Business value of Improved Decision Making

• Decision making in businesses used to be limited to management.

• Today, lower-level employees are responsible for some of these decisions, as information systems make information available to lower levels of the business.

• What does it mean to the business to make better decisions?

• Decisions are made at all levels of the firm and that some of these decisions are common, routine, and numerous.

• Although the value of improving any single decision may be small, improving hundreds of thousands of “small” decisions adds up to a large annual value for the business.
## Business value of Improved Decision Making

<table>
<thead>
<tr>
<th>Example Decision</th>
<th>Decision Maker</th>
<th>Number of Annual Decisions</th>
<th>Estimated Value to Firm of a Single Improved Decision</th>
<th>Annual Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allocate support to most valuable customers</td>
<td>Accounts manager</td>
<td>12</td>
<td>$100,000</td>
<td>$1,200,000</td>
</tr>
<tr>
<td>Predict call center daily demand</td>
<td>Call center management</td>
<td>4</td>
<td>$150,000</td>
<td>$600,000</td>
</tr>
<tr>
<td>Decide parts inventory levels daily</td>
<td>Inventory manager</td>
<td>365</td>
<td>$5,000</td>
<td>$1,825,000</td>
</tr>
<tr>
<td>Identify competitive bids from major suppliers</td>
<td>Senior management</td>
<td>1</td>
<td>$2,000,000</td>
<td>$2,000,000</td>
</tr>
<tr>
<td>Schedule production to fill orders</td>
<td>Manufacturing manager</td>
<td>150</td>
<td>$10,000</td>
<td>$1,500,000</td>
</tr>
<tr>
<td>Allocate labor to complete a job</td>
<td>Production floor manager</td>
<td>100</td>
<td>$4,000</td>
<td>$400,000</td>
</tr>
</tbody>
</table>
Types of Decisions

- **Structured decisions**, are repetitive and routine, and they involve a definite procedure for handling them so that they do not have to be treated each time as if they were new.

- **Unstructured decisions**, by contrast, are those in which the decision maker must provide judgment, evaluation, and insight to solve the problem. Each of these decisions is novel, important, and non-routine, and there is no well-understood or agreed-on procedure for making them.

- Many decisions have elements of both types of decisions and are semi-structured, where only part of the problem has a clear-cut answer provided by an accepted procedure.

- In general, structured decisions are more prevalent at lower organizational levels, whereas unstructured problems are more common at higher levels of the firm.
Types of Decisions

Decision Characteristics

Senior Management
- Decide entrance or exit from markets
- Approve capital budget
- Decide long-term goals

Middle Management
- Design a marketing plan
- Develop a departmental budget
- Design a new corporate Web site

Operational Management
- Individual Employees and Teams
- Determine overtime eligibility
- Restock inventory
- Offer credit to customers
- Determine special offers to customers

Structured

Semistructured

Unstructured
The Decision Making Process

- **Intelligence** consists of discovering, identifying, and understanding the problems occurring in the organization—why a problem exists, where, and what effects it is having on the firm.

- **Design** involves identifying and exploring various solutions to the problem.

- **Choice** consists of choosing among solution alternatives.

- **Implementation** involves making the chosen alternative work and continuing to monitor how well the solution is working.
What if a chosen solution does not work?

• You can return to an earlier stage in the decision-making process and repeat it if necessary.

• For instance, in the face of declining sales, a sales management team may decide to pay the sales force a higher commission for making more sales to spur on the sales effort.

• If this does not produce sales increases, managers would need to investigate whether the problem stems from poor product design, inadequate customer support, or a host of other causes that call for a different solution.
Managerial Roles

• The classical model of management, which describes what managers do, was largely unquestioned for the more than 70 years since the 1920s.

• Henri Fayol and other early writers first described the five classical functions of managers as planning, organizing, coordinating, deciding, and controlling.

• This description of management activities dominated management thought for a long time, and it is still popular today.
Managerial Roles

• The classical model describes formal managerial functions but does not address what exactly managers do when they plan, decide things, and control the work of others.

• **Behavioral models**, in contrast, state that the actual behavior of managers appears to be less systematic, more informal, less reflective, more reactive, and less well organized than the classical model would have us believe.

• Observers find that managerial behavior actually has five attributes that differ greatly from the classical description.
Managerial Roles

• First, managers perform a great deal of work at an unrelenting pace—studies have found that managers engage in more than 600 different activities each day, with no break in their pace.

• Second, managerial activities are fragmented; most activities last for less than nine minutes, and only 10 percent of the activities exceed one hour in duration.

• Third, managers prefer current, specific, and ad hoc information

• Fourth, managers prefer oral forms of communication to written forms because oral media provide greater flexibility, require less effort, and bring a faster response.

• Fifth, managers give high priority to maintaining a diverse and complex web of contacts that acts as an informal information system and helps them execute their personal agendas and short- and long-term goals.
Managerial Roles

• **Managerial roles** are expectations of the activities that managers should perform in an organization. Mintzberg found that these managerial roles fell into three categories: **interpersonal, informational, and decisional.**

• **Interpersonal Roles:**
  • Managers act as **figureheads** for the organization when they represent their companies to the outside world
  • Managers perform **symbolic duties**, such as giving out employee awards, in their interpersonal role
  • Managers act as **leaders**, attempting to motivate, counsel, and support subordinates
  • Managers also act as **liaisons** between various organizational levels
  • Managers **provide time and favors**, which they expect to be returned.
Managerial Roles

• **Informational Roles:**
  Managers act as the *nerve centers of their organizations*, receiving the most concrete, up-to-date information and redistributing it to those who need to be aware of it.

  Managers are therefore *information disseminators* and spokespersons for their organizations.

• **Decisional Roles:**
  Managers *act as entrepreneurs* by initiating new kinds of activities.

  Managers *handle disturbances* arising in the organization.

  Managers *allocate resources* to staff members who need them.

  Managers *negotiate conflicts* and mediate between conflicting groups.
Managerial Roles and Information Systems

<table>
<thead>
<tr>
<th>ROLE</th>
<th>BEHAVIOR</th>
<th>SUPPORT SYSTEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Interpersonal Roles</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Figurehead</td>
<td>---------------</td>
<td>Telepresence systems</td>
</tr>
<tr>
<td>Leader</td>
<td>Interpersonal</td>
<td>Telepresence, social networks, Twitter</td>
</tr>
<tr>
<td>Liaison</td>
<td></td>
<td>Smartphones, social networks</td>
</tr>
<tr>
<td><strong>Informational Roles</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nerve center</td>
<td>---------------</td>
<td>Management information systems, ESS</td>
</tr>
<tr>
<td>Disseminator</td>
<td>Information</td>
<td>E-mail, social networks</td>
</tr>
<tr>
<td>Spokesperson</td>
<td>processing</td>
<td>Webinars, telepresence</td>
</tr>
<tr>
<td><strong>Decisional Roles</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entrepreneur</td>
<td>Decision</td>
<td>None exist</td>
</tr>
<tr>
<td>Disturbance handler</td>
<td>Making</td>
<td>None exist</td>
</tr>
<tr>
<td>Resource allocator</td>
<td></td>
<td>Business intelligence, DSS systems</td>
</tr>
<tr>
<td>Negotiator</td>
<td></td>
<td>None exist</td>
</tr>
</tbody>
</table>

Sources: Kenneth C. Laudon and Jane P. Laudon; and Mintzberg, 1971.
Real World Decision Making

• Information systems are not helpful for all managerial roles

• And in those managerial roles where information systems might improve decisions, investments in information technology do not always produce positive results.

• There are three main reasons: information quality, management filters, and organizational culture
Real World Decision Making

• **Information Quality:** High-quality decisions require high-quality information. If the output of information systems does not meet these quality criteria, decision-making will suffer.

• **Management Filters:** Even with timely, accurate information, some managers make bad decisions.

• Managers (like all human beings) absorb information through a series of filters to make sense of the world around them.

• Managers have selective attention, focus on certain kinds of problems and solutions, and have a variety of biases that reject information that does not conform to their prior conceptions.
Real World Decision Making

- **Organizational Inertia and Politics:** Organizations are bureaucracies with limited capabilities and competencies for acting decisively.

- When environments change and businesses need to adopt new business models to survive, strong forces within organizations resist making decisions calling for major change.

- Decisions taken by a firm often represent a balancing of the firm’s various interest groups rather than the best solution to the problem.
Business Intelligence (BI) and Business Analytics (BA)

• **Business intelligence and analytics** are about **integrating** all the information streams produced by a firm into a single, coherent enterprise-wide set of data, and

• then, **analyzing data** using modeling, statistical analysis tools (like normal distributions, correlation and regression analysis, Chi square analysis, forecasting, and cluster analysis), and data mining tools (pattern discovery and machine learning),

• **to make sense out of all these data** so managers can make better decisions and better plans, or at least know quickly when their firms are failing to meet planned targets
BI Environment

• There are six elements in business intelligence environment:

• **Data from the business environment:** Businesses must deal with both structured and unstructured data from many different sources, including mobile devices and the Internet. The data need to be integrated and organized so that they can be analyzed and used by human decision makers.

• **Business intelligence infrastructure:** The underlying foundation of business intelligence is a powerful database system that captures all the relevant data to operate the business. The data may be stored in transactional databases or combined and integrated into an enterprise-data warehouse or series of interrelated data marts.
BI Environment

• **Business analytics toolset:** A set of software tools are used to analyze data and produce reports, respond to questions posed by managers, and track the progress of the business using key indicators of performance.

• **Managerial users and methods:** Managers impose order on the analysis of data using a variety of managerial methods that define strategic business goals and specify how progress will be measured.

• Without strong senior management oversight, business analytics can produce a great deal of information, reports, and online screens that focus on the wrong matters and divert attention from the real issues.
BI Environment

• **Delivery platform—MIS, DSS, ESS:** MIS, DSS, and ESS deliver information and knowledge to different people and levels in the firm—operational employees, middle managers, and senior executives.

• **User interface:** Today’s business analytics software suites emphasize visual techniques such as dashboards and scorecards. They also are able to deliver reports on Blackberrys, iPhones, and other mobile handhelds as well as on the firm’s Web portal.

• **BA software is adding capabilities to post information on Twitter, Facebook, or internal social media to support decision making in an online group setting rather than in a face-to-face meeting.**
BI and BA capabilities

• **Production reports**: These are predefined reports based on industry-specific requirements

• **Parameterized reports**. Users enter several parameters as in a pivot table to filter data and isolate impacts of parameters. For instance, you might want to enter region and time of day to understand how sales of a product vary by region and time.
BI and BA capabilities

- **Dashboards/scorecards**: These are visual tools for presenting performance data defined by users.

- **Ad hoc query/search/report creation**: These allow users to create their own reports based on queries and searches.

- **Drill down**: This is the ability to move from a high-level summary to a more detailed view.

- **Forecasts, scenarios, models**: These include the ability to perform linear forecasting, what-if scenario analysis, and analyze data using standard statistical tools.
Management strategies for developing BI and BA capabilities

• There are two different strategies for adopting BI and BA capabilities for the organization:
  – one-stop integrated solutions versus multiple best-of-breed vendor solutions.

• The hardware firms (IBM, HP, and now Oracle, which owns Sun Microsystems) want to sell your firm integrated hardware/software solutions that tend to run only on their hardware (the totally integrated solution). It’s called “one stop shopping.”

• The software firms (SAP, SAS, and Microsoft) encourage firms to adopt the “best of breed” software and that runs on any machine they want. In this strategy, you adopt the best database and data warehouse solution, and select the best business intelligence and analytics package from whatever vendor you believe is best.
Management strategies for developing BI and BA capabilities

• The first solution carries the risk that a single vendor provides your firm’s total hardware and software solution, making your firm dependent on its pricing power.

• It also offers the advantage of dealing with a single vendor who can deliver on a global scale.

• The second solution offers greater flexibility and independence, but with the risk of potential difficulties integrating the software to the hardware platform, as well as to other software.

• Regardless of which strategy your firm adopts, all BI and BA systems lock the firm into a set of vendors and switching is very costly.