Managing and Using Information Systems: A Strategic Approach – Fifth Edition

Keri Pearlson & Carol Saunders

Strategic Use of Information Resources

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Huizenga School of Business and Entrepreneurship
Nova Southeastern University

Learning Objectives

- List the identifying factors of the eras of information usage.
- Know what makes an information resource valuable. gia tri
- Explain how information resources are used strategically in context of the 5-forces model.
- Understand how information resources can be used to alter the value chain.
- Explain the importance of strategic alliances.
- Know the risks of information resources.

Real World Example

- Zara aligns its **information system strategy** with its **business strategy**.
- The system links demand to manufacturing and distribution.
- Customers visit up to 17 times per year to check on new items that may have arrived.
- Limited products lead customers to immediately purchase products they like.
- Zara's business strategy leads to a loyal and satisfied customer base.

Real World Example (Cont.)

- The POS system sends daily updates to Zara's headquarters.
- Managers report to designers what sold and what customers wanted but couldn't find.
- The information is used to determine inventory management.
- New designs can be ordered twice a week.
- The entire process is automated so that new designs and products can be created quickly.
- Zara uses its information resources to sustain its advantages over competitors

Evolution Of Information Resources

- IS strategy from the 1960s to the 1990s was driven by internal organizational needs
  - Lower existing transaction costs
  - Provide support for managers by collecting and distributing information
  - Redesign business processes
- In the 2010 era IS strategy was driven by social IT platforms and new capabilities
  - A new evolution of applications, processes, and strategic opportunities

Figure 2.1 – Mission statements of computer companies

	Era I 1960s	Era II 1970s	Era III 1980s	Era IV 1990s	Era V 2000+	Era VI 2100+
Primary role of IT	Efficiency Automate existing paper-based processes	Effectiveness Solve problems and create opportunities	Strategic Increase individual and group effectiveness	Strategic Transform industry/ organization	Value creation Create collaborative partnerships	Value creation Community and social business
Justify IT expenditures	ROI	Increasing productivity and better decision quality	Competitive position	Competitive position	Adding value	Creating relationships
Target of systems	Organization	Organization/ group	Individual manager/ group	Business processes ecosystem	Customer/ supplier ecosystem	Customer/ employee supplier ecosystem
Information models	Application specific	Data driven	User driven	Business driven	Knowledge driven	People driven (or relationship driven)

Figure 2.1 – Mission statements of computer companies (Cont.)

	Era I 1960s	Era II 1970s	Era III 1980s	Era IV 1990s	Era V 2000+	Era VI 2100+
Dominate technology	Mainframe, "centralized intelligence"	Minicomputer, mostly "centralized intelligence"	Microcomputer, "decentralized intelligence"	Client Server, "distributed intelligence"	Internet, global "ubiquitous intelligence"	Social platforms, social networks, mobile, cloud
Basis of value	Scarcity	Scarcity	Scarcity	Plentitude	Plentitude	Plentitude
Underlying economics	Economics of information bundled with economics of things	Economics of information bundled with economics of things	Economics of information bundled with economics of things	Economics of information separated from economics of things	Economics of information separated from economics of things	Economics of relationships bundled with economics of information

The Strategic Role for IS – Value Creation

- IS help firms address their **internal and external** circumstances
- Enable managers to identify and use information resources strategically
- IS enable firms to gain advantage over the competition.
- Firms draw on modern and innovative applications

Information Resources as Strategic Tools

- The manager need to combine all the available firm's resources:
- Internal resources -
  - Financial, production, human, and information resources,
- External resources -
  - The Internet and various global opportunities
- **Information resources** is defined as the available data, technology, people, and processes available to perform business processes and tasks.

Information Resources

- Information resources can be either **assets** or **capabilities**.
  - **IT asset** is anything, tangible or intangible, that can be used by a firm in its processes for creating, producing and/or offering its products, goods or services. (i.e. IT infrastructure).
  - **IT capability** is something that is learned or developed over time for the firm to create, produce or offer it products.

IT Assets

- IS infrastructure:
  - Includes data, technology, people, and processes.
  - The infrastructure provides the foundation for the delivery of a firm's products or services.
- Information repository
  - **Logically-related** data that is captured, organized and retrievable by the firm.
  - Designed to improve the firm's efficiency.

IT Assets (Cont.)

- Web 2.0 space include resources used but not owned by the firm (eBay, Facebook, Linked-In etc.).
  - Available as a service such as Internet-based software (Software as a Service, or SAAS)
  - Managers can manage customer information with an externally based IT resource
  - Managers can find expertise or an entire network of individuals ready to participate in the innovation processes of the corporate using relatively little capital or expense. (i.e. Facebook, Linked-In).

Categories of IT Capabilities

- **Technical skills** - applied to designing, developing and implementing information systems.
- **IT management skills** - critical for managing the IT function and IT projects.
- **Relationship skills** - can either be externally-focused or spanning across departments.
- Committing and developing information resources require substantial financial resources.

Figure 2.2 Information resources

Type of Information Resource	Definition	Example
IT Asset	Anything that can be used by a firm in its processes for creating, producing and/or offering its products (goods or services)	
IS infrastructure	Base foundation of the IT portfolio shared through the firm	Hardware, software, network, data components, proprietary technology, web-based services
Information repository	Data that is logically related and organized in a structured form accessible and able for decision making purposes.	Critical information about customers that can be used to gain strategic advantage. Much of this information is increasingly available on the web.
IT Capability	Something that is learned or developed over time in order for the firm to create, produce or offer it products in IT assets	
Technical skill	Ability applied to designing, developing and implementing information systems	Proficiency in systems analysis and design; programming skills
IT management skills	Ability to managing IT function and IT projects	Being knowledgeable about business processes and managing systems to support them; evaluating technology options; envisioning creative IS solutions to business problems
Relationship skills	Ability of IS specialists to work with parties outside the IS department.	Spanning: having a good relationship between IT and business managers Externally-forced: have a good relationship with an outsourcing vendor

Advantages of Information Resource

- **Information resource value :**
  - Eras I through III – value was derived from scarcity reflected in the cost to produce the information.
  - Era IV – value was derived from plenitude

Network effects is the value of a network node to a person or organization, it increases when others join the network. (i.e. e-mail)

  - Rather than use production costs to guide the determination of price, information products might be priced to reflect their value to the buyer.

Advantages of Information Resource (Cont.)

- **Information resource appropriation:**
  - Determining where a resource's value lies and how it can be improved in a firm's favor.
  - The attributes of information resources that impact the value make it possible to create and sustain competitive advantage (i.e. Zara).
- **Information resource distribution across firms:**
  - Early adopters may experience a competitive advantage from using an information resource.
  - The experience gained may lead to inequities between firms.
  - Different experiences with a resource creates value, and a create strategic advantage.

Advantages of Information Resource (Cont.)

- The value of information mushrooms under conditions of information asymmetries.
- Possessor of information may use it against, or sell it to, companies or individuals who are not otherwise able to access the information.

- **Mobility of Information resource:**
  - Reliance on the individual skills of IT professional
  - Risky as key individuals will leave the firm, taking their experience with them.
  - Development of unique knowledge-sharing processes, and creation of an organizational memory.

Advantages of Information Resource (Cont.)

- Capturing of lessons learned from all team members after the completion of each project.
- Using social technologies to record interactions and activity streams.
- Information resource become **obsolete:**
  - Information resources lose value over time.
- Understanding the nature of the information resources at hand is a prerequisite to using them effectively.
- Aligning IS strategy with business strategy enables the general manager maximizes its profit potential.

Information Resources Strategy

- Managers confront elements that influence the competitive environment.
- Slim tolerance for error.
- Managers must take multiple view of the strategic landscape:
  - First view - Porter's five competitive forces model.
  - Second view - Porter's value chain.
  - Third view – focuses on the types of IS resources needed to gain competitive advantage.

Using Information Resources to Influence Competitive Forces

- Porter's five forces model show the major forces that shape the competitive environment of the firm (figure 2.3 and 2.4).

1. **Threat of New Entrants:** new firms that may enter a companies market.
2. **Bargaining Power of Buyers:** the ability of buyers to use their market power to decrease a firm's competitive position
3. **Bargaining Power of Suppliers:** the ability suppliers of the inputs of a product or service to lower a firm's competitive position
4. **Threat of Substitutes:** providers of equivalent or superior alternative products
5. **Industry Competitors:** current competitors for the same product.

Figure 2.3 Five competitive forces with potential strategic use of information resources.

Strategic use
- Cost-effectiveness
- Market access
- Differentiation of product or service

1 Potential threat of new entrants

Strategic use
- Switching costs
- Access to distribution channels
- Economies of scale

3 Bargaining power of suppliers

5 Industry competitors

2 Bargaining power of buyers

Strategic use
- Selection of supplier
- Threat of backward integration

Strategic use
- Buyer selection
- Switching costs
- Differentiation

4 Threat of substitute products

Strategic use
- Redefine products and services
- Improve price/performance

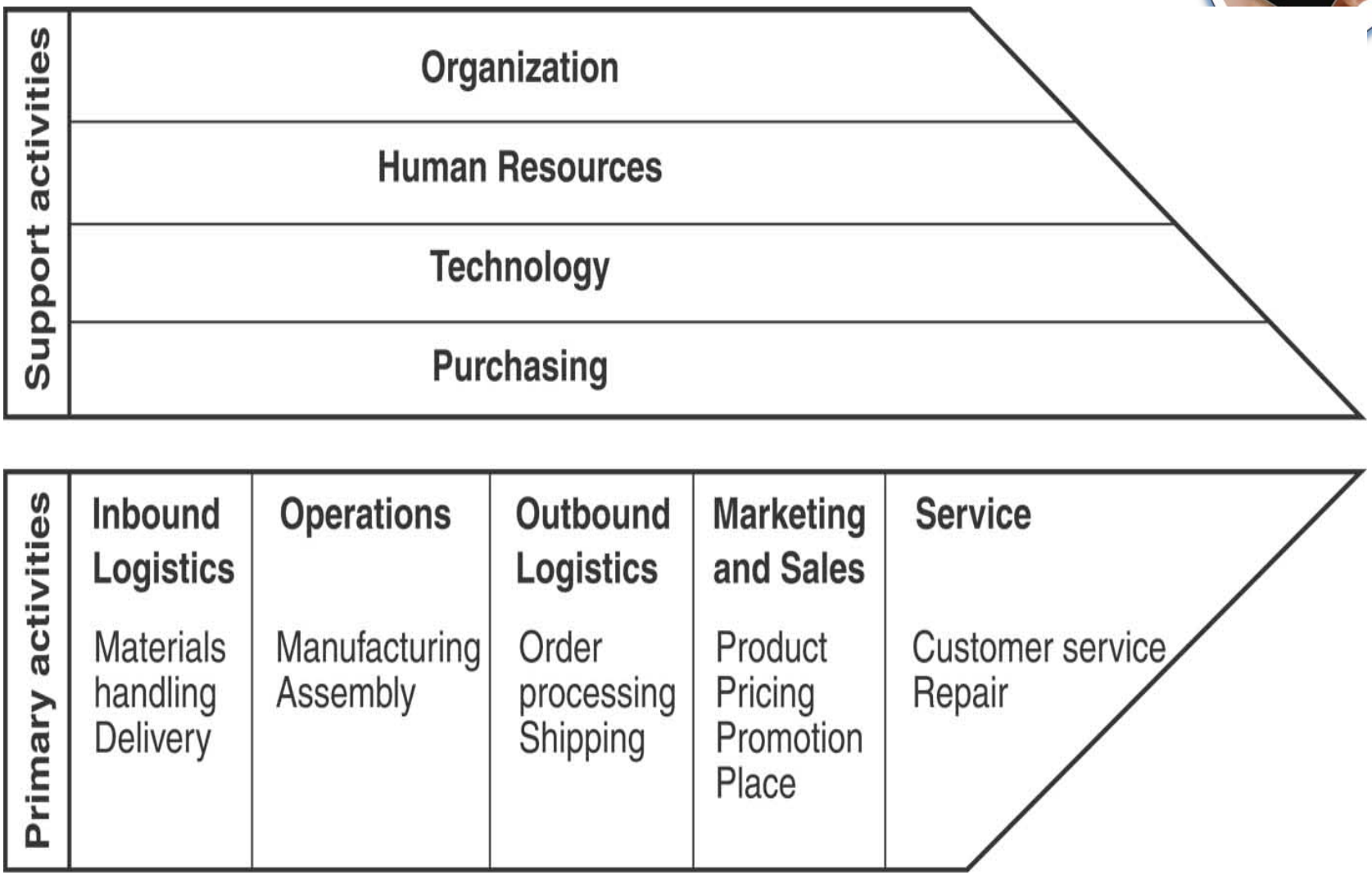
Figure 2.4 Application of five competitive forces model for Zara.

Competitive Force	IT Influence on Competitive Force
Threat of New Entrants	Zara's IT supports its tightly-knit group of designers, market specialists, production managers and production planners. New entrants are unlikely to provide IT to support relationships that have been built over time. Further it has a rich information repository about customers that would be hard to replicate.
Bargaining Power of Buyers	With its constant infusion of new products, buyers are drawn to Zara stores. Zara boasts more than 11,000 new designs a year, whereas competitors typically offer only 2,000 – 4,000. Further, because of the low inventory that the Zara stores stock, the regulars buy products they like when they see them because they are likely to be gone the next time they visit the store. More recently Zara has employed laser technology to measure 10,000 women volunteers so that it can add the measurements of 'real' customers into its information repositories. This means that the new products will be more likely to fit Zara customers.
Bargaining Power of Suppliers	Its computer-controlled cutting machine cuts up to 1000 layers at a time. It then sends the cut materials to suppliers who sew the pieces together. The suppliers' work is relatively simple and many suppliers can do the sewing. Thus, the pool of suppliers is expanded and Zara has greater flexibility in choosing the sewing companies. Further, because Zara dyes 50% of the fabric in its plant, it is less dependent on suppliers and can respond more quickly to mid-season changes in customer color preferences.
Threat of Substitute Products	Industry competitors long marketed the desire of durable, classic lines. Zara forces on meeting customer preferences for trendy, low-cost fashion. It has the highest sales per square foot of any of its competitors. It does so with virtually no advertising and only 10% of stock is unsold. It keeps its inventory levels very low and offers new products at an amazing pace for the industry (i.e., 15 days from idea to shelves). Zara has extremely efficient manufacturing and distribution operations.
Industrial Competitors	Zara offers extremely fashionable lines that are only expected to last for approximately 10 wears. It offers trendy, appealing apparel at a hard-to-beat price.

Porter's Value Chain Model

- Value chain model addresses the activities that create, deliver, and support a company's product or service (see Figure 2.5).
- Two broad categories:
  - **Primary activities** – relate directly to the value created in a product or service.
  - **Support activities** – make it possible for the primary activities to exist and remain coordinated.

Figure 2.5 Value chain of the firm.



Resources to Attain Competitive Advantage

- A **resource** is considered valuable when it enables the firm to become more efficient or effective.
- A resource is rare when other firms do not possess it.
  - Stakes or resources required just to be in the business.(i.e. banks and ATMs)
  - Initially rare and valuable resources were the communities many companies implemented using social IT.
  - These communities were a valuable resource for the firms that sponsored them, and only a few existed.

Resources to Sustain Competitive Advantage

- Many firms who invested in systems learned that gaining a competitive advantage does not automatically mean that you can sustain it over the long term.
- Need to continue to innovate and to protect against resource imitation, substitution, or transfer.
- Technical knowledge, especially that relates to the firm's operation, a gung-ho company culture, and managerial experience in the firm's environment is less easy to obtain and, hence, considered harder to transfer to other firms.

Figure 2.8 - Information resources at Zara, by attribute

	VALUE CREATION		VALUE SUSTAINABILITY		
	Value	**Rarity**	**Imitation**	**Substitution**	**Transfer**
Information Asset					
IT Infrastructure	M	M	H	M	H
Information Repository	H	M	M	L	M
Information Capability					
Technical Skills	M	L	M	M	M
IT Management Skills	H	H	L	L	M
Relationship Skills					
Externally-focused	H	M	L	M	L-M
Spanning	H	H	L	L	L

Note: L = low; M = medium; H = high

Adapted from Wade, M and Hulland, J. "The Resource-Based View and Information Systems Research: Review, Extension and Suggestions for Future Research,," *MIS Quarterly, 28*(1), pp. 107-142.

Strategic Alliances

- An interorganizational relationship that affords one or more companies in the relationship a strategic advantage.
- E.g., the alliance between Zynga and Facebook helped Zynga benefit from the revenue resulting from its gamers on Facebook community.
- IS can be the platform upon which a strategic alliance functions.
- E.g., The alliance between Delta and e-Travel helped Delta reduce agency reservation fees and offered e-Travel new corporate leads.
- Linking value chains through SCM is another way firms build an IT-facilitated strategic alliance.

Types of Strategic Alliances

- **Co-opetition**: a new strategy whereby companies cooperate and compete at the same time with companies in their value net.
- **Value net** includes a company and its competitors and complementors, as well as its customers and suppliers, and the interactions among all of them.
- C**omplementor** is a company whose product or service is used in conjunction with a particular product or service to make a more useful set for the customer.
- Co-opetition is the strategy for creating the best possible outcome for a business by optimally combining competition and cooperation.

Potential Risks

- There are many potential risks that a firm faces when attempting to use IT to outpace their competition.
- **Awakening a sleeping giant** – a large competitor with deeper pockets may be nudged into implementing IS with even better features (i.e FedEx and UPS).
- **Demonstrating bad timing** – sometimes customers are not ready to use the technology designed to gain strategic advantage (i.e. GRiDPAD in 1989 and iPAD in 2010)

Potential Risks - (Cont.)

- **Implementing IS poorly** – information systems that fail because they are poorly implemented (i.e. Virgin America, Hershey Foods, and Austin Energy).
- **Failing to deliver what users what** – systems that don't meet the firm's target market likely to fail (i.e. Netflix)
- **Web-based alternative removes advantages** – consider risk of losing any advantage obtained by an information resource that later becomes available as a service on the web. (i.e. Clear Channel Communications)
- **Running afoul of the law** – Using IS strategically may promote litigation (American Airlines, Google).

Co-Creating IT and Business Strategy

- Information is increasingly a core component of the product or service offered by the firm.
- IT strategy is business strategy – they cannot be created without each other.
- Some company's main product is information (financial services).
- FedEx can not function without IT even though they are primarily a package delivering company.

Chapter 2 - Key Terms

Customer relationship management (CRM) (p. 59) - a tool to optimize the processing of customer information .

Co-opetition (p. 65) - is the strategy for creating the best possible outcome for a business by optimally combining competition and cooperation.

Enterprise resource planning (ERP) (p. 59) - a tool that automates functions of the operations activities of the value chain.

Information resources (p. 47) - the available data, technology, people, And processes available to perform business processes and tasks

Chapter 2 - Key Terms - (Cont.)

IT asset (p. 47) - anything, tangible or intangible, that can be used by A Firm in its processes for creating, producing and/or offering its products, goods or services. (i.e. IT infrastructure).

IT capability (p. 47) - something that is learned or developed over Time for the firm to create, produce or offer it products.

Network effects (p. 48) - the value of a network node to a person or organization, it increases when others join the network. (i.e. e-mail) Rather than use production costs to guide the determination of price, information products might be priced to reflect their value to the buyer.

Chapter 2 - Key Terms - (Cont.)

Resource-based view (RBV) (p. 59) - competitive advantage comes From the information and other resources of the firm.

Strategic alliance (p. 64) – an inter-organizational relationship that affords one or more companies in the relationship a strategic advantage.

Supply chain management (SCM) (p. 59) - an approach to how companies source materials for operations.

Web 2.0 (p. 47) - potential resources that are available to the firm as a service, but that are not necessarily owned by the firm.

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