

ERP Applications

Industry Segment	Basic Applications	Advanced Applications
Federal Government	<ul style="list-style-type: none"> • accounting and administration • tax reporting and auditing • order processing • census analysis 	<ul style="list-style-type: none"> • information retrieval • intelligence • command and control • pollution control
Insurance	<ul style="list-style-type: none"> • premium accounting • customer billing • external reports • reserve calculation 	<ul style="list-style-type: none"> • actuarial analysis • investment analysis • policy approval • cash flow analysis
Business and Personnel Service	<ul style="list-style-type: none"> • service bureau functions • tax preparation • accounting • client records 	<ul style="list-style-type: none"> • econometric models • time sharing • engineering analysis • data base

ERP Applications

Industry Segment	Basic Applications	Advanced Applications
Education	<ul style="list-style-type: none"> • attendance accounting • grading and scoring • school administration • alumni records 	<ul style="list-style-type: none"> • student scheduling • computer-aided instructions • library cataloging • student counseling
Utilities	<ul style="list-style-type: none"> • customer billing • accounting • meter reading • inventory control 	<ul style="list-style-type: none"> • rate analysis • line and generator loading • operational simulation • financial models
State and Local Government	<ul style="list-style-type: none"> • utility billing • tax record-keeping • payroll • school administration 	<ul style="list-style-type: none"> • traffic analysis • budget preparation • police identification • city planning

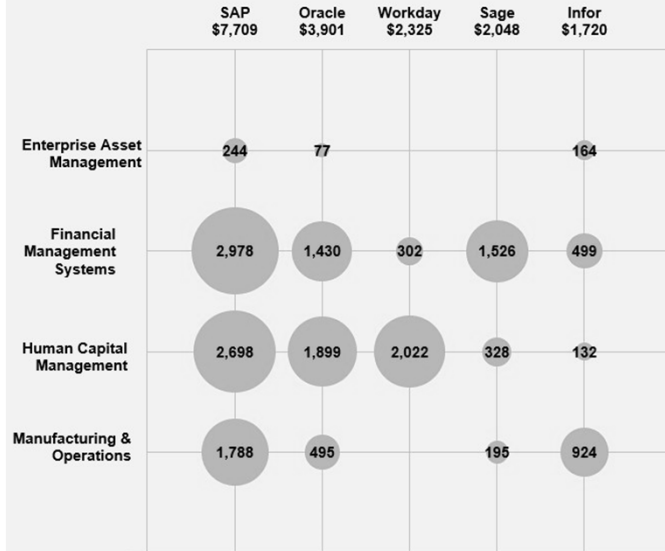
ERP Applications

Industry Segment	Basic Applications	Advanced Applications
Retail	<ul style="list-style-type: none"> • customer billing • sales analysis • accounting • inventory reporting 	<ul style="list-style-type: none"> • point of sale automation • sales forecasting • merchandising • cash flow analysis
Transportation	<ul style="list-style-type: none"> • rate calculation • vehicle maintenance • cost analysis • accounting 	<ul style="list-style-type: none"> • traffic pattern analysis • automatic rating • tariff analysis • reservation systems
Health Care	<ul style="list-style-type: none"> • patient billing • inventory accounting • health care statistics • patient history 	<ul style="list-style-type: none"> • lab/operation scheduling • nurse' station automation • intensive care • preliminary diagnosis

ERP Applications

Industry Segment	Basic Applications	Advanced Applications
Distribution	<ul style="list-style-type: none"> • order processing • inventory control • purchasing • warehouse control 	<ul style="list-style-type: none"> • vehicle scheduling • merchandising • forecasting • store site selection
Printing and Publishing	<ul style="list-style-type: none"> • circulation • classified ads • accounting • payroll 	<ul style="list-style-type: none"> • automatic typesetting • home finder • media analysis • page layout

Top 5 ERP Software, Worldwide, 2018 Providers, Worldwide, 2018
 revenue (millions of US dollars)



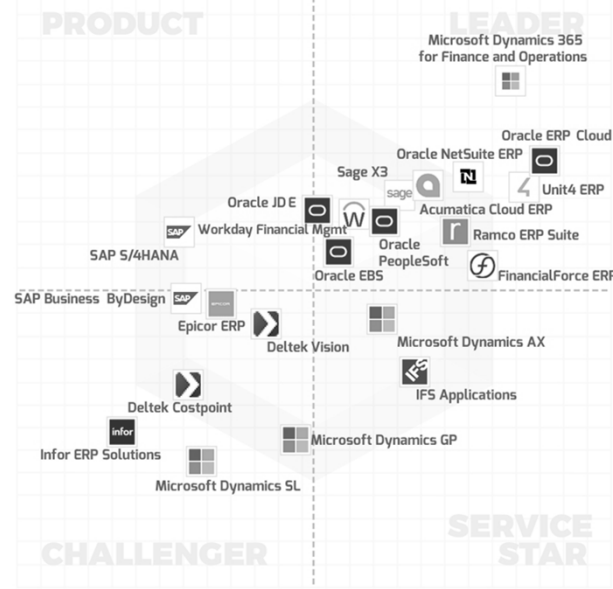
Note: The size of the bubble and value equal 2018 revenue (millions of US dollars) and the color coding equals positive or negative year-over-year change. A green bubble represents positive change, and a red bubble represents negative change.

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PRODUCT FEATURES AND SATISFACTION

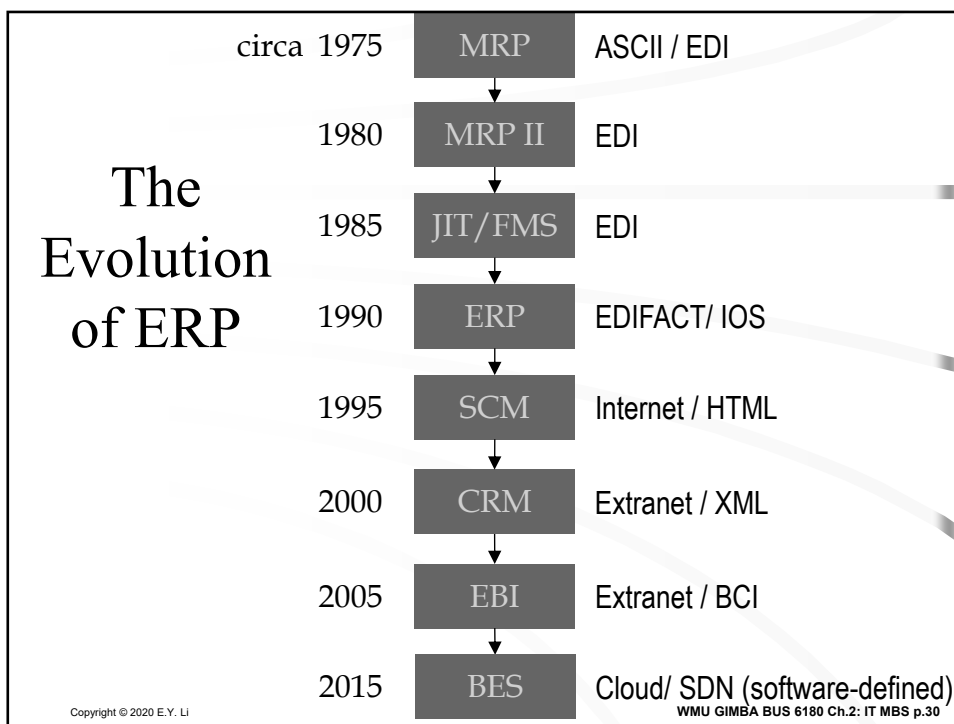
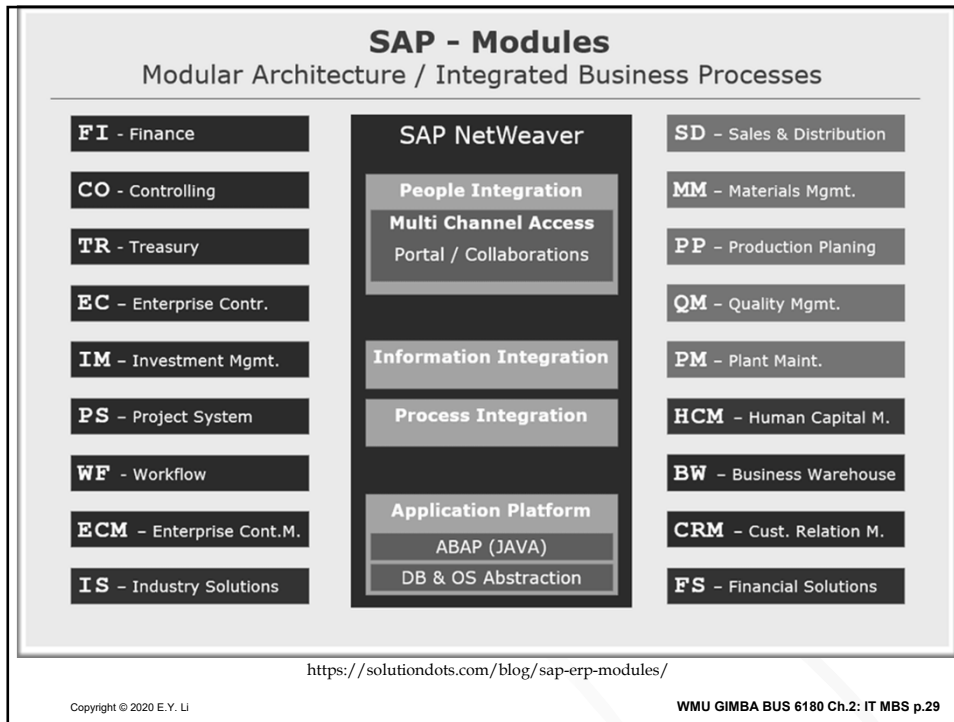
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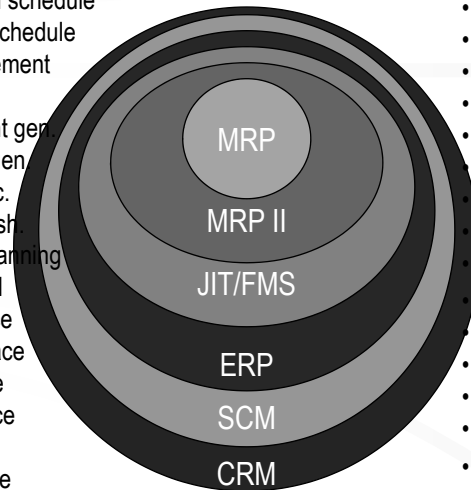
VENDOR EXPERIENCE AND CAPABILITIES

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The Evolution of ERP

- Manufacturing-centric/Push mgt.
- Master production schedule
- Final production schedule
- Inventory management
- Bill of materials
- Gross requirement gen.
- Net requirement gen.
- Reorder point calc.
- Automatic replenish.
- Capacity resrc. planning
- Production control
- Marketing interface
- Accounting interface
- Financial interface
- Personnel interface
- Supplier interface
- Customer interface
- Demand-centric/Pull mgt.
- EDI integration
- Automatic setups



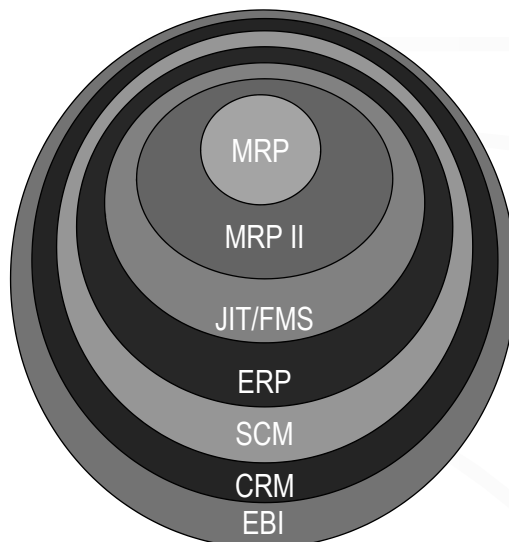
- Customer managed relation
- One-to-one marketing

- Supplier relations
- Flow through distribution
- Just-in-time delivery
- Small lot production
- Process-centric mgt.
- TQM & BPR & BPRD
- POS integration
- Enterprise integration
- Total system approach
- Supplier integration
- Strategic purchasing
- Globalization
- Horizontal teaming
- Total system welfare
- Customer integration
- Relationship marketing
- Customer franchise mgt.
- Integrated delivery mgt.

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The Evolution of ERP



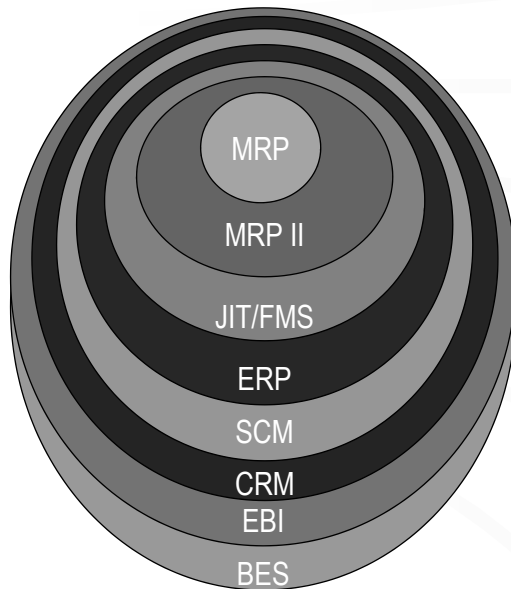
E-Business Integration

- CRM & SCM & ERP integration (ERP2)
- Web-enabled processes
- Globalization to all
- Business community integration (BCI)
- Push web technology
- e-Business management
- Web content management
- Integration of ERP2 and Internet commerce.
- Global logistic management

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The Future of ERP



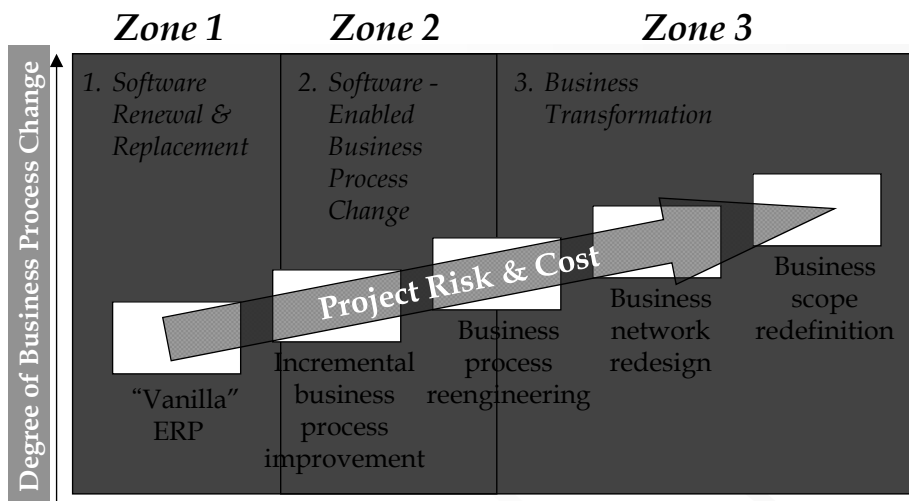
Business Ecosystem (BES)

- A **business ecosystem** is the network of organizations—including suppliers, distributors, customers, competitors, government agencies, and so on—involved in the delivery of a specific product or service through both competition and cooperation.

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Complexity in ERP Implementation



Source: Adapted from Grant Norris, et al., 1998.

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Degree of Business Complexity

	Degree of Business Complexity			
Aspect	High	Medium	Medium	Low
Product portfolio	Many products	Many products	Single product	Single product
Integration	Vertical and/or horizontally integrated	Vertical and/or horizontally integrated	No integration	No integration
Business units	Multiple BUs	Multiple BUs	Effectively single BUs	Effectively single BUs
Operations	Domestic and international	Domestic	Domestic and international	Domestic

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Time Schedule for Process Change

	Degree of Business Process Change		
	Zone 1	Zone 2	Zone 3
	Low	Medium	High
High	12- 18 months	18- 36 months	24- 48+months
Medium	6- 9 months	12- 18 months	18- 36 months
Low (Vanilla ERP)	3- 6 months	6- 9 months	12- 18 months

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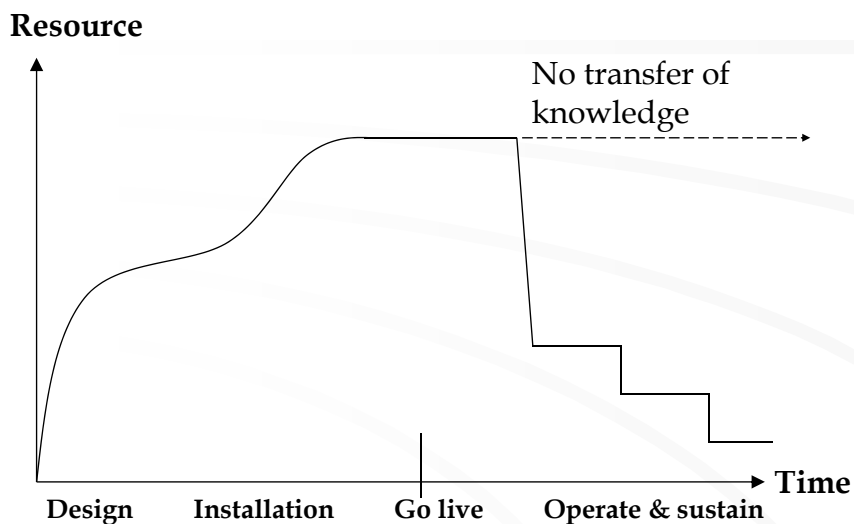
ERP Project Team Sizes

Degree of Business Change	Complexity of Business	Scope	Team Size	Full Team Size		
Zone 1	Low	Financials	10	12	8	30
		Logistics				
		HR				
	Medium	Financials	15	18	12	45
		Logistics				
		HR				
	High	Financials	20	24	16	60
		Logistics				
		HR				
Financials		20	24	16	60	
Logistics						
HR						
Zone 2	Low	Financials	20	24	16	60
		Logistics				
		HR				
	Medium	Financials	30	36	24	90
		Logistics				
		HR				
	High	Financials	40	48	32	120
		Logistics				
		HR				
Financials		60	72	48	180	
Logistics						
HR						
Zone 3	Low	Financials	90	108	72	270
		Logistics				
		HR				
	Medium	Financials	120	144	96	360
		Logistics				
		HR				
	High	Financials				
		Logistics				
		HR				

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Resource Needs for ERP System



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Executive Brief

- **“I don’t want you to tell me what the numbers are, I want you to tell me what they mean.”** (Henry Schacht, Chairman of Lucent Technologies, 1998)
- **Mr. Schacht exhorted his financial managers to stop looking in the rearview mirror and start creating proactive analysis and measurements that can help their business partners in operations anticipate where the market will be, where the industry will be, and where the company will be in the future.**

Executive Brief

- **“Deploying SAP has been likened to changing a tire on a moving car. In this case, the job of managing an SAP deployment is like doing it in the dark. It’s hard to know what to do, when to do it, and exactly what is happening at any one time. ... However, if done correctly, success for both the organizations and individuals involved can be the end result.”**
(Herbert G. Vinnicombe, VP and CIO, Lucent Technologies, 1998)

Are We Ready to Implement ERP?

- Do we have the capabilities - people with the business and technical ability to carry the program forward?
- Do we have the financial resources to do it right?
- Do we have the time to do it right?
- Do we have a strong organizational culture, one that will be able to withstand the turmoil that is inevitable in such a large change effort?

10-Point Readiness Checklist

1. Senior executive buy-in is achieved across the organization, and senior executives agree to positively communicate their buy-in to those who work for them.
2. Senior executives are confident that the company's culture is ready to absorb the stress from a massive change effort, involving both business process change and total systems change.

10-Point Readiness Checklist

3. The project's scope is clearly defined, and mechanisms are in place to assess any suggested expansion of that scope and make a quick decision, so that the scope does not metastasize on its own.
4. A strong, senior project sponsor is in place. Company's program and project management has been identified, is available, and is willing.

10-Point Readiness Checklist

5. The anticipated business benefits are quantified and articulated across the organization.
6. Understand and have available knowledge of existing systems.
7. Resources (the project teams) have been identified and are available and willing.
8. Funding needs have been assessed, funding levels have been agreed to, and funding has been appropriated.

10-Point Readiness Checklist

9. Consulting or short-term permanent staff needs have been identified, a decision on consulting versus short-term permanent has been made, and the source of that assistance has been identified and hired.
10. Clear decision making and issue resolution mechanisms are in place.

Top 10 Risks to an ERP Project

1. Inadequate sponsorship
2. Poor/slow decision making
3. Poor/no scope definition
4. Inadequate attention to change management
5. Lack of cooperation between business areas/departments
6. Poor use of consultants
7. Inappropriate resources
8. Unrealistic expectations
9. Inadequate knowledge transfer
10. Poor project management

- How can we implement ERP system?

ERP Implementation Steps

1. Initiation
2. Strategy analysis
3. Process design
4. Prototype
5. Develop
6. Transition
7. Sustain

System Administration Plan

- Create a disaster recovery plan.
- Determine the current level of network utilization.
- Forecast utilization growth with the new system.
- Determine if any changes need to occur on the network.
- Define a plan for periodic review and initial actions when utilization problems occur.

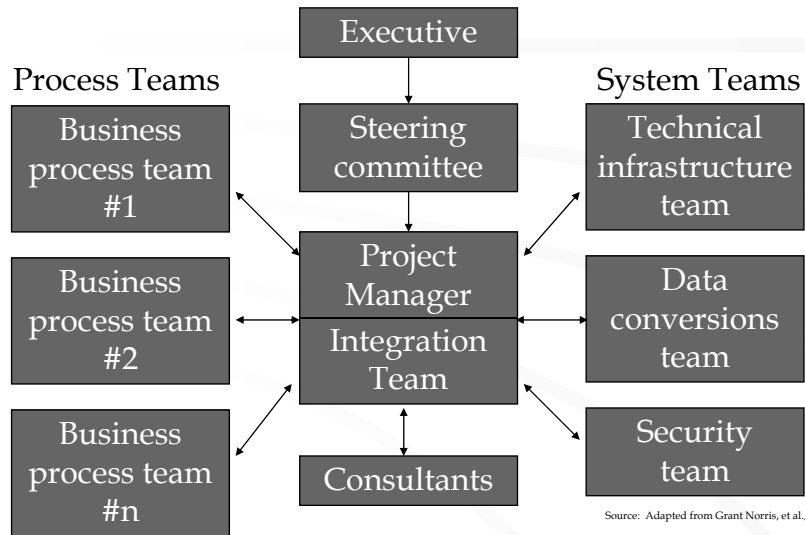
System Administration Plan

- Establish security plans and procedures.
- Establish audit plans and procedures.
- Define standards for documentation and programming.
- Implement procedures for managing changes to the system (change control).
- Identify any external linkages.

1. Project Initiation

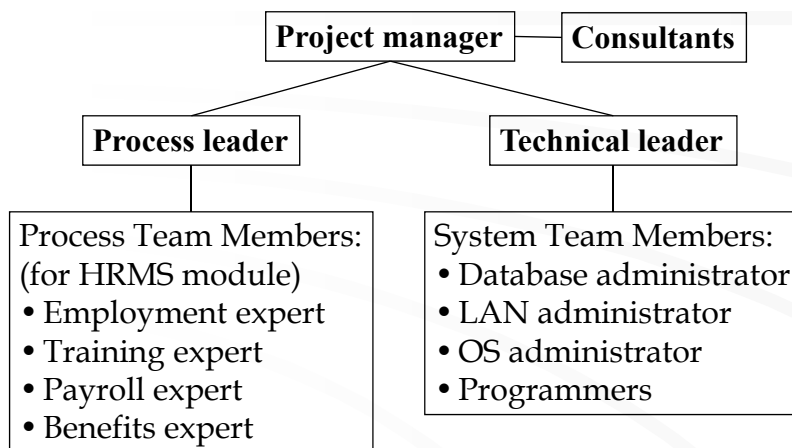
Tasks	Key Deliverables	Tools and Techniques
<ul style="list-style-type: none">• Scope• Management structure• Plan	<ul style="list-style-type: none">• Project announcement letter• Statement of scope• Project infrastructure• Training plan• Project work assignments• Quality & change management procedures	<ul style="list-style-type: none">• Executive workshops• System development methodologies• Estimating guidelines

Project Management Structure



Copyright © 2020 E.Y. Li Each process team must also report to a process owner. WMU GIMBA BUS 6180 Ch.2: IT MBS p.51

Project Team Members



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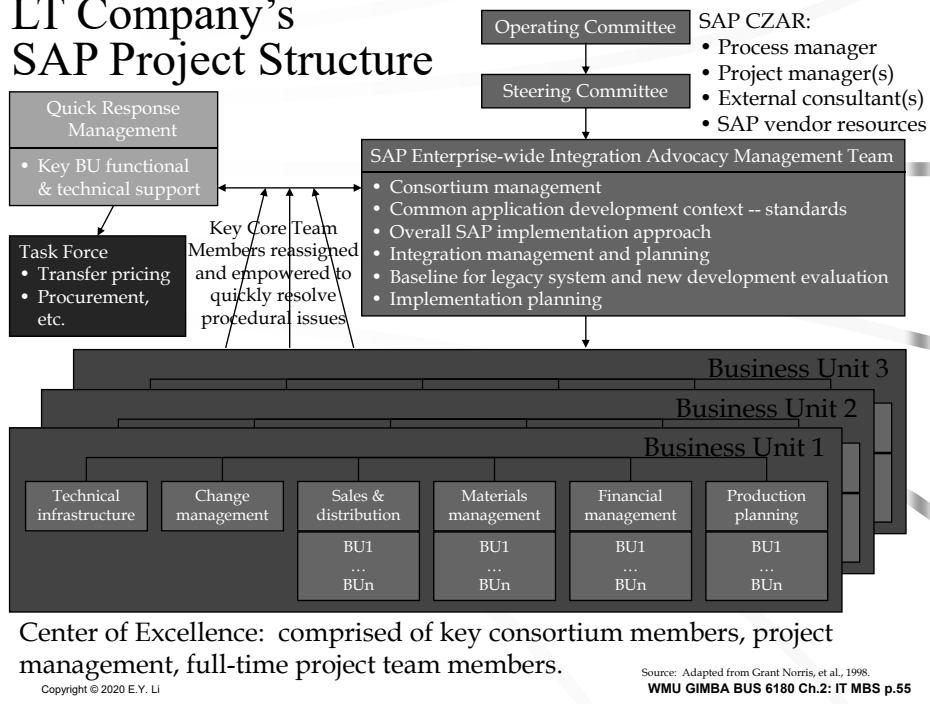
Project Team Members

- **Project manager**
- **Process leader**
- **Technical leader**
- **Database administrator:** build databases, run installation scripts, load base system, manage data integrity, performance tuning, and upgrading.
- **LAN administrator:** manage application directories, provide database connectivity for each workstation that runs ERP application.

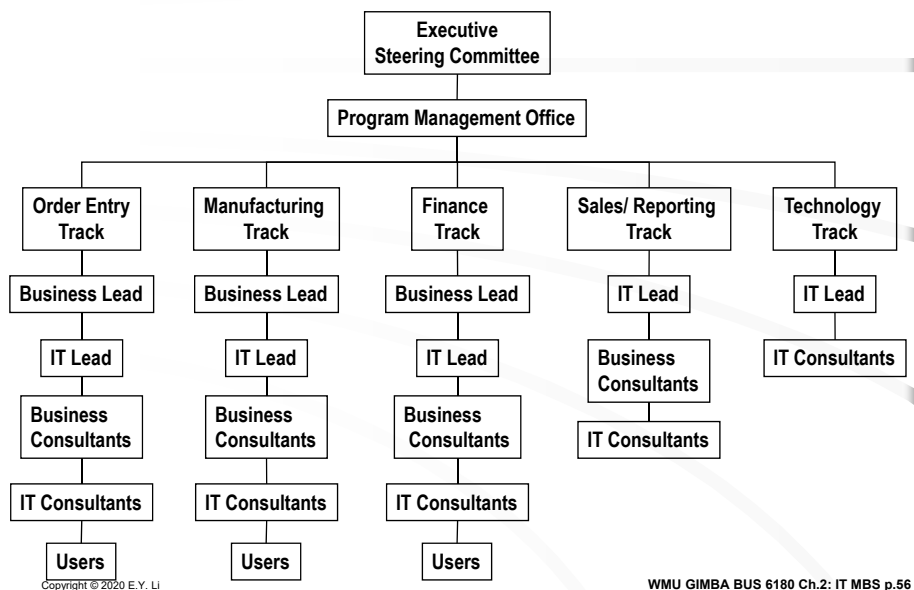
Project Team Members

- **System administrator:** install and configure the initial ERP environment on the database server, ensure the server is configured with the appropriate version of compilers.
- **Programmers:** support system and data migration, define and develop any necessary system interfaces.
- **Process experts:** establish functional requirements, guide the implementation of specific ERP module, provide production data, and evaluate the implemented module.

LT Company's SAP Project Structure



Cisco's Oracle ERP Project Structure



2. Strategy Analysis

Tasks	Key Deliverables	Tools and Techniques
<ul style="list-style-type: none"> • Current strategy • Future strategy • ERP validation • Conceptual design 	<ul style="list-style-type: none"> • Current business & IT strategies • Business drivers, goals, & objectives • Core business process scripts • Business analysis 	<ul style="list-style-type: none"> • Workshops • Process modeling • Customer, environmental & competitor analysis

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3. Process Design

Tasks	Key Deliverables	Tools and Techniques
<ul style="list-style-type: none"> • Confirm & document current processes • Target processes • Redesign processes • Refine organization 	<ul style="list-style-type: none"> • Reengineered business processes • Process performance targets • Revised business model • New organization structure • Change management procedures 	<ul style="list-style-type: none"> • Cost/benefit analysis • Process investment analysis • Redesign workshops • Process analyzer

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4. Prototype

Tasks	Key Deliverables	Tools and Techniques
<ul style="list-style-type: none"> • Customize • Set up data tables & business rules • Specify interfaces • Review & finalize 	<ul style="list-style-type: none"> • System definition • Reporting structure • Customized ERP system • Interface, data conversion & system modifications • Confirmed process flow & reporting structure • Transition plan 	<ul style="list-style-type: none"> • ERP development tools • ERP system tools • Implementation guide • Configuration management • Workshops

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5. Develop

Tasks	Key Deliverables	Tools and Techniques
<ul style="list-style-type: none"> • User procedures • New module development • Operations procedures • Integration testing • Acceptance testing 	<ul style="list-style-type: none"> • Tested & accepted system • User procedures • Enhancement modules • Conversion modules • Interface modules • Operations procedures 	<ul style="list-style-type: none"> • User procedures guidelines • ERP documentation system • ERP development tool • Implementation guide

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6. Transition

Tasks	Key Deliverables	Tools and Techniques
<ul style="list-style-type: none">• Confirm readiness• Initiate production	<ul style="list-style-type: none">• Complete transition plan• Converted data• Production ERP system• Mobilized support teams	<ul style="list-style-type: none">• Go-live readiness checklist

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Go-Live Readiness Checklist

- Has the system been tested and accepted by both users and the IT department?
- Has the production environment been checked for readiness and tested?
- Has the outstanding-issues list been cleared of critical items (show stoppers)?
- Have all conversions been completed?
- Have all interfaces been tested?
- Have volume and stress tests been completed?

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Go-Live Readiness Checklist

- Has the back-up process been tested to ensure that a restore is possible?
- Is a Fast Response Team in place to deal with production system problems?
- Is a Help Desk in place and staffed?
- Has disaster recovery and contingency planning been put in place?
- Has user training been completed?
- Do the users know the go-live status?

Go-Live Readiness Checklist

- Has there been a readiness assessment?
- Has final approval for go-live been given by the Steering Committee and Internal Audit?
- Has a post-implementation review been scheduled?

Cisco's \$15 Million ERP Project

<u>Milestone</u>	<u>Date</u>
Project kickoff	June 2, 1994
Prototype setup complete	July 22
Implementation team training	July 31
Process, key data, modification designs complete	August 31
Functional process approval	September 30
Hardware benchmark and capacity plan validated	October 15
Critical interfaces, modifications and reports complete	December 1
Procedures and end-user documentation complete	December 16
Conference room pilot complete --- Go/No go decision	December 22
End-user training begins	January 3, 1995
Data conversion complete	January 27
Go live!	January 30

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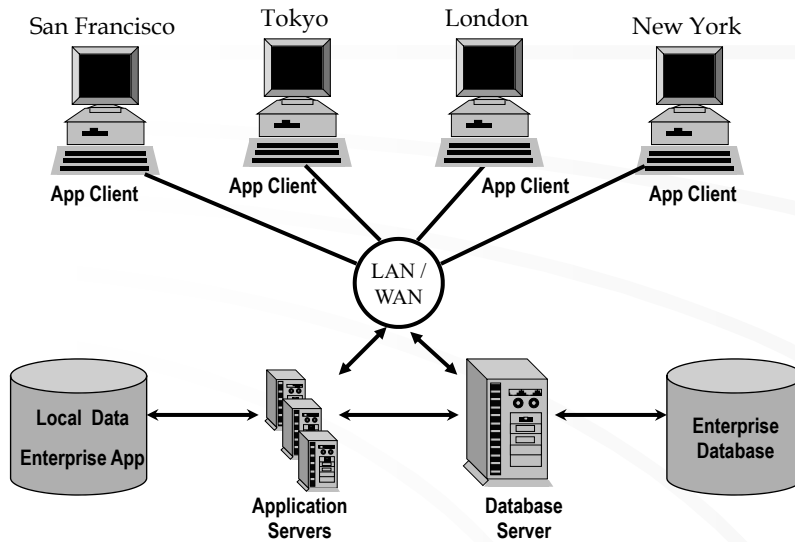
7. Sustain

Tasks	Key Deliverables	Tools and Techniques
<ul style="list-style-type: none"> • Consolidate lessons learned • Knowledge transfer • Post implementation review • Track performance metrics 	<ul style="list-style-type: none"> • Action plans • Change mgt. program • Performance improvement program • Post-implementation review report • Performance metrics matrix and variance analysis • Updated performance targets 	<ul style="list-style-type: none"> • Change management techniques • Performance measurement analysis • Walkthroughs, workshops & questionnaires

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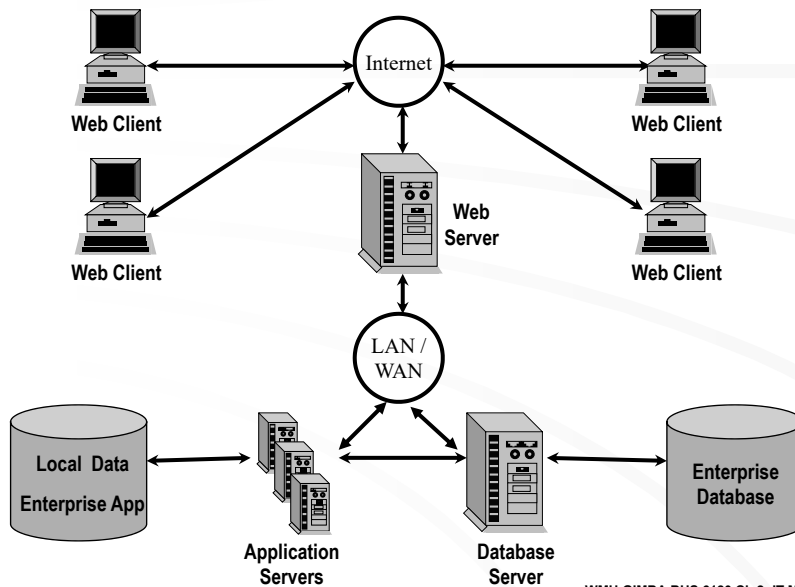
ERP Three-Tier Infrastructure



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ERP N-Tier Infrastructure



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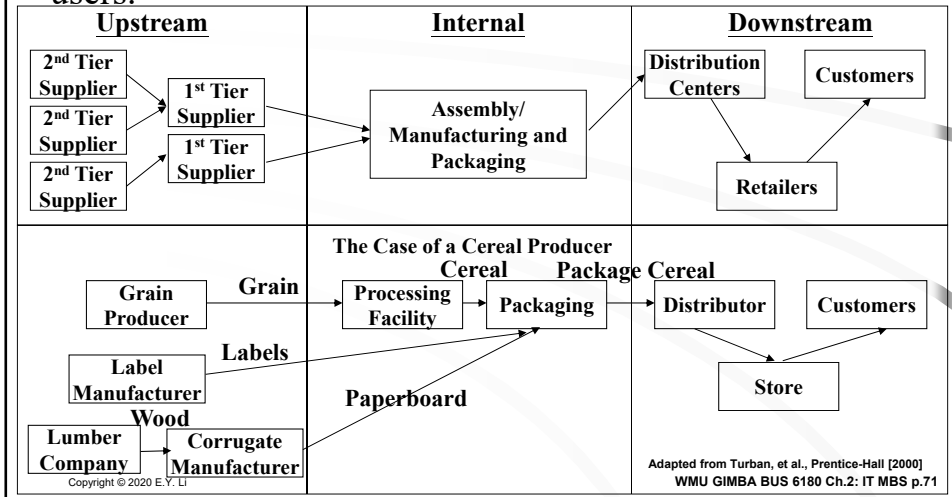
Recommendations

- “ERP software is a cost or even a waste of money, if it is not installed properly and used to its fullest potential. This requires business process change, project and program management, and organizational change.” (Grant Norris, et al., Coopers & Lybrand, 1998)
- Process redesign or reengineering should be performed before or along with ERP implementation.
- Parallel conversion is the best practice.
- TQM culture is key to ERP and SCM success.

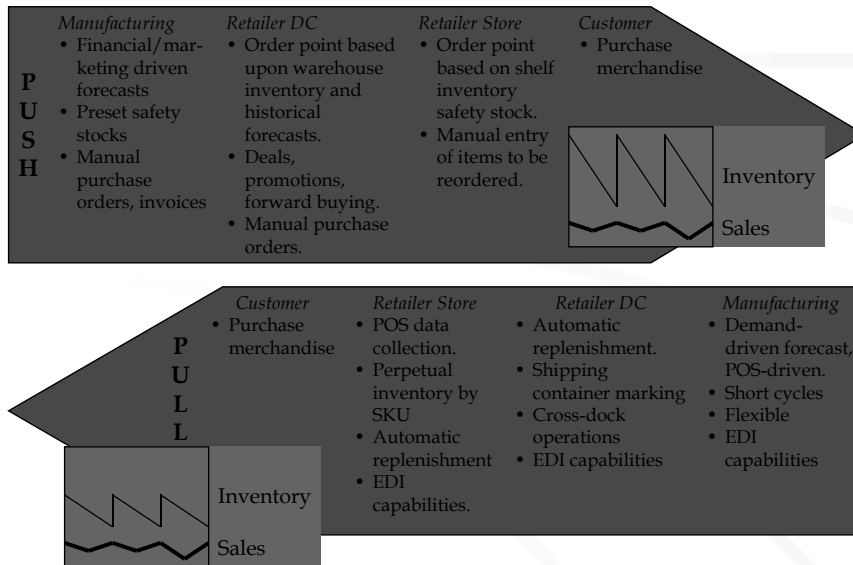
Supply Chain Management

Supply Chain

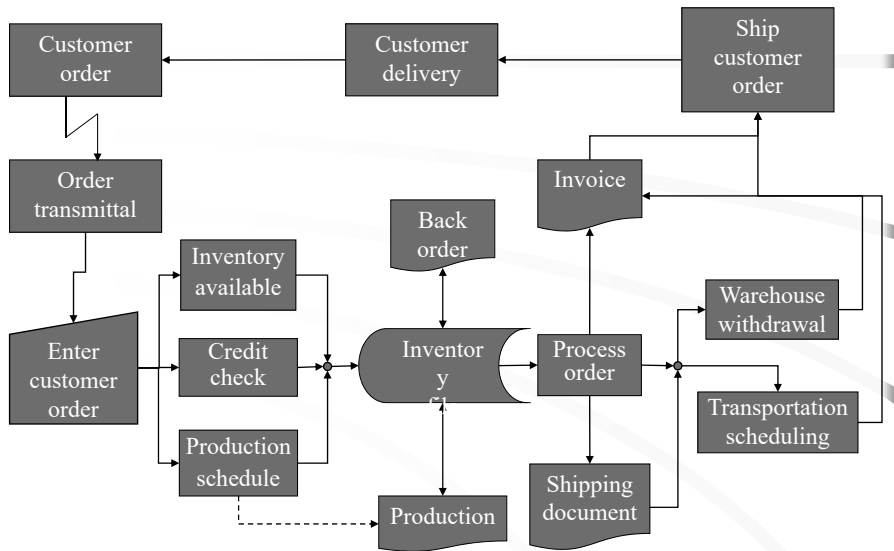
- Supply chain involves all activities associated with the flow and transformation of goods from raw materials to end users.



Push vs. Pull SCM Processes



The Path of a Customer's Order



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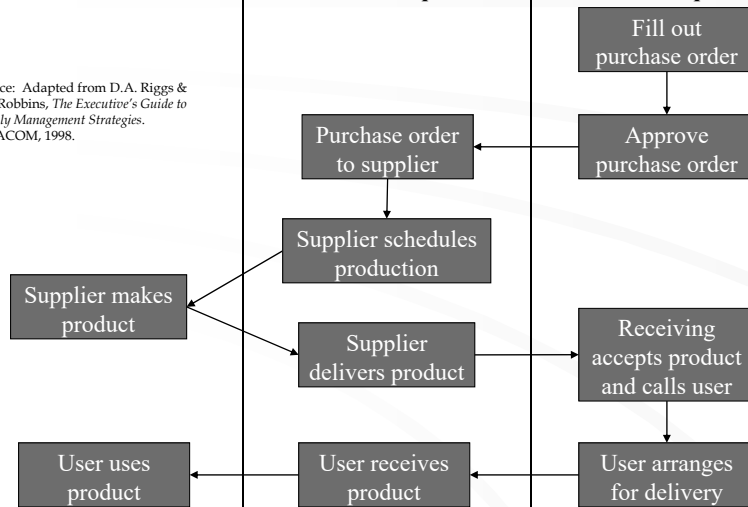
Customer's Order Cycle

Value-Adding Work Steps

Essential Work Steps

Non-Value-Adding Work Steps

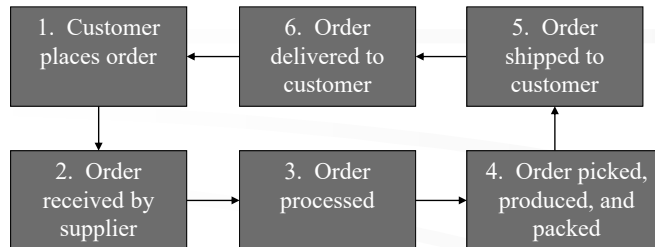
Source: Adapted from D.A. Riggs & S.L. Robbins, *The Executive's Guide to Supply Management Strategies*. AMACOM, 1998.



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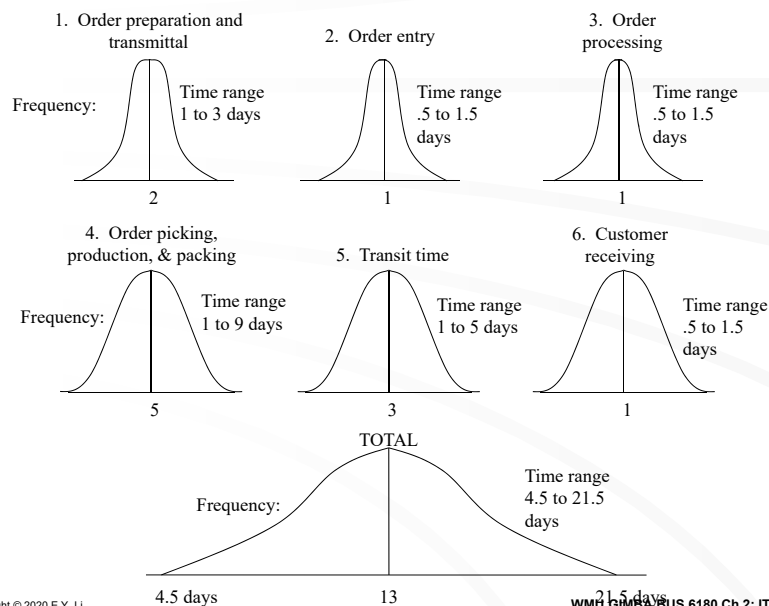
Customer's Order Cycle



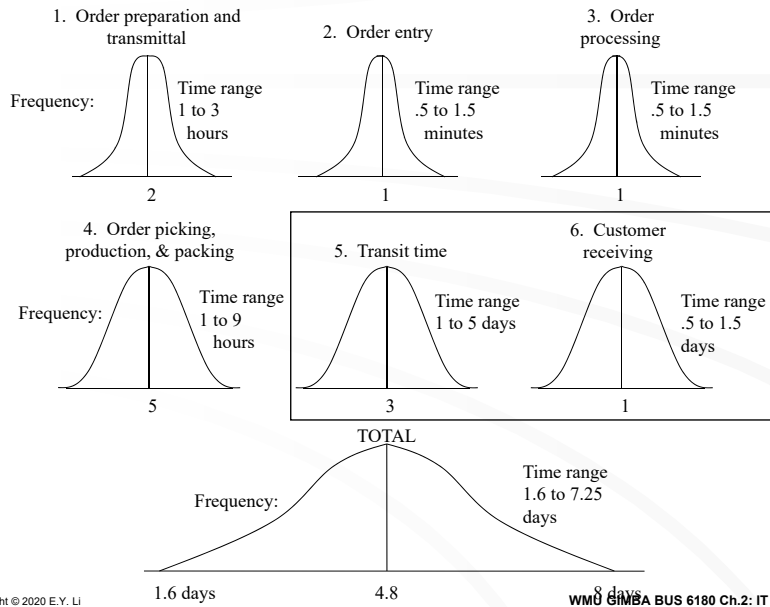
Example of A Typical Company:

1. Order preparation and transmittal	2 days
2. Order received and entered into system	1 day
3. Order processing	1 day
4. Order picking,, production & packing	5 days
5. Transit time	3 days
6. Customer receiving and placing into storage	1 day
Total order cycle time	13 days

Total Order Cycle with Variability



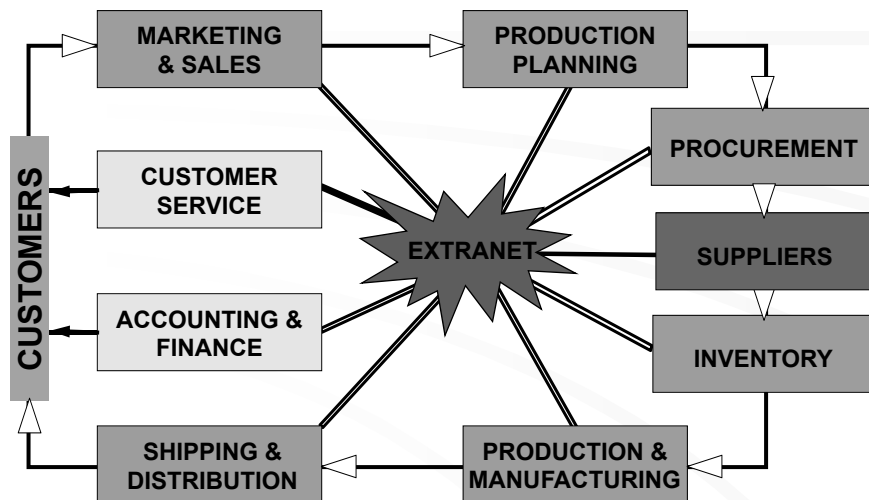
IT-Enabled Total Order Cycle



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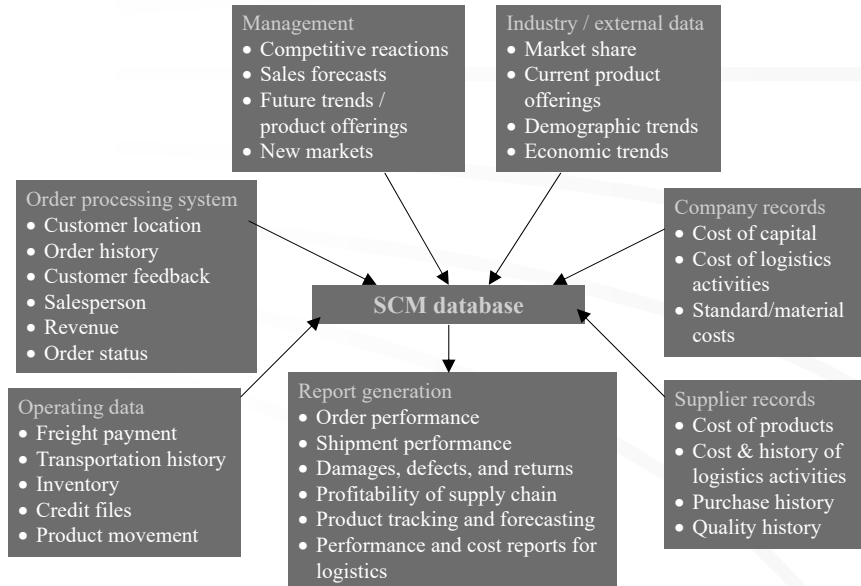
Supply Chain Management



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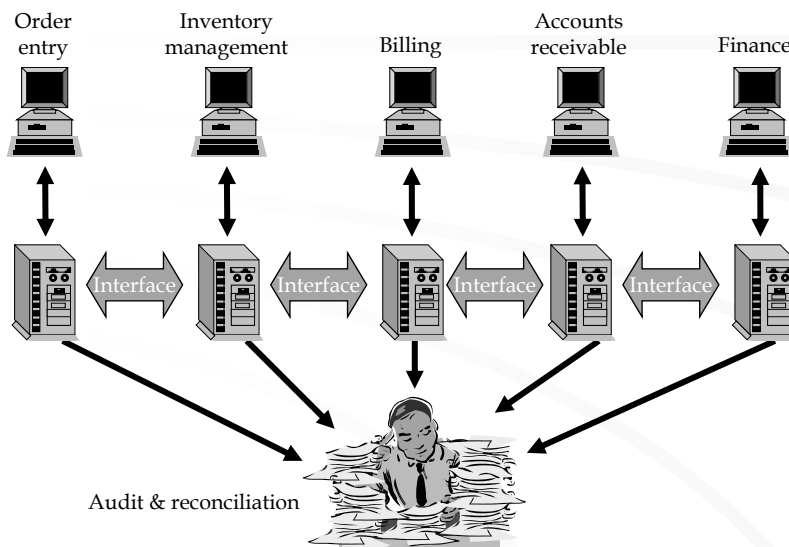
SCM Information Systems



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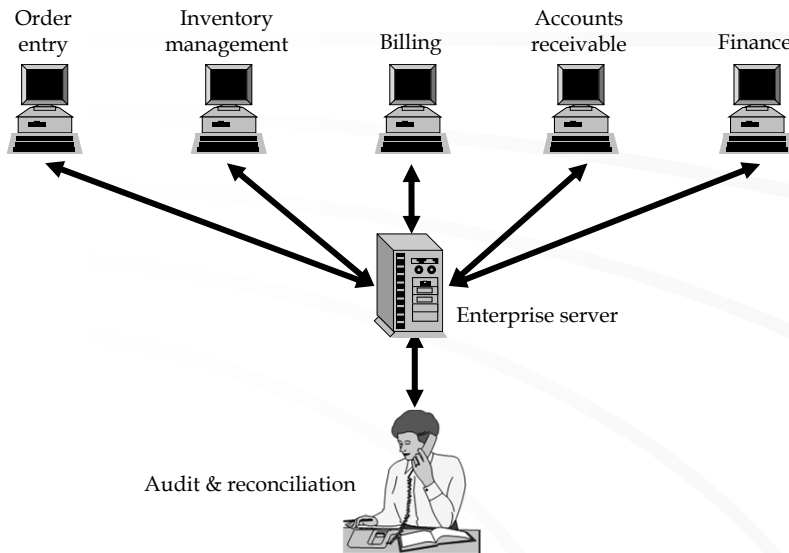
Legacy System Architecture



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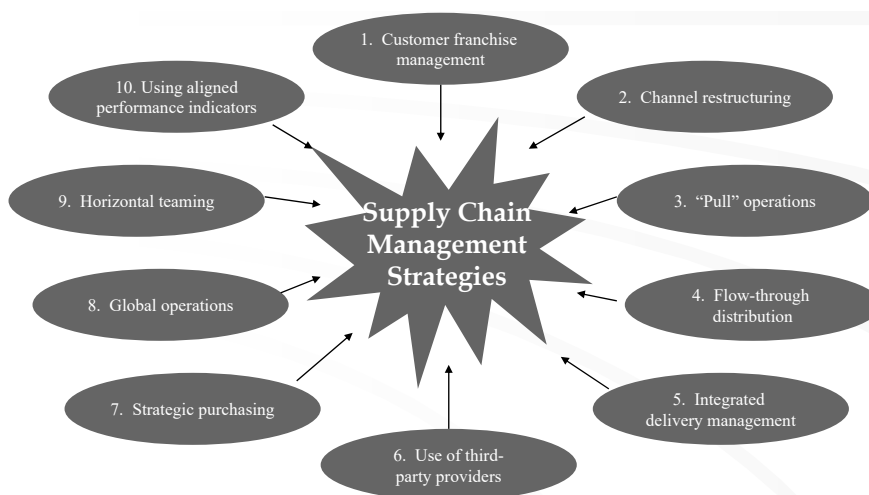
ERP Architecture Simplifies



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Supply Chain Drivers



Source: Adapted from Norris, et al., 1998.

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Supply Chain Drivers

- Customer franchise management: regard customers as assets and establish customer-driven logistics and operations performance specifications.
- Channel restructuring: understand the cost/service tradeoffs of logistics options and optimize margins across channels.
- Pull operations: abandon manufacturing centric operations and integrate IT to create a seamless customer demand driven just-in-time FMS environment.

Supply Chain Drivers

- Flow-through distribution: transform distribution facilities from storage to flow-through operations to support the pull concept.
- Integrated delivery management: establish service requirements and allow a set of core carrier/partners to make decisions about low-cost modes and methods.
- Use of third-party providers: enable company to concentrate on core competencies and reduce its asset base and to do more with less.

Supply Chain Drivers

- Strategic purchasing: benchmark and reengineer purchasing processes, create more tightly integrated supplier relationships, centralize/decentralize purchasing process, minimize purchasing cost and switch to “materials-only” costing system.
- Globalization: extend supply chain to seek improved sourcing, production options, and new market opportunities.

Supply Chain Drivers

- Horizontal teaming: adopt TQM method and create customer-centered process-oriented culture to support profitable growth.
- Using aligned performance indicators: realign performance measure to highlight the key control points in the new manufacturing and distribution environment.

Standardized Outsourcing Process

- Establish team
- Define and analyze needs
- Market analysis
 - Goods and services
 - Industry
 - Supplier base
- Benchmarking/best practices
- Solidify work scope
- Select potential bidders
 - Request for bidder conference
- Adjust work scope if required
- Select bidders
- Develop evaluation criteria
- Develop and issue an RFP
- Select top contenders
- Set targets
- Determine best suppliers
- Make final selection and award
- Sign contract
- Implement new supplier access and usage procedures
- Measure pricing and usage vs. prior period
- Establish continual communications loop

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Concerns by SCM Function

Decision Type	Customer Service	Delivery	Warehousing	Order Processing	Inventory
Strategic	Setting customer service levels	Selecting transportation models Freight consolidation programs Common carriers vs. private trucking	Determination of number of warehouse and locations Public vs. private warehousing	Extent of automation	Replenishment systems
Operational	Service level measurements	Rate freight bills Freight bill auditing Claims administration	Picking Packing Stores measurement	Order tracking Order validation Credit checking	Forecasting Inventory tracking Carrying-cost measurements

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Concerns by SCM Function

Decision Type	Customer Service	Delivery	Warehousing	Order Processing	Inventory
Operational	Customer service staffing	Vehicle scheduling Rate negotiation Shipment planning Railcar management Shipment routing and scheduling Carrier selection Performance measurements	Warehouse stock transfer Staffing Warehousing layout and design Selection of materials-handling equipment Performance measurement	Invoice reconciliation Performance measurements	Inventory turns

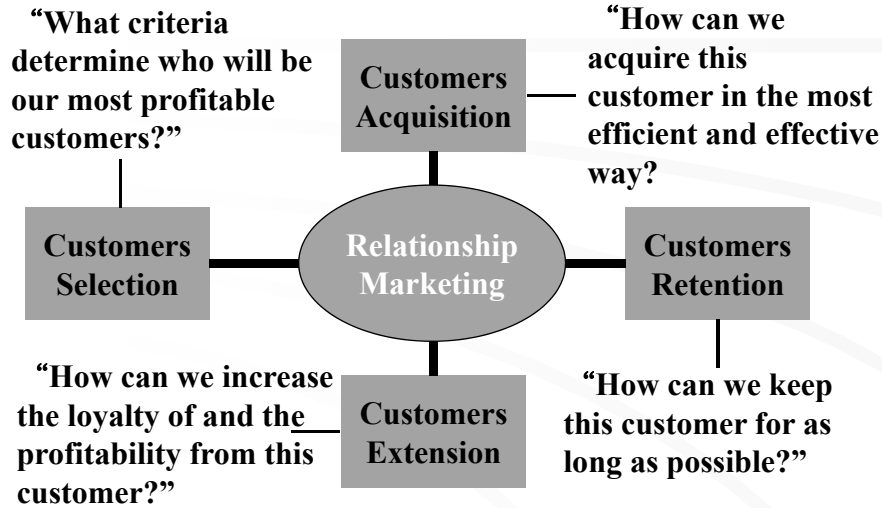
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Customer Relationship Management

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Relationship Marketing Model



Source: GartnerGroup, 1999

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Table 6.1 Uses of Data Mining

Application	Description
Cross-selling	Identify products and services that will most appeal to existing customer segments and develop cross-sell and up-sell offers tailored to each segment
Customer churn	Predict which customers are likely to leave your company and go to a competitor and target those customers at highest risk
Customer retention	Identify customer characteristics associated with highest lifetime value and develop strategies to retain these customers over the long term
Direct marketing	Identify which prospects should be included in a mailing list to obtain the highest response rate
Fraud detection	Identify which transactions are most likely to be fraudulent based on purchase patterns and trends
Interactive marketing	Predict what each individual accessing a Web site is most likely interested in seeing
Market basket analysis	Understand what products or services are commonly purchased together (e.g., beer and diapers) and develop appropriate marketing strategies
Market segmentation	Segment existing customers and prospects into appropriate groups for promotional and evaluation purposes and determine how to approach each segment for maximum results
Payment or default analysis	Identify specific patterns to predict when and why customers default on payments
Trend analysis	Investigate the difference between an average purchase this month versus last month and prior months

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From CRM to PRM

- Bonds in Partner Relationship Management (PRM):
 - Legal bond
 - Economic bond
 - Technological bond
 - Geographical bond
 - Time bond
 - Familiarity bond
 - Social bond
 - Culture bond (Identity or Community bond)
 - Ideological bond (Customization bond)
 - Psychological bond (Confidence bond)
 - Structure bond
 - Knowledge bond (include Information bond)
 - Process bond
 - Commitment bond

Digital Marketing and MkIS

What is Digital Marketing?

- *Digital marketing* is a process of actively promoting products and services using digital distribution channels as an alternative to the more traditional mediums such as television, print, radio, and WOW.
- Digital marketing media includes *Internet, mobile phones, social media, location-based devices (Beacon), etc.*



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Why Digital Marketing?

- Today's consumer is more cognizant of the marketing messages all around them, leaving them more likely to tune out advertisements or other forms of marketing communication.
- Information saturation ("clutter") is a major problem for today's marketer.
- Intense competition making the cost of selling higher drastically; using ICT can reach target consumers effectively.
- Today's consumers desire interactivity of digital marketing, less information asymmetry.

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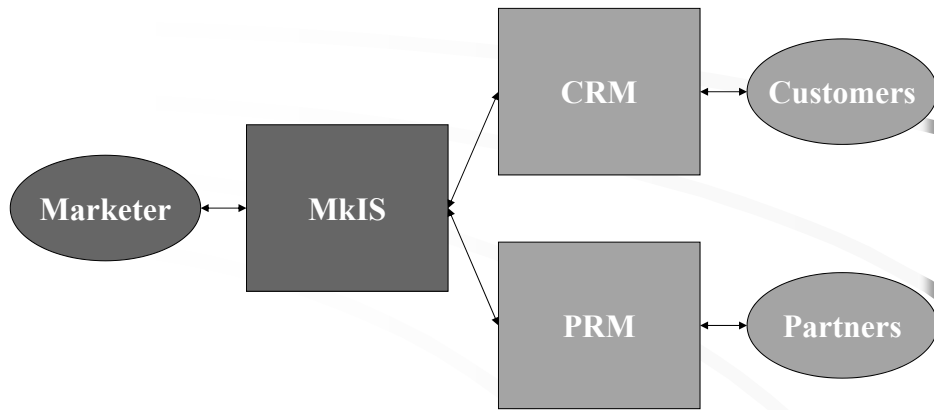
Digital Marketing Strategies

- Search engine marketing (SE optimization),
- Search engine marketing (pay-per-click),
- Affiliate and partner marketing (third-party display advertising),
- APP marketing,
- Multimedia marketing
- Email marketing
- Social media marketing
- Content marketing (AdWords)
- Viral marketing ("e-WOW" marketing)

Digital Marketing Performance

- Three key CSF's:
 - **D**istribute,
 - **S**hare,
 - **C**lick
- The objectives are:
 - Branding,
 - Sales,
 - Customer acquisition
 - Customer retention,
 - Return on investment,
 - Value creation

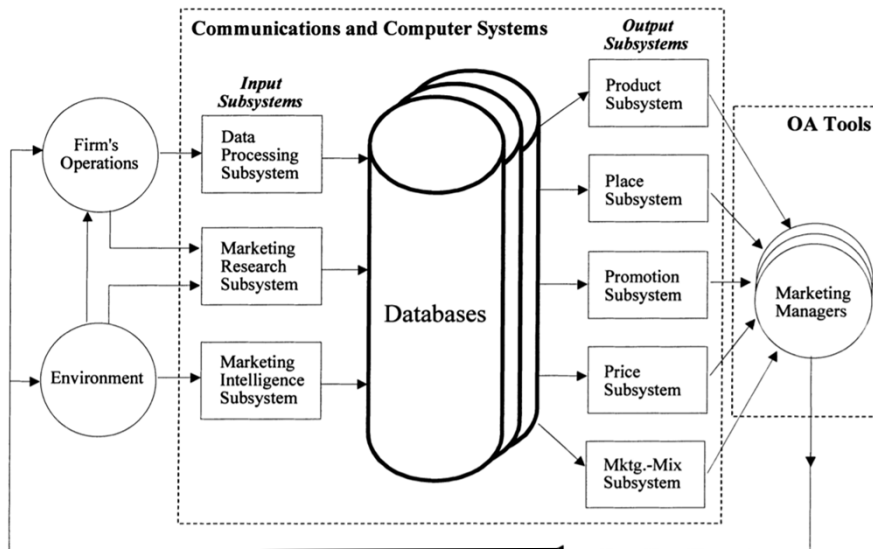
Marketing Information Systems



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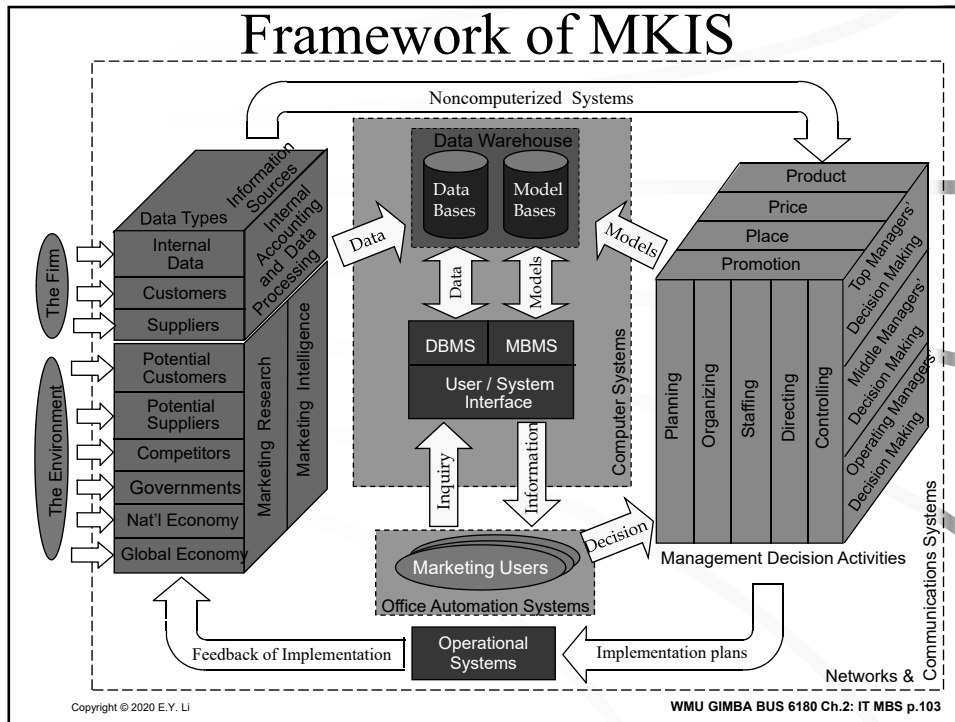
Basic Framework of MKIS



Source: Li, E.Y., McLeod, R., Rogers, J.C. (2001.4) "Marketing Information Systems in Fortune 500 Companies: A Longitudinal Analysis of 1980, 1990, and 2000," Information & Management (Elsevier), 38 (5), 307-322.

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Benefits of MkIS Applications

	TYPICAL APPLICATIONS	BENEFITS	EXAMPLES
CONTROL SYSTEMS	<ol style="list-style-type: none"> Control of marketing costs. Diagnosis of poor sales performance. Management of fashion goods. Flexible promotion strategy. 	<ol style="list-style-type: none"> Timely computerized reports. Flexible on-line retrieval of data. Automatic spotting of problems and opportunities. Cheaper, more detailed, and more frequent reports. 	<ol style="list-style-type: none"> Undesirable cost trends are spotted more quickly so that corrective action may be taken sooner. Executives can ask supplementary questions of the computer to help pinpoint reasons for a sales decline and reach an action decision more quickly. Fast-moving fashion items are reported daily for quick reorder, and slow-moving items are also reported for fast price reductions. On-going evaluation of a promotional campaign permits reallocation of funds to areas behind target.
PLANNING SYSTEMS	<ol style="list-style-type: none"> Forecasting. Promotional planning and corporate long-range planning. <p>(More...)</p>	<ol style="list-style-type: none"> Automatic translation of terms and classifications between departments. Systematic testing of alternative promotional plans and compatibility testing of various divisional plans. 	<ol style="list-style-type: none"> Survey-based forecasts of demand for complex industrial goods can be automatically translated into parts requirements and production schedules. Complex simulation models, both developed and operated with the help of data bank information, can be used for promotional planning by product managers and for strategic planning by top management.

Source: Cox, D.F. and Good, R.E. "How to Build a Marketing Information System," *Harvard Business Review*, No. 3, May-June 1967, pp.145-154.

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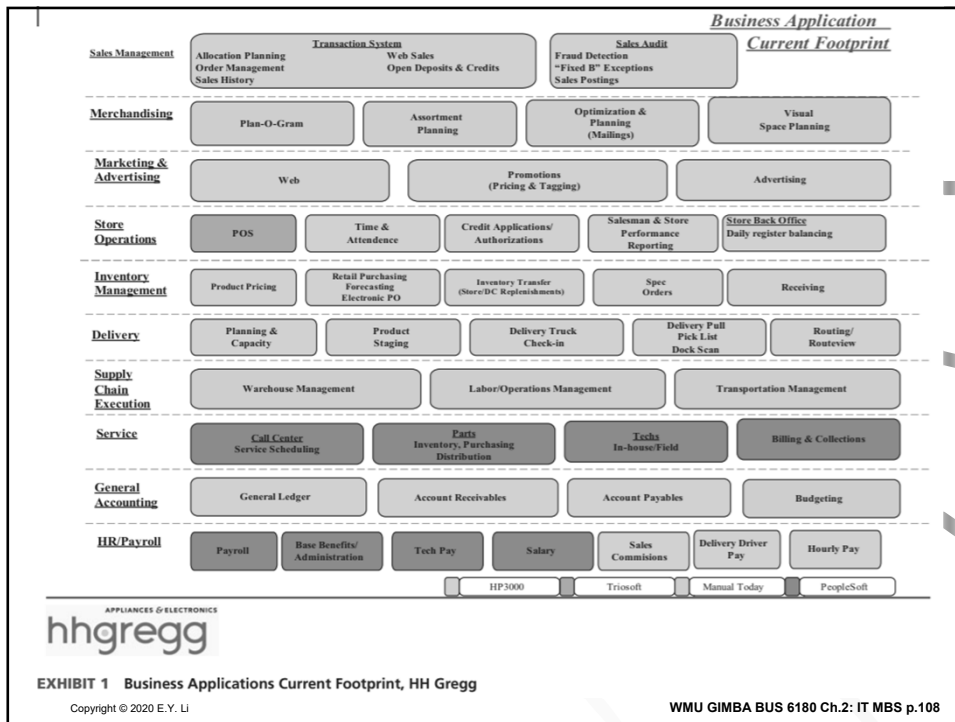
Benefits of MkIS Applications

	TYPICAL APPLICATIONS	BENEFITS	EXAMPLES
PLANNING SYSTEMS	<ol style="list-style-type: none"> 3. Credit management. 4. Purchasing. 	<ol style="list-style-type: none"> 3. Programmed executive decision rules can operate on data bank information. 4. Detailed sales reporting permits automation of management decisions. 	<ol style="list-style-type: none"> 3. Credit decisions are automatically made as each order is processed. 4. Computer automatically repurchases standard items on the basis of correlation of sales data with programmed decision rules.
RESEARCH SYSTEMS	<ol style="list-style-type: none"> 1. Advertising strategy. 2. Pricing strategy. 3. Evaluation of advertising expenditures. 4. Continuous experiments. 	<ol style="list-style-type: none"> 1. Additional manipulation of data is possible when stored for computers in an unaggregated file. 2. Improved storage and retrieval capability allows new types of data to be collected and used. 3. Well-designed data banks permit integration and comparison of different sets of data. 4. Comprehensive monitoring of input and performance variables yields information when changes are made. 	<ol style="list-style-type: none"> 1. Sales analysis is possible by new market segment breakdowns. 2. Systematic recording of information about past R & D contract bidding situations allows improved bidding strategies. 3. Advertising expenditures are compared to shipments by county to provide information about advertising effectiveness. 4. Changes in promotional strategy by type of customer are matched against sales results on a continuous basis.

Source: Cox, D.F. and Good, R.E. (1967)

Q & A

Case Study I-6 HH Gregg ERP Migration



Case Analysis Tasks

1. Identify the most important or the most critical issue that leads to the problem in the minicase;
2. Analyze this most important or most critical issue; then, provide your suggestions about what should be done;
3. Identify any additional issues;
4. Analyze these additional issues; then, provide your suggestions about what should be done and set the priority for each of them.

