2. THE STRATEGIC ROLE OF INFORMATION SYSTEMS

2.1 INFORMATION SYSTEM

BUSINESS CHALLENGE

INFORMATION SYSTEM

BUSINESS SOLUTIONS

SUSTAIN COMPETITIVE ADVANTAGE
ORGANIZATIONAL BARRIERS TO STRATEGIC TRANSITIONS

2.2 TYPES OF INFORMATION SYSTEMS

<table>
<thead>
<tr>
<th>KIND OF SYSTEM</th>
<th>GROUPS SERVED</th>
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<tbody>
<tr>
<td>STRATEGIC LEVEL</td>
<td>SENIOR MANAGERS</td>
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<tr>
<td>MANAGEMENT LEVEL</td>
<td>MIDDLE MANAGERS</td>
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<tr>
<td>KNOWLEDGE LEVEL</td>
<td>KNOWLEDGE &amp; DATA WORKERS</td>
</tr>
<tr>
<td>OPERATIONAL LEVEL</td>
<td>OPERATIONAL MANAGERS</td>
</tr>
</tbody>
</table>

SALES & MARKETING  MANUFACTURING  FINANCE  ACCOUNTING  HUMAN RESOURCES
MAJOR TYPES OF SYSTEMS

- EXECUTIVE SUPPORT SYSTEMS (ESS)
- MANAGEMENT INFORMATION SYSTEMS (MIS)
- DECISION SUPPORT SYSTEMS (DSS)
- KNOWLEDGE WORK STATIONS (KWS)
- OFFICE AUTOMATION SYSTEMS (OAS)
- TRANSACTION PROCESSING SYSTEMS (TPS)

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EXECUTIVE SUPPORT SYSTEMS (ESS)

- STRATEGIC LEVEL
- INPUTS: AGGREGATE DATA
- PROCESSING: INTERACTIVE
- OUTPUTS: PROJECTIONS
- USERS: SENIOR MANAGERS

EXAMPLE: 5 YEAR OPERATING PLAN

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EXECUTIVE SUPPORT SYSTEMS (ESS)

- TOP LEVEL MANAGEMENT
- DESIGNED TO THE INDIVIDUAL
- TIES CEO TO ALL LEVELS
- VERY EXPENSIVE TO KEEP UP
- EXTENSIVE SUPPORT STAFF

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MANAGEMENT INFORMATION SYSTEMS (MIS)

- **MANAGEMENT LEVEL**
- **INPUTS**: HIGH VOLUME DATA
- **PROCESSING**: SIMPLE MODELS
- **OUTPUTS**: SUMMARY REPORTS
- **USERS**: MIDDLE MANAGERS

**EXAMPLE**: ANNUAL BUDGETING

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MANAGEMENT INFORMATION SYSTEMS (MIS)

- **STRUCTURED & SEMI-STRUCTURED DECISIONS**
- **REPORT CONTROL ORIENTED**
- **PAST & PRESENT DATA**
- **INTERNAL ORIENTATION**
- **LENGTHY DESIGN PROCESS**

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DECISION SUPPORT SYSTEMS (DSS)

- **MANAGEMENT LEVEL**
- **INPUTS**: LOW VOLUME DATA
- **PROCESSING**: INTERACTIVE
- **OUTPUTS**: DECISION ANALYSIS
- **USERS**: PROFESSIONALS, STAFF

**EXAMPLE**: CONTRACT COST ANALYSIS
DECISION SUPPORT SYSTEMS (DSS)

- Flexible, adaptable, quick
- User controls inputs/outputs
- No professional programming
- Supports decision process
- Sophisticated modeling tools

KNOWLEDGE WORK SYSTEMS (KWS)

- Knowledge level
- Inputs: design specs
- Processing: modelling
- Outputs: designs, graphics
- Users: technical staff

Example: Engineering work station

OFFICE AUTOMATION SYSTEMS (OAS)

- Toward a “paperless” office
- Redesign of work flow
- Integrated software
- Ergonomic design
- Bright, cheerful work space

Example: Presentation graphics
TRANSACTION PROCESSING SYSTEMS (TPS)

- OPERATIONAL LEVEL
- INPUTS: TRANSACTIONS, EVENTS
- PROCESSING: UPDATING
- OUTPUTS: DETAILED REPORTS
- USERS: OPERATIONS PERSONNEL

EXAMPLE: ACCOUNTS PAYABLE

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TYPICAL TPS APPLICATIONS
Sales & Marketing Systems

MAJOR FUNCTIONS OF SYSTEMS:
- Sales Management; Market Research; Promotion; Pricing; New Products

MAJOR APPLICATION SYSTEMS:
- Sales Order Info System; Market Research System; Pricing System

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TYPICAL TPS APPLICATIONS
Manufacturing & Production Systems

MAJOR FUNCTIONS OF SYSTEMS:
- Scheduling; Purchasing; Shipping / Receiving; Engineering; Operations

MAJOR APPLICATION SYSTEMS:
- Materials Resource Planning Systems; Purchase Order Control Systems; Engineering Systems; Quality Control Systems

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TYPICAL TPS APPLICATIONS
Finance & Accounting Systems
MAJOR FUNCTIONS OF SYSTEMS:
• Budgeting; General Ledger; Billing; Cost Accounting
MAJOR APPLICATION SYSTEMS:
• General Ledger; Accounts Receivable / Payable; Budgeting; Funds Management Systems

TYPICAL TPS APPLICATIONS
Human Resources Systems
MAJOR FUNCTIONS OF SYSTEMS:
• Personnel Records; Benefits; Compensation; Labor Relations; Training
MAJOR APPLICATION SYSTEMS:
• Payroll; Employee Records; Benefit Systems; Career Path Systems; Personnel Training Systems

TYPICAL TPS APPLICATIONS
Other Types (e.g., University)
MAJOR FUNCTIONS OF SYSTEMS:
• Admissions; Grade Records; Course Records; Alumni
MAJOR APPLICATION SYSTEMS:
• Registration System; Student Transcript System; Curriculum Class Control System; Alumni Benefactor System

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TPS DATA FOR MIS APPLICATIONS

TPS
- ORDER PROCESSING
- ORDER FILE
- MATERIALS RESOURCES PLANNING
- PRODUCTION MASTER FILE
- GENERAL LEDGER
- ACCOUNTING FILES

MIS
- SALES DATA
- UNIT PRODUCT COST
- PRODUCT CHANGE DATA
- EXPENSE DATA
- MIS FILES

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CHANGING CONCEPTS OF INFORMATION SYSTEMS

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<th>TIME PERIOD</th>
<th>CONCEPTION OF INFORMATION SYSTEM</th>
<th>INFORMATION SYSTEM</th>
<th>PURPOSE</th>
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<tbody>
<tr>
<td>1950-1960</td>
<td>BUREAUCRATIC REQUIREMENT</td>
<td>ELECTRONIC ACCOUNTING MACHINE</td>
<td>SPEED ACCOUNTING &amp; PAPER PROCESSING</td>
</tr>
<tr>
<td>1960s-1970s</td>
<td>GENERAL PURPOSE SUPPORT</td>
<td>MIS</td>
<td>SPEED GENERAL REPORTING REQUIREMENTS</td>
</tr>
<tr>
<td>1970s-1980s</td>
<td>CUSTOMIZED MANAGEMENT SUPPORT</td>
<td>DSS - GSS</td>
<td>IMPROVE, CUSTOMIZE DECISION MAKING</td>
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<tr>
<td>1980-2000</td>
<td>STRATEGIC RESOURCE SUPPORT</td>
<td>STRATEGIC SYSTEM</td>
<td>PROMOTE SURVIVAL AND PROSPERITY OF ORGANIZATION</td>
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STRATEGY LEVELS AND INFORMATION TECHNOLOGY

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<th>MODELS</th>
<th>IT TECHNOLOGIES</th>
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<td>COMPETITIVE FORCES MODEL</td>
<td>ELECTRONIC TRANSACTIONS</td>
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<td>NETWORK ECONOMIES</td>
<td>COMMUNICATIONS NETWORKS</td>
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<td>INFORMATION PROFESSIONAL SYSTEMS</td>
<td>INORGANIZATIONAL SYSTEMS</td>
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<td>MISSION</td>
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<td>BUSINESS</td>
<td>VALUE CHAIN ANALYSIS</td>
<td>DATA MINING</td>
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<tr>
<td></td>
<td>SCOPE</td>
<td>IT-BASED PRODUCTS, SERVICES</td>
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<td></td>
<td></td>
<td>INORGANIZATIONAL SYSTEMS</td>
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<td></td>
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<td>SUPPLY CHAIN MANAGEMENT</td>
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<td></td>
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<td>EFFICIENT CUSTOMER RESPONSE</td>
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STRATEGY LEVELS AND INFORMATION TECHNOLOGY

- VALUE CHAIN ANALYSIS: Highlights Activities that add Margin of Value to Product or Service
- DATAMINING: Analysis of Data to Find Patterns & Rules to Guide Decision Making

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STRATEGIC ROLE OF INFORMATION SYSTEMS

STRATEGIC INFO SYSTEM: CAN CHANGE GOALS, OPERATIONS PRODUCTS, SERVICES ENVIRONMENT

TO MAINTAIN COMPETITIVE ADVANTAGE

COMPETITIVE FORCES MODEL

NEW MARKET ENTRANTS

THE FIRM

TRADITIONAL COMPETITION

SUPPLIERS

SUBSTITUTE PRODUCTS & SERVICES

CUSTOMERS
COUNTERING COMPETITIVE FORCES

• PRODUCT DIFFERENTIATION
• FOCUSED DIFFERENTIATION
• LINK CUSTOMERS & SUPPLIERS
• LOW-COST PRODUCER

USE INTERNET!

IMPLICATIONS

• STRATEGIC TRANSITIONS
• USE INFORMATION SYSTEMS WISELY
• PLACE INFO SYSTEMS FOR GREATEST VALUE
• MESH INFO WITH STRATEGIC PLAN
• PLAN FOR TECHNOLOGY & CAPITAL

QUALITY

• CONFORMANCE TO SPECS
• CUSTOMER SATISFACTION
• TOTAL QUALITY MANAGEMENT
• SIMPLIFY PRODUCT/PRODUCTION
• ESTABLISH BENCHMARKS
• CUSTOMER DEMAND AS GUIDE
• REDUCE CYCLE TIME
• IMPROVE QUALITY, PRECISION
2. THE STRATEGIC ROLE OF INFORMATION SYSTEMS