Information Systems Planning

Chapter 4

Outline

- Introduction
  - Types of planning
  - Why is planning so difficult?
- The Changing World of Planning
  - Traditional Strategy-Making
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- Seven Planning Techniques
  - Stages of Growth
  - Critical Success Factors
  - Competitive Forces Model
  - Value Chain Analysis
  - E-Business Value Matrix
  - Linkage Analysis Planning
  - Scenario Planning

Paradox of IS Planning

- Most organization's survival now depends on IT
  - Planning of its effective use is a matter of organizational life and death
- IT is changing so fast
  - Is it useless to do IS planning?
- A variety of approaches, tools and mechanisms available for IS planning
  - No best way to do it.

Mindset for Planning

- Traditional view
  - Determining what decisions to make in the future
- A better view
  - Developing a view of the future that guides decision making today
- Difference: **Strategy Making** instead of **Planning**
  - Strategy: stating the direction in which you want to go and how you intend to get there

Types of Planning

- Planning is usually defined in three forms, which correspond to the three planning horizons.
  - Strategic: 3 – 5 years
  - Tactical: 1 – 2 years
  - Operational: 6 months – 1 year

Horizon	*Focus*	*Issues*	*Primary Responsibility*
3–5 years	Strategic	Vision, architecture, business goals	Senior management CIO
1–2 years	Tactical	Resource allocation, project selection	Middle managers IS line partners Steering committee
6 months–1 year	Operational	Project management, meeting time, and budget targets	IS professionals Line managers Partners

Why Planning is so Difficult?

- Some Fundamental reasons explain why system planning is so difficult. Here are a few of them:
  - Business goals and systems plans need to align
  - Technologies are rapidly changing
  - Companies need portfolios rather than projects
  - Infrastructure development is difficult to fund
  - Responsibility needs to be joint
  - Other planning issues

Why Planning is so Difficult?

- Business goals and systems plans need to align
  - Strategic systems plans need to align with business goals and support those objectives
  - Will be difficult if CIO is not part of senior management

Why Planning is so Difficult?

- Technologies are rapidly changing
  - Continuous planning based on monitoring and experimenting new technologies
  - Advanced technology groups

Why Planning is so Difficult?

- Companies need portfolios rather than projects
  - Evaluation on more than their individual merit
  - How they fit into other projects and how they balance the portfolio of projects

Why Planning is so Difficult?

- Infrastructure development is difficult to fund
  - Often done under the auspices of a large application project
  - Challenge: develop improved applications and improve infrastructure over time
    - Mainframe ➔ Client/Server ➔ ERP ➔ Web application ➔ Web Services

Why Planning is so Difficult?

- Responsibility needs to be joint
  - Systems planning has become business planning, not just a technology issue
  - It is better done by a full partnership of C-level officers

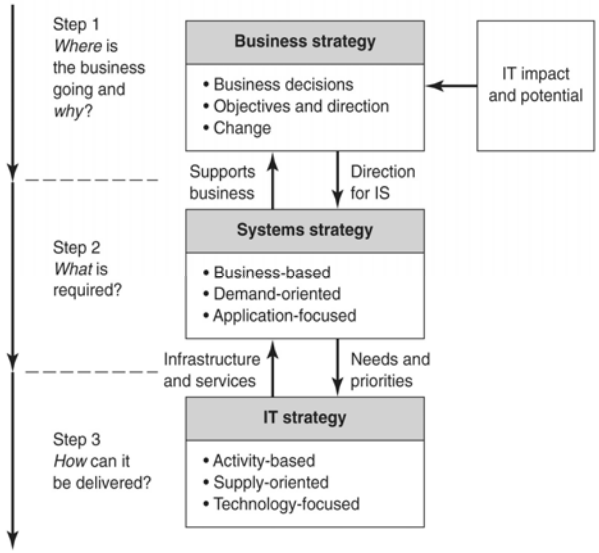
Why Planning is so Difficult?

- Other planning issues
  - Top-down vs. bottom-up
    - Radical change vs. continuous
  - Planning culture in which the systems planning must fit

Traditional Strategy-Making

- Traditional Strategy-Making:
  - Business executives created a strategic business plan ➔ where the business wanted to go
  - IS executives created an IS strategic ➔ how IT would support the business plan
  - IT implementation plan created ➔ describe exactly how the IS strategic plan would be implemented
- Assumptions:
  - The future can be predicted
  - Time is available to do these 3 parts
  - IS supports and follows the business
  - Top management knows best (broadest view of firm)
  - Company like an Army

Tradition Strategy Making



The Changing World of Planning

- Today, due to the Internet and other technological advances, these assumptions no longer hold true:
  - The future cannot be predicted
  - Time is not available for the sequence
  - IS does not just support the business anymore
  - Top management may not know best
  - An organization is not like an army

The Changing World of Planning

- The future cannot be predicted
  - Discontinuous change
    - Who predicted Internet, Amazon, eBay etc.?

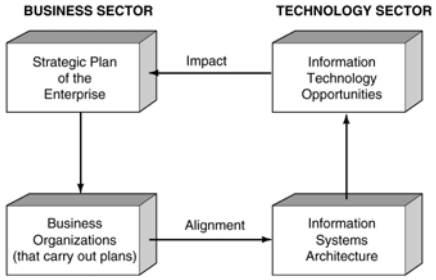
The Changing World of Planning

- Time is not available for the sequence
  - Never enough time in Internet Age
  - IT implementation planning needs to go ahead of business strategizing

The Changing World of Planning

- IS does not just support the business anymore

FIGURE 2-8 The Enterprisewide Information Management Model



Source: Marilyn Parker and Robert Benson with Ed Trainor, *Information Economics: Linking Information Technology and Business Performance* (Upper Saddle River, NJ: Prentice Hall, 1988).

The Changing World of Planning

- Top management may not know best
  - Inside out vs. outside in approach

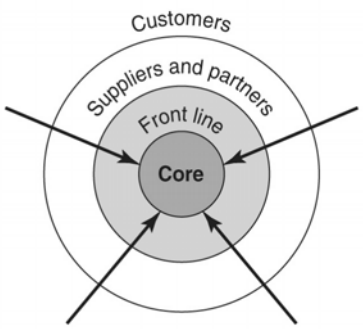


FIGURE 4-3 Outside-In Strategy Development

Source: Reprinted with permission from Roger Woolfe, Barbara McNurlin, and Phil Taylor, *Tactical Strategy*, Wentworth Research Program (now part of Gartner EXP, 56 Top Gallant, Stamford, CT 06904), November 1999.

The Changing World of Planning

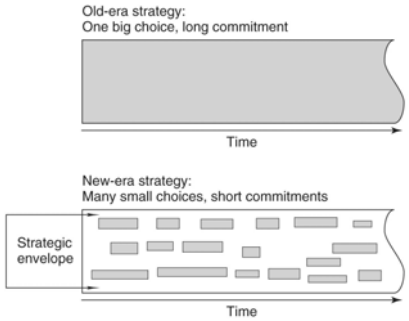
- An organization is not like an army
  - Industrial era metaphor no longer always applies

Today's Sense and Response Approach

- If yesterday's assumptions no longer hold true, what is taking the old approach's place?
  - Let strategies unfold rather than plan them
  - Formulate strategy closest to the action
  - Guide strategy-making with a strategic envelope
  - Be at the Table
  - Test the Future
  - Put the Infrastructure in Place

Today's Sense and Response Approach

- Let strategies unfold rather than plan them:
  - In times of fast paced change this is risky
  - When predictions are risky, the way to move into the future is step by step using a sense-and-respond approach
    - Sense a new opportunity and immediately respond via testing it via an experiment
    - Myriad of small experiments



Read Case Example P.140-141

Today's Sense and Response Approach

- Formulate strategy closest to the action:
  - Close contact with the market
    - Employees who interact daily with customers, suppliers and partners (organizational edges)
  - Employees who are closest to the future should become prime strategists.
    - In the Internet Age, this means younger employees

Read Case Example P.141-143

Today's Sense and Response Approach

- Guide strategy-making with a strategic envelope:
  - Having a myriad of potential corporate strategies being tested in parallel could lead to anarchy without a central guiding mechanism
  - Top management set the parameters for the experiments, and then continually manage that context
    - Experiment by territory (as Microsoft did)
    - Strategic conversation
    - Meet regularly with the experimenters

Read Case Example P.143-145

Today's Sense and Response Approach

- Be at the Table
  - IS executives should be actively involved in business strategizing
  - The IS function needs to be strategy-oriented
  - CIO need to make their departments credible and outsource most operational work

Today's Sense and Response Approach

- Test the Future
  - Need to test potential futures before the business is ready for them (thinking ahead of the business)
    - Provide funding for experiments
    - Work with research organizations
    - Have an emerging technologies group

Today's Sense and Response Approach

- Put the Infrastructure in Place:
  - Moving quickly in Internet commerce means having the right IT infrastructure in place.
  - The most critical IT decisions are infrastructure.
  - Recommended that IT experiments include those that test painful infrastructure issues such as how to:
    - Create and maintain common, consistent data definitions
    - Create and instil mobile commercial standards among handheld devices
    - Implement e-commerce security and privacy measures
    - Determine operational platforms (e.g. ERP, SCM)

Seven Planning Techniques

- Stages of Growth
- Critical Success Factors
- Competitive Forces Model
- Value Chain Analysis
- E-Business Value Matrix
- Linkage Analysis Planning
- Scenario Planning

Stages of Growth

- Richard Nolan et al observed four stages in the introduction and assimilations of a new technology
  - Stage 1: Early Successes
    - Increased interest and experimentation
  - Stage 2: Contagion
    - Interest grows rapidly; growth is uncontrolled; learning period for the field
  - Stage 3: Control
    - Efforts begun toward cost reduction and standardization
  - Stage 4: Integration
    - Dominant design mastered; setting the stage for newer technology

Stages of Growth

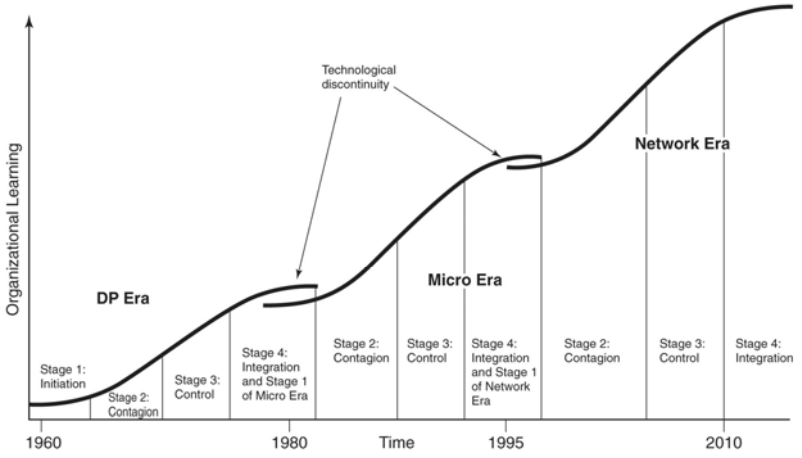


FIGURE 4-5 Stages of Growth

Source: Reprinted with permission from R. L. Nolan, "Information Technology Management from 1960–2000," in *A Nation Transformed by Information*, Alfred D. Chandler and James W. Cortad (Eds.), Oxford, 2000.

Stages of Growth

- The importance of the theory is understanding where a technology or company resides on the organizational learning curve
  - e.g. Web Service is currently in Stage 2, too much control at the learning and experimentation stage can kill off new uses of technology
- Management principles differ from stage to stage
- Different technologies are in different stages at any point in time

Critical Success Factors

- Popular planning approach that can be used to help companies identify information systems they need to develop or improve
- Used to determine factors critical to accomplish corporate objectives Can be used to identify IS plans that need to be developed and corresponding measures
- Four sources for these factors
  - Industry the business is in
  - Company itself and situation within industry
  - Environment
  - Temporal organizational factors

Competitive Forces Model

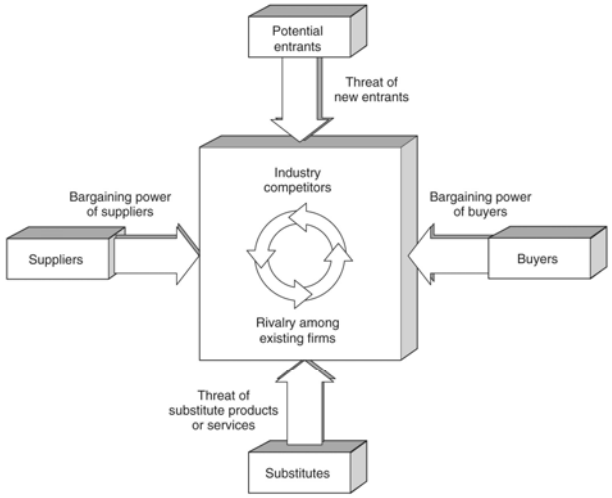


FIGURE 4-6 Michael Porter's Competitive Analysis Model

Source: Michael E. Porter, *Competitive Strategy* (New York: The Free Press, 1980).

Competitive Forces Model

- Michael Porter's Five Forces Model is a model that determines the relative attractiveness (competition) of an industry.
- Companies must contend with five competitive forces which you need to analyse:
  - Bargaining power of customers and buyers
  - Bargaining power of suppliers
  - Threat of Substitute products or services
  - Threat of new entrants
  - The intensity of rivalry among competitors

Competitive Forces Model

- Bargaining power of customers and buyers
  - The bargaining power of buyers is high if there are concentrated sources of supply and few substitutes.
  - If these near monopoly situations, the suppliers can push prices upward and can be indifferent about service or quality.
  - IT can be used to reduce supplier power by developing in-house capability to produce or service or buying into a supplier.

Competitive Forces Model

- Bargaining power of suppliers
  - When buyer is high (e.g. when the buyer is large and/or the products are undifferentiated), then there is downward pressure on prices and upward pressure on both product quality and service.
  - IT can be used to reduce buyer power such as increasing switching costs

Competitive Forces Model

- Threat of Substitute products or services
  - Substitution of products and services can reduce or eliminate the market for existing organizations and thereby weaken it.
  - A late entrant to the market may choose to introduce a product that is a technological advancement over the existing products in the market, and thereby weaken existing players by the threat of substitution.

Competitive Forces Model

- Threat of new entrants
  - When an industry experiences good profit margins, it is attractive for new entrants to join the industry and this will create downward pressure on prices due to the increased availability of products and service.
  - An existing player in the market can create an entry barrier by using IT to make the cost too high for any new player.
  - A new entrant can use IT to improve its services or product and thereby, overcome barriers set up by existing players.

Competitive Forces Model

- The intensity of rivalry among competitors
  - The intensity of rivalry in the market affects the overall profitability, and it is usually greater in mature or declining markets.
  - Price wars usually benefit the consumer and eliminate some of the weaker players in the market.
  - IT can be used to overcome the dilemma of having to lower prices while increasing levels of service.

Competitive Strategy for Competitive Forces Model

- Three strategies for dealing with these competitive forces:
  - **Differentiate Product and Services** – make them better in the eyes of the consumer
  - **Overall Cost Leadership** – not just a low cost producer
  - **Find a niche** – Focus its product or service provision on a particular segment for an identified market

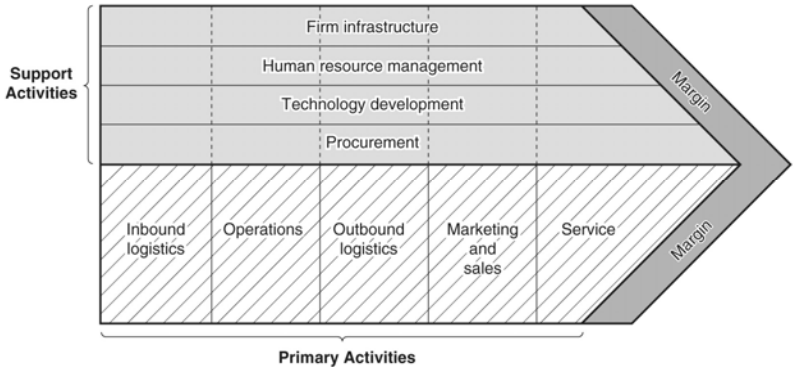
Read Case Example P.150-152

Impact of Internet on Competitive Forces

Bargaining power of buyers	Bargaining power of suppliers	Threat of substitute products and services	Barriers to entry	Rivalry amongst existing competitors
■ The power of online buyers is increased since they have a wider choice and prices are likely to be forced down through increased customer knowledge and price transparency, i.e. switching behaviour is encouraged. ■ For a B2B organisation, forming electronic links with customers may deepen a relationship and it may increase switching costs leading to 'soft lock-in'.	■ When an organisation purchases, the bargaining power of its suppliers is reduced since there is wider choice and increased commoditisation due to e-procurement and e-marketplaces. ■ The reverse arguments also apply as for bargaining power of buyers.	■ Substitution is a significant threat since new digital products or extended products can be more readily introduced. ■ The introduction of new substitute products and services should be carefully monitored to avoid erosion of market share. ■ Internet technology enables faster introduction of products and services. ■ This threat is related to new business models which are covered in a later section in this chapter.	■ Barriers to entry reduced, enabling new competitors, particularly for retailers or service organisations that have traditionally required a high-street presence or a mobile sales force. ■ New entrants must be carefully monitored to avoid erosion of market share. ■ Internet services are easier to imitate than traditional services, making it easy for 'fast followers'.	■ The Internet encourages commoditisation which makes it less easy to differentiate products. ■ Rivalry becomes more intense as product lifecycles decrease and lead times for new product development decrease. ■ The Internet facilitates the move to the global market, increasing the number of competitors.

Value Chain Analysis

- Michael Porter's value chain is a framework for considering key activities within an organization and how well they add value as products and services move from conception to delivery to the customer.



Value Chain Analysis – Primary Activities

- Five primary activities that form the sequence of the value chain:
  - **Inbound Logistics:** Receiving and handling inputs
  - **Operations:** Converting inputs to the product or service
  - **Outbound Logistics:** Collect, store and distribute the product or service to buyers
  - **Marketing and Sales:** Provide incentives to buyers to buy the product or service
  - **Service:** Enhance and maintain the value of the product or service

Value Chain Analysis – Supporting Activities

- Four supporting (secondary) Activities that underlie the entire value chain:
  - **Organizational Infrastructure** – supports the entire value chain and includes general management, finance, etc
  - **Human Resources Management** – include staff recruitment, training, etc.
  - **Technology Development** – includes development of the technology of the product or service, the processes that produce it and the processes that ensure the successful management of the organization.
  - **Procurement** – supports the process of purchasing inputs for all the activities of the value chain. Such inputs might include raw materials, office equipment, etc.

Read Case Example P.154

E-Business Value Matrix

- It can be difficult for executives to prioritise projects, therefore a portfolio management approach is valuable.
- Tool used by Cisco to ensure they are developing a well-rounded portfolio of IT projects.
- Every IT project is meant to be placed into one of four categories to assess its value to the company

FIGURE 4-8 E-Business Value Matrix

	Criticality to Business	*Newness of Idea*
New fundamentals	Low	Low
Operational excellence	High	Low
Rational experimentation	Low	High
Breakthrough strategy	High	High

Source: Adapted from a speech by Peter Alexander and *Net Ready: Strategies for Success in the E-conomy* by Amir Hartman, John Sifonis, and John Kador (New York: McGraw-Hill, 2000).

E-Business Value Matrix

New Fundamentals	Low – Low: Provide a fundamentally new way of working in overhead areas, not business-critical areas
Operational Excellence	High (Criticality to business) – Low (Newness of idea): medium risk because they may involve reengineering work processes
Rational Experimentation	Low (Criticality to business) – High (Newness of idea): Test new technologies and ideas
Breakthrough Strategy	High – High: Potentially have a huge impact on the company

Read Case Example P.157-158

Linkage Analysis Planning

- Examines the links organizations have with one another with the goal of creating a strategy for utilizing electronic channels
- Methodology includes the following steps:
  - **Define Power Relationships** among the various players and stakeholders:
  - **Map Out Your Extended Enterprise** to include suppliers, buyers, and strategic partners
  - **Plan Your Electronic Channels** to deliver the information component of products and services

Read Case Example P.160-162

Linkage Analysis Planning

- Define power relationships among the various players and stakeholders:
  - Identify who has the power
  - Determine future threats and opportunities for the company

Linkage Analysis Planning

- Map out your extended enterprise to include suppliers, buyers, and strategic partners
  - The enterprise's success depends on the relationships among everyone involved
  - Some 70% of the final cost of goods and services is in their information content

FIGURE 4-9 The Extended Enterprise

Source: K. I. Primozic, E. A. Primozic, and J. F. Leben, *Strategic Choices: Supremacy, Survival, or Sayonara* (New York: McGraw-Hill, 1991).

Linkage Analysis Planning

- Plan your electronic channels to deliver the information component of products and services
  - Create, distribute, and present information and knowledge as part of a product or service or as an ancillary good

Scenario Planning

- Scenarios are stories about the way the world might be in the future
- The goal of scenario planning is not to predict the future, but to explore the forces that could cause different futures to take place
- Then decide on actions to take if those forces begin to materialize
- Long-term planning has traditionally extrapolated from the past and has not factored in low-probability events that could significantly alter trends

Four Steps in Scenario Planning

- Markus identifies four steps in Scenario Planning:
  - Define a decision problem and time frame to bound the analysis
  - Identify the major known trends that will affect the decision problem
  - Identify just a few driving uncertainties
  - Construct the scenarios

Read Case Example P.163-166