Application Portfolio

Arrianto Mukti Wibowo
amwibowo@cs.ui.ac.id

Materials taken from:
Wheelen, Thomas L. & J. David Hunger, *Strategic Management & Business Policy*
Ward, John & Joe Peppard, *Strategic Planning for Information Systems*
Laudon & Laudon, *Management Information Systems*
Agenda

3.1. Determine application portfolio from CSF-Balanced scorecard, value chain, value shop
3.2. Examples of several organizations’ strategy & their application portfolio
3.3. Understand McFarlan matrix
3.4. Understand IS/IT Architecture
Strategy Development

• SWOT-TOWS method
• Competitive strategies & Cooperative strategies example
• Balanced Scorecard – CSF example
• Functional Strategies example
SWOT method

• Internal strategic factors:
  – Strength
  – Weaknesses

• External strategic factors:
  – Opportunities
  – Threats
# TOWS Matrix

<table>
<thead>
<tr>
<th>Internal Factors</th>
<th>Strengths (S)</th>
<th>Weaknesses (W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>External Factors</td>
<td><em>List of strengths</em></td>
<td><em>List of weaknesses</em></td>
</tr>
</tbody>
</table>
| Opportunities (O) | **SO Strategies**  
Use strengths to take advantage of opportunities | **WO Strategies**  
Take advantage of opportunities by overcoming weaknesses |
| Threats (T)      | **ST Strategies**  
Use strengths to avoid threats | **WT Strategies**  
Generate strategies that minimize weaknesses and avoid threats |
# Maytag – Hoover Example

<table>
<thead>
<tr>
<th>Internal Factors</th>
<th>Strengths (S)</th>
<th>Weaknesses (W)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Maytag’s quality culture</td>
<td>• Process oriented R&amp;D</td>
</tr>
<tr>
<td></td>
<td>• Experienced top management</td>
<td>• Distribution channels</td>
</tr>
<tr>
<td></td>
<td>• Vertical integration</td>
<td>• Financial position</td>
</tr>
<tr>
<td></td>
<td>• Employee relations</td>
<td>• Global positioning</td>
</tr>
<tr>
<td></td>
<td>• Hoover’s international orientation</td>
<td>• Manufacturing facilities</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>External Factors</th>
<th>Opportunities (O)</th>
<th>Threats (T)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Integration of EU</td>
<td>• Increasing gov. regulations</td>
</tr>
<tr>
<td></td>
<td>• Demographics favor quality</td>
<td>• Strong US competition</td>
</tr>
<tr>
<td></td>
<td>• Economic dev. in Asia</td>
<td>• Whirlpool and Electrolux positioned for global economy</td>
</tr>
<tr>
<td></td>
<td>• Opening of Eastern Europe</td>
<td>• Japanese appliance company</td>
</tr>
<tr>
<td></td>
<td>• Trend toward superstores</td>
<td>• New product advances</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SO Strategies</th>
<th>Use worldwide Hoover distribution channel to sell Hoover &amp; Maytag appliance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Find joint venture partners in Eastern Europe and Asia</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WO Strategies</th>
<th>Further improve quality</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Reduce manufacturing cost and distribution cost</td>
</tr>
<tr>
<td></td>
<td>Emphasis superstore channel</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ST Strategies</th>
<th>Acquire Raytheon’s appliance in US to increase market share</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Merge with a major Japanese home appliance</td>
</tr>
<tr>
<td></td>
<td>Sell off all non Maytag brands and strongly defend Maytag’s US niche</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WT Strategies</th>
<th>Sell Dixie-Narco to reduce debt</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Emphasize cost reduction to reduce break-even point</td>
</tr>
</tbody>
</table>
# IS Strategies of Maytag-Hoover

<table>
<thead>
<tr>
<th>Strategy</th>
<th>IS Application</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Use worldwide Hoover distribution channel to sell Hoover &amp; Maytag appliance</em></td>
<td><em>An efficient global supply chain management (SCM) system – may cooperate with global carriers.</em></td>
</tr>
<tr>
<td><em>Further improve quality</em></td>
<td><em>Quality monitoring system, decision support system</em></td>
</tr>
</tbody>
</table>
| *Reduce manufacturing cost and distribution cost*  
*Emphasize cost reduction to reduce break-even point* | *Accurate cost accounting information system  
Efficient & effective SCM* |
| *Emphasis superstore channel* | *SCM with on-line EDI links to superstore’s inventory system* |
| *Acquire Raytheon’s appliance in US to increase market share*  
*Merge with a major Japanese home appliance* | *Common financial reporting system* |
Balanced Scorecard

Financial Perspective
- How do we look to shareholders?
- Objective
- Measures

Internal Business Perspective
- What must we excel at?
- Objective
- Measures

Innovation & learning Perspective
- How can we continue to improve?
- Objective
- Measures

Customer Perspective
- How do customers see us?
- Objective
- Measures
Notes on BSC

- Was developed to ‘balance’ the common but might be misleading indicator: financial reports
- The important thing is the measurement!
- Less focused on external factors
- Suggested to be used after business strategy defined
- BSC can be used to define activities/programs (not explained today)
Rockmart's Critical Success Factors (CSF)

• Small number of easily identifiable operational goals
• Shape by industry, manager & environment
• Believed to assure firm’s success
• Used to determine organization’s information requirements
## Critical Success Factors & Goals

<table>
<thead>
<tr>
<th>EXAMPLE</th>
<th>GOALS</th>
<th>CSF</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROFIT</td>
<td>EARNINGS/SHARE</td>
<td>AUTOMOTIVE INDUSTRY:</td>
</tr>
<tr>
<td>CONCERNS</td>
<td>RETURN ON INVESTMENT</td>
<td>STYLING</td>
</tr>
<tr>
<td></td>
<td>MARKET SHARE</td>
<td>QUALITY DEALER SYSTEM</td>
</tr>
<tr>
<td></td>
<td>NEW PRODUCT</td>
<td>COST CONTROL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ENERGY STANDARDS</td>
</tr>
<tr>
<td>NONPROFIT</td>
<td>EXCELLENT HEALTH CARE</td>
<td>REGIONAL INTEGRATION WITH OTHER HOSPITALS</td>
</tr>
<tr>
<td></td>
<td>MEETING GOVERNMENT REGULATIONS</td>
<td>EFFICIENT USE OF RESOURCES</td>
</tr>
<tr>
<td></td>
<td>FUTURE HEALTH NEEDS</td>
<td>IMPROVED MONITORING OF REGULATIONS</td>
</tr>
</tbody>
</table>

*CSF should also include quantifiable objectives!*
CSF Methodology

Manager A CSF
Manager B CSF
Manager A CSF
Manager B CSF

Develop agreement on company’s CSF

Define company’s prioritized CSF

Define Decision Support Systems
Develop IS Application Priorities

What is important for your organization?
CSF Levels

- Industry CSF
  - Organizational CSF
    - Business Unit / Functional CSF
      - Manager’s CSF
    - Business Unit / Functional Obj.
  - Business Unit / Functional CSF
    - Manager’s Objectives
BSC-CSF Example: Manufacturing Company of Electrical Product

• Imported components
• Orders tend to be unique for specific customer, now using stock strategy
• Problems:
  – Cost for components acquisition
  – Cost of finished goods
  – Long delivery time
<table>
<thead>
<tr>
<th>Objectives</th>
<th>Financial Measures</th>
</tr>
</thead>
</table>
| - To reduce stock costs | (a) Stock turn  
(b) write-offs  
(c) Stockhandling costs |
| - To increase product profitability | (a) Product margins  
(b) Gross profit |

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Customer Measures</th>
</tr>
</thead>
</table>
| - To increase responsiveness | (a) Order to delivery lead time  
(b) Enquiry response time |
| - To be more price competitive | (a) Benchmarks versus competitor prices  
(b) Customer value/price perception |

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Internal Measures</th>
</tr>
</thead>
</table>
| - To provide fast-track service to best customers | (a) Reduced lead time to specific customers  
(b) Customer satisfaction |
| - To remove interface costs/delays with agents | (a) Cost of rework  
(b) Number of referrals |

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Innovation Measures</th>
</tr>
</thead>
</table>
| - To reduce new product lead times by 30% | (a) Design to sale time  
(b) No slack in elapsed time |
| - To find new channel to reach SME customers | (a) New channel exists  
(b) Number of options reviewed/tested |
Objectives To: achieve
reduce stock costs

Critical Success Factors
By: taking action
By:
- earlier identification of obsolete items
- better forecasting to reduce safety stocks etc.

Measures
(a) Stock turn
(b) Write-offs
(c) Stock handling costs

Information and systems required
(i) New analysis of stock turn to separate fast-moving/slow-moving items (A, B, C based)
(ii) Improved stock forecasting based on more accurate sales forecasts/actuals
(iii) New stock replenishment algorithms for different types of stock
### Financial Perspective

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Measure(s)</th>
<th>Action (CSF)</th>
<th>IS Needs</th>
</tr>
</thead>
<tbody>
<tr>
<td>- To reduce stock costs</td>
<td>a) Stock turn</td>
<td>- By earlier identification of obsolete items</td>
<td>i) New stock turn analysis (ABC)</td>
</tr>
<tr>
<td></td>
<td>b) Write offs</td>
<td>- By better forecasting to reduce safety stocks</td>
<td>ii) Improved sales and stock forecasting</td>
</tr>
<tr>
<td></td>
<td>c) Stockhandling costs</td>
<td></td>
<td>iii) New stock replenishment algorithms</td>
</tr>
</tbody>
</table>

### Customer Perspective

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Measure(s)</th>
<th>Action (CSF)</th>
<th>IS Needs</th>
</tr>
</thead>
<tbody>
<tr>
<td>- To increase responsiveness</td>
<td>a) Order to delivery lead time</td>
<td>- By identifying causes of all late deliveries</td>
<td>i) New accurate measure of all order/delivery times</td>
</tr>
<tr>
<td></td>
<td>b) Enquiry response time</td>
<td>- By informing customers in advance of problems</td>
<td>ii) Analysis of all types of delivery failure</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- By tracking all enquiries/ progress daily</td>
<td>iii) New/dynamic customer/order monitoring system to instigate action</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>iv) New enquiry recording/tracking process and system</td>
</tr>
</tbody>
</table>
Understanding the Boston Consulting Group (BCG) Matrix
The IS Application Portfolio

- **STRATEGIC**
  - Applications that are critical to sustaining future business strategy

- **HIGH POTENTIAL**
  - Applications that may be important in achieving future success

- **KEY OPERATIONAL**
  - Applications on which the organization currently depends for success

- **SUPPORT**
  - Applications that are valuable but not critical to success

Closely related and derived from “McFarlan Matrix”
Fill the Application Portfolio Matrix For BI…!

- **STRATEGIC**
  1. Collaborative Portal
  2. Staff Portal
  3. Public Portal
  4. Research Portal

- **KEY OPERATIONAL**
  13. Logistics
  14. Finance
  18. Rural Banking
  19. Financial System
  24. Real Time Gross Settlement
  25. Clearing

- **HIGH POTENTIAL**
  1. Staff Portal
  2. Collaborative Portal
  3. Public Portal
  4. Research Portal

- **SUPPORT**
  5. Helpdesk
  27. Money Circulation (SIPU)

- **7. Risk Management**
- **8. Performance Management**
- **9. Economy Analysis**
- **16. Supervision**
- **17. Examination**
- **20. Monetary Management**
- **18. Rural Banking**
- **21. Fiscal Indicators**
- **19. Financial System**
- **22. External Indicators**
- **23. Real Sector Indicators**
- **15. Human Resources**
- **11. Risk Management**
- **12. Performance Management**
- **14. Finance**
- **13. Logistics**
- **17. Examination**
- **20. Monetary Management**
- **21. Fiscal Indicators**
- **22. External Indicators**
- **23. Real Sector Indicators**
- **15. Human Resources**
- **26. Security Settlement (SSSS)**
Laudon’s Organization Level & Functions

<table>
<thead>
<tr>
<th>KIND OF SYSTEM</th>
<th>GROUPS SERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>STRATEGIC LEVEL</td>
<td>SENIOR MANAGERS</td>
</tr>
<tr>
<td>MANAGEMENT / TACTICAL LEVEL</td>
<td>MIDDLE MANAGERS</td>
</tr>
<tr>
<td>KNOWLEDGE LEVEL</td>
<td>KNOWLEDGE &amp; DATA WORKERS</td>
</tr>
<tr>
<td>OPERATIONAL LEVEL</td>
<td>OPERATIONAL MANAGERS</td>
</tr>
<tr>
<td></td>
<td>SALES &amp; MARKETING</td>
</tr>
<tr>
<td></td>
<td>MANUFACTURING</td>
</tr>
<tr>
<td></td>
<td>FINANCE</td>
</tr>
<tr>
<td></td>
<td>ACCOUNTING</td>
</tr>
<tr>
<td></td>
<td>HUMAN RESOURCES</td>
</tr>
</tbody>
</table>
Types of Information Systems

**Executive Information Systems**

- Strategic Level Systems
  - 5 yr budget forecast
  - Profit planning
  - 5 yr sales forecast

**MIS / DSS**

- Management / Tactical Level Systems
  - Sales analysis
  - Production scheduling
  - Cost analysis
  - Annual budgeting
  - Pricing analysis

**Knowledge Work System & Office Systems**

- Knowledge Level Systems
  - Word processing
  - Documents imaging
  - Workflow app
  - Spreadsheets
  - Analyst workstations

**Transaction Processing Systems**

- Operational Level Systems
  - Order tracking
  - Machine control
  - Payroll
  - AR/AP
  - Employee records
  - Securities Trading
**Alter’s Work System Principles**

- **Customers**: Please the customers.
- **Products**: Minimize effort consumed by technology.
- **Business Process**: Create value from information.
- **Participants**: Serve the participants.
- **Information**: Minimize unintended conflicts and risk.
- **Technology**: Deploy infrastructure as genuine resource.
- **Context**:
- **Infrastructure**: Our next discussion!
Figure 4.3  An example of an architecture model, comprising a business and an IS model (source: M. Cook, ‘Architecture models’, working papers, Glaxo Wellcome Operations, 1995)
IS/IT Architecture of A Central Bank
Business Application and Supporting Technology

Note: * As this is a high-level architecture, not all Directorates are represented (e.g., Legal, Internal Audit, Archiving, Planning etc.)