

THE INFORMATION SYSTEM AS A COMPETITIVE WEAPON

With the help of information system technology, a company can become competitive in all phases of its customer relationships. The customer resource life cycle model makes it possible for such companies to determine not only when opportunities exist for strategic applications, but also what specific applications should be developed.

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Information systems have traditionally been considered primarily in terms of their effects on individual organizations. Researchers have concentrated their efforts on delineating the nature of information system function: operational support versus decision support [24], the impact of information systems on end users [44, 45], or the importance of information systems to the organization as a whole [35]. More recently, however, the external use of information systems as competitive weapons has come under consideration. This can be attributed to several factors, including a decline in the cost of supporting information technologies; structural changes in the economy caused by global competition; and, perhaps most importantly, the deregulation of many industries, particularly transportation and financial services. Companies that were once constrained by regulatory practices have moved quickly in the wake of deregulation to replace limited, well-understood, and well-regulated product lines with varied, ever-changing selections of new products and services.

Recent studies demonstrate that information systems

offer a unique opportunity for competitive advantages in the new business climate. These studies present descriptive models for classifying successful strategic applications and for evaluating the potential of proposed applications. These models are not generally useful, however, for identifying these applications. A more detailed model is necessary: one that can help to find new opportunities for the successful application of information system technologies (IST).

Such an application is strategic if it changes a firm's product or the way a firm competes in its industry. The model that will be used to explain the use of IST in a competitive strategy is the *customer resource life cycle*. This model considers a firm's relationship with its customers and how this relationship can be changed or enhanced by the strategic application of IST.

STRATEGIC INFORMATION SYSTEMS

The Harvard Studies

Much of the research on the competitive application of IST originated at the Harvard Business School. The basis for this research was Michael Porter's work on

industry analysis and the formulation of competitive strategies [43]. Porter (see Figure 1) identified five major competitive forces (CFs):

- CF1—the threat of new entrants,
- CF2—the intensity of rivalry among existing competitors,
- CF3—pressure from substitute products,
- CF4—the bargaining power of buyers, and
- CF5—the bargaining power of suppliers.

Porter maintained that firms wishing to gain a competitive edge should consider building defenses against these forces and formulate specific courses of competitive action that can directly influence these forces. The three generic strategies that a firm may choose to follow in determining its course of competitive action are

- overall cost leadership (being the lowest cost producer),
- differentiation (of a product or service), and
- focus (i.e., finding a specialized niche in an industry).

Porter's analysis of competitive forces does not specifically address IST, but it does provide a framework for investigating the role that IST can play in a firm's competitive strategy.

McFarlan and McKenney [34] were among the first to formally recognize the new role IST was beginning to play in organizations. Their *strategic grid* (see Figure 2) classifies firms on the basis of the criticality of existing applications and the potential criticality of applications under development.

Recent changes in the banking industry illustrate the use of the strategic grid. Prior to deregulation, banks typically fell into the *factory quadrant* with respect to their usage of IST: Information system support was crit-

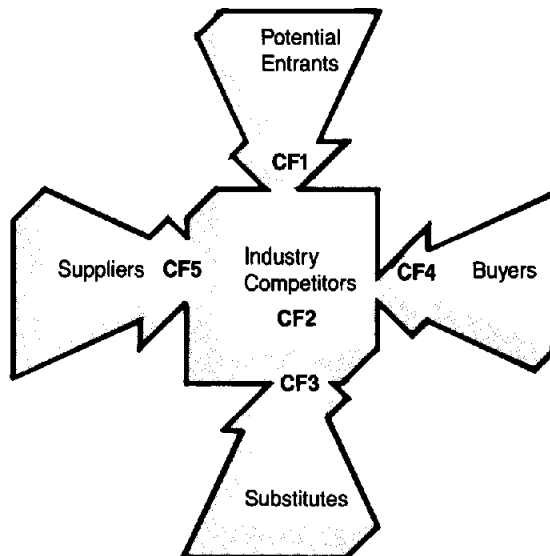


FIGURE 1. Competitive Forces [43]

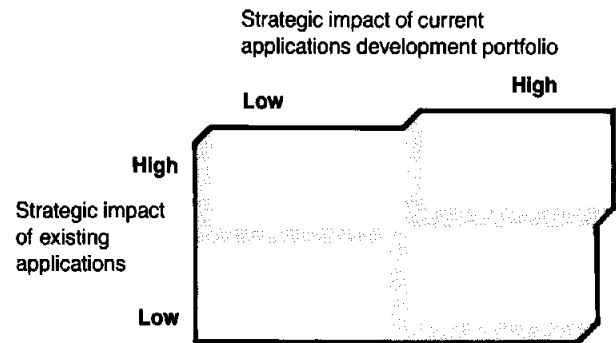


FIGURE 2. Strategic Grid [34]

ical for day-to-day transaction processing, but applications under development were not likely to help a company to achieve a significant competitive advantage. After deregulation, successful banks progressed through the *turnaround quadrant* to the *strategic quadrant*, acting aggressively to get new information-based products to market. This marked a clear shift of IST from a back-office support role to an important instrument of competitive strategy.

In other industries, such as publishing, information systems have not been critical in the past but may soon move from the *support quadrant* to the *turnaround quadrant* as new ISTs begin to offer significant competitive advantages. Eventually, firms in these industries may find themselves in the *strategic quadrant* as IST becomes a critical element of competition.

McFarlan and McKenney use the strategic grid to prescribe an appropriate type of management control system. For example, they argue that it makes more sense to charge for computer resources in the *factory quadrant* than it does in the *turnaround quadrant*. The strategic grid is also useful for evaluating a portfolio of alternative information system investments; it offers little assistance, however, to the firm that wants to *identify* new competitive applications of information systems.

Recently, McFarlan [33] mapped the competitive application of IST onto Porter's competitive forces model. He proposed five questions for assessing the strategic impact of IST on a firm. If a particular question is answered in the affirmative, a strategic opportunity exists that deserves "the highest level thinking." The five questions, with Porter's competitive forces noted in parentheses, are

- Can IST be used to build barriers against new entrants (CF1)?
- Can IST change the basis of competition (CF2)?
- Can IST be used to generate new products (CF3)?
- Can IST be used to build in switching costs (CF4)?
- Can IST change the balance of power in supplier relationships (CF5)?

These questions help a firm to determine *when* opportu-

nities exist for strategic applications but, again, provide relatively little assistance in identifying *what* specific applications to develop.

Parsons [40] also builds on Porter's work, taking a broader perspective than McFarlan by viewing the strategic implications of IST at three levels: the industry level, the firm level, and the strategy level. He suggests that a sound understanding of *when*, *where*, and *how* IST will impact a firm can lead to the recognition of both opportunities and threats.

At the industry level, Parsons focuses on how IST changes the fundamental nature of the industry [40]. This analysis takes account of real or potential changes in the nature of an industry's products or services, the markets the industry serves, and the economics of production in the industry.

At the firm level, Parsons uses Porter's five competitive forces to determine where opportunities exist for IST to directly influence a firm's competitive position. He argues that the traditional criteria for information technology investments (e.g., return on investment) are not always the correct criteria to apply when considering the strategic impact of these investments. It may be difficult, for example, to justify placing terminals in the offices of large customers on the basis of reductions in order-processing costs. Such an installation may nevertheless provide a significant competitive advantage by tying these large customers to the supplier's order-entry system.

In summary, the Harvard studies have made substantial progress in highlighting the strategic potential of IST by developing categories for describing existing applications and by providing qualifying criteria for evaluating proposed applications. However, they do not offer adequate assistance in identifying new opportunities for the strategic application of IST.

Interorganizational Information Systems

The strategic importance of information links between customers and suppliers has given rise to an interest in interorganizational information systems. In the airline industry, competing carriers, travel agents, and consumers are all interconnected through a network of airline reservation systems.¹ In banking, automated teller machines permit banks to enter new markets with minimal outlays of capital [55]. Distributors like Bergen Brunswig [46], GESCO [46], and American Hospital Supply [4] have set up electronic order-entry links with many of their customers that provide better customer service, often at lower costs to the distributors. Standards for the interorganizational movement of electronic transactions have been established by trade organizations for the grocery, warehouse, ocean-carrier, railroad, and motor-carrier industries, among others [16].

McFarlan recognized the importance of the evolving "interorganizational electronic link between customer

¹ See The TWA reservation system, *Commun. ACM* 27, 7 (July 1984), 649-665, for an in-depth description of such a system.

TABLE I. Classification Scheme for Interorganizational Information Systems [3]

Level 1	Remote I/O node
Level 2	Application processing node
Level 3	Multiparticipant exchange node
Level 4	Network control node
Level 5	Integrating network node

and supplier" [34], but cautions that "these links offer the opportunity for competitive advantage on the one hand but pose strategic vulnerability on the other."

Barrett and Konsynski [3] examined the various forms of interorganizational information systems and developed the five-level classification scheme shown in Table I. At the lowest level is the firm that serves only as a remote input/output node for one or more higher level nodes, and at the highest level is "a data communication/data processing utility which integrates any number of lower level participants and applications in real time." Although not rigorously defined, the classification scheme serves as a useful conceptual tool for describing and understanding the multitude of possible interorganizational information systems.

Other Models

Several other studies focus on the strategic importance of information systems. Three are discussed here:

1. McLaughlin et al. [36] suggest that alternative investments in information systems be judged not simply by cost but also by potential for "adding value"; that is, the extent to which marginal revenue exceeds the marginal cost of the investment. An airline, for example, might upgrade a passenger reservation system so it can handle bookkeeping for a "frequent flyer" program. Management might justify the outlay of a million dollars for IST on the conviction that it can leverage a 20 or 30 million dollar increase in revenues over the following year. McLaughlin et al. [36] note that "financial services firms currently use about one dollar of computer hardware for every 30 to 40 dollars of value added."

Value-adding applications² of IST may cause improvements in cost-effectiveness, enhanced market access, and product differentiation, and also cause structural change in the marketplace. McLaughlin et al. hypothesize that organizations vary in the extent to which information systems can add value through technology and also in the capabilities of their information systems departments. This relationship is depicted in Figure 3.

An organization with high value-adding potential but weak systems resources is vulnerable to competitors with better IST resources. On the other hand, if value-adding potential is high and the systems group strong, the organization may be in a position to compensate for the technological weaknesses.

² McLaughlin et al. use the term "value-added applications."

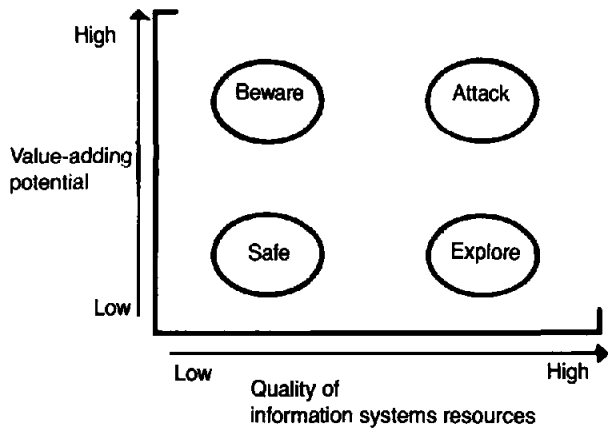


FIGURE 3. Quality of Information Systems Resources versus Value-Adding Potential of Business [36]

2. Benjamin et al. [5] discussed the strategic opportunities presented by ISTs with “top executives and technology managers in two dozen companies.” Based on these interviews they proposed the model illustrated in Figure 4. The model is based on two questions [5]:

- Can IST be used to make a significant change in the way a company does business so as to gain a competitive advantage?
- Should a company concentrate on using IST to improve its approach to the marketplace, or should it center its efforts around internal improvements?

The internal versus external dimension assumes that the uses of an information system need not be directly related to customers to be strategic. As the Japanese have demonstrated, proper operating decisions can be strategic [6]. In the structural change dimension, the adoption of some IST requires significant modifications to current business practices.

3. Notowidigdo [38] also divides strategic information systems into internal systems “that have direct benefit to the company” and external systems “that have direct benefits to the company’s customers,” but which indirectly benefit the company. He notes that in

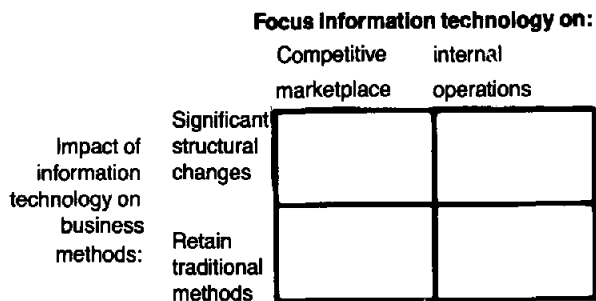


FIGURE 4. Strategic Opportunities Matrix [5]

the past information systems of benefit to the customer were generally found in the service sector, whereas strategic internal systems were developed primarily in the industrial sector. Figure 5 presents a modified version of his model.

Although Notowidigdo specifies “Information Intelligence Delivery” as offering a competitive advantage to corporations, we illustrate below that there are many instances where “Information Intelligence” provided directly to the customer can also result in a significant competitive advantage.

The “mechanisms” shown in Figure 5 (e.g., service delivery, product delivery) provide a useful starting point for identifying specific strategic applications but are still too general to be of direct applicability.

USING THE CUSTOMER RESOURCE LIFE CYCLE AS A MODEL FOR ANALYSIS AND INNOVATION

The models discussed so far are generally descriptive in nature. They help managers to recognize the strategic importance of information systems, present a framework for categorizing various types of strategic applications, and provide criteria for assigning priorities among alternative investments. We now provide an alternative model that we believe can be used to identify new applications or to map existing applications into new settings. We have incorporated numerous examples of such information system applications to enhance the model’s prescriptive capability.

In the context of Porter’s work [43], our model focuses on a single relationship, that is; the relationship between the provider of goods or services and the customer. It is here that the primary competitive strategy evolves: Will management elect to *differentiate* the firm from its competitors in the eyes of the customer, try to become the *low-cost producer*, or seek a special *niche* in the market? ISTs can frequently assist in implementing any of these three strategies, but they are particularly useful for differentiating a product on the basis of customer service.

The Product/Resource Life Cycle

It is generally accepted that an organization’s products or services go through a fairly well-defined life cycle. A typical life cycle model contains stages for

- ascertaining the requirements for the product,
- developing or manufacturing the product,
- managing products in inventory, and
- terminating organizational responsibility for the product.

A similar life cycle model can be applied to the supporting resources that an organization uses to achieve its goals. Within IBM’s Business Systems Planning process, for instance, four stages are proposed for the life cycle of both products and supporting resources [19]:

- requirements, planning, measurement, and control;
- acquisition or implementation;

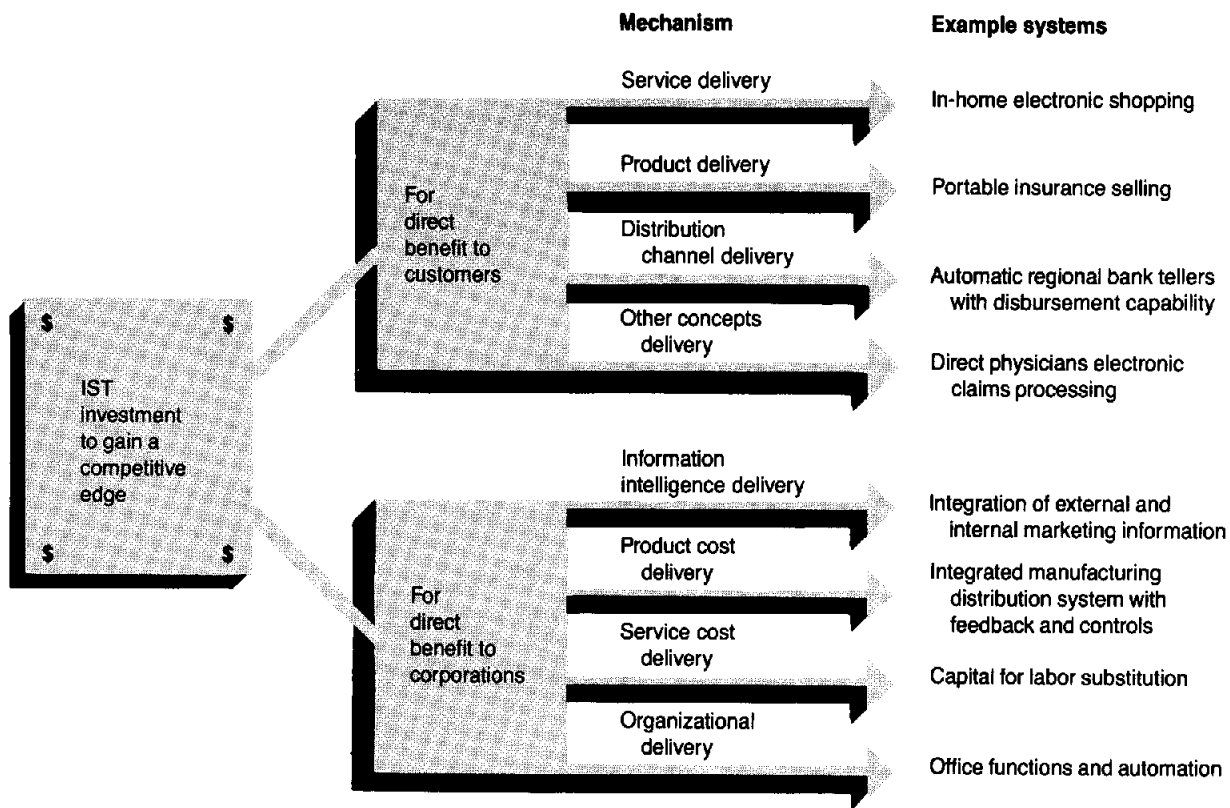


FIGURE 5. Information Systems as a Weapon to Gain a Competitive Edge [38]

- stewardship;
- retirement or disposition.

The Customer's Resource Life Cycle

The products that an organization provides to its customers are, from the customer's perspective, supporting resources. To acquire them, the customer goes through a resource life cycle. This frequently requires a considerable investment of time and effort to manage. If the supplier can assist the customer in managing this life cycle, the supplier may be able to differentiate itself from its competitors, usually on the basis of enhanced customer service or, in some cases, by introducing direct cost savings. In the process, the supplier will typically introduce *switching costs* (costs that customers must bear if they wish to switch to another supplier) for its customer base.

A customer's resource life cycle can be supported through the application of IST provided by the supplier. Frequently, transactions with customers are sufficiently homogeneous that the supplier can justify developing support systems that the customer can't afford. Canning [10] has described a Swedish dairy cooperative that developed forecasting models to assist its customers (retail stores) to accurately predict daily requirements for dairy products. Few retail outlets had the resources or

expertise to develop such a model, but the large customer base permitted the co-op to do it. By focusing on customers' needs, the cooperative was able to use IST to enhance its customer service.

The IBM 4-stage model is a useful starting point for characterizing a customer's resource life cycle activities, but it is too broadly defined to be directly applicable. Burnstine [7] proposed a more detailed 11-stage resource life cycle. By adding two more stages to his model, we present in Table II, a 13-stage customer resource life cycle (CRLC) model, which can serve as the focal point for both analyzing and proposing supplier-developed strategic information systems.

Applying the Model

The CRLC model is useful for categorizing existing competitive information systems and, more importantly, is a prescriptive tool for generating new applications. The model is described through a series of examples that demonstrate its descriptive power.

The examples are drawn from the recent trade literature and from a survey of information system executives. They are not all successful applications, nor are they all still being used; they are meant to illustrate the model and to promote creative ideas for future competitive information systems.

TABLE II. Four- and Thirteen-Stage Resource Life Cycles [7, 19]

IBM stage	Extended model	Description
Requirements	Establish requirements	To determine how much of a resource is required.
	Specify	To determine a resource's attributes.
Acquisition	Select source	To determine where customers will buy a resource.
	Order	To order a quantity of a resource from the supplier.
	Authorize and pay for*	To transfer funds or extend credit.
	Acquire*	To take possession of a resource.
Stewardship	Test and accept	To ensure that a resource meets specifications.
	Integrate	To add to an existing inventory.
	Monitor	To control access and use of a resource.
	Upgrade	To upgrade a resource if conditions change.
Retirement	Maintain	To repair a resource, if necessary.
	Transfer or dispose	To move, return, or dispose of inventory as necessary.
	Account for	To monitor where and how much is spent on a resource.

*Not included in Burnstine's [7] original list, but subsumed instead under *Order* and *Test and accept*.

Although the examples are drawn from a variety of industries, they are often surprisingly similar when viewed in a particular stage of the resource life cycle. In each case a supplier is using IST to attend to some aspect of a customer's resource life cycle, often by enhancing customer service. In some instances (typically, retail stores), the customer may resell the product to another customer, in which case the supplier may provide IST support to either the immediate customer or to the final customer. In other instances, the supplier may be providing a service of interest to both customers and other suppliers; for example, an airline reservation system provides a service to the air traveler, travel agencies, and other air carriers.

Some applications bridge two or more CRLC stages: The Swedish dairy cooperative provided retailers with estimated requirements in the form of pro forma orders; the retailer then had the option of either using these prespecified orders or changing them. The pro forma orders assisted the retailer in the *specification* as well as *requirements* stage of the life cycle. We have found applications covering as many as six life cycle stages.

Example Uses of IST in the CRLC Model

Here are the 13 stages of the CRLC, accompanied by examples of suppliers addressing a customer's resource life cycle needs with IST.

1. *Establish requirements.* In the first stage, requirements are established for the resources to be acquired. This involves estimating future needs for the resource.

- Owens Corning Fiberglass uses data on energy efficiency to help builders evaluate insulation require-

ments for new building designs. Evaluations are provided free of charge to builders meeting minimum standards of energy efficiency, if they agree to purchase insulation from the vendor [8].

- The Sylvania Commercial Lighting Division of GTE supplies sales personnel with portable computer terminals. The sales representatives then access a system to analyze prospective customers' lighting requirements and can prepare sales proposals on-site [42].
- Several taxi firms have installed terminals in their cabs that display the number of empty cabs cruising in various cab zones; drivers use this information to calculate where requirements are greatest [53].

2. *Specify.* The customer must specify the attributes of the required resource.

- The Inventory Locator Service allows air carriers to specify the parts they require for repairing airplanes undergoing maintenance. If so requested, the system automatically generates "request for quotation" letters to potential suppliers [11].
- A greeting-card distributor developed a system for reordering that frees retailers from involvement in specifying particular cards. When a particular card is sold out, the retailer returns the reorder ticket at the back of the stack; the system determines the type of card (e.g., father's birthday) and resupplies, not with the same card, but with one specified by the system, usually the best-selling card in the particular category.

3. *Select a source.* The customer must locate an ap-

appropriate source for the required resource. Opportunities for the application of IST are frequently in an intermediary firm that links customers with suppliers. This involves matching clients' resource needs with appropriate suppliers.

- The Official Airline Guide displays potential flights after the user specifies a departure and destination city and a time and date of flight [27].
- Automated Directory Services provides residents of Washington, D.C., with an on-line alternative to the Yellow Pages; the system gives callers the names of appropriate nearby businesses [26].

Other systems locate alternatives when the desired product is unavailable.

- The Phone In-Drive Thru Market of Los Angeles permits customers to order groceries by phone and pick them up at store loading docks. The system suggests alternative products if a requested product is currently out of stock [47].
- The Inventory Locator Service (previously described under *Specify*) also provides a "parts number cross reference database" to assist users in identifying interchangeable parts provided by alternative vendors.

4. *Order.* After selecting a source, customers place orders. Reservation systems were among the earliest IST support systems for order taking and have become an effective strategic weapon for some airlines [see, for example, [2]].

- Distributors such as American Hospital Supply, McKesson Pharmaceuticals, General Electric Supply Company, and Arrow Electronics have all established sophisticated round-the-clock order-entry systems that accept a customer-entered order without human intervention [4, 13, 51].
- Bergen Brunswig, a pharmaceutical supply distributor, leases hand-held computers to its customers. Orders can be entered via these devices to one of several warehouses and are shipped the following day [46].
- Comp-U-Card, using an on-line database, lets customers place orders directly with suppliers for products ranging from electronics appliances to chocolates [54].

5. *Authorize and pay for.* Before a resource can be acquired, authority for the expenditure must be obtained and payment made (or arranged).

- J. C. Penney has made their on-line retail credit network available to such other retailers as Shell and Gulf. Originally designed to authorize and process credit sales for J. C. Penney, the system is now being offered as a service to organizations requiring credit authorizations. For Shell and Gulf, the network makes credit-card sales competitive with cash sales [32].
- Exxon is pilot testing a debit-card network that immediately debits customer bank accounts for purchases made with Exxon's AutoCard. The retail cus-

tomers is provided with most of the conveniences of a credit card but at the same per gallon discount they receive for a cash purchase. The retailer, meanwhile, is spared most of the aggravation of credit-card sales [18].

- Mass Mutual's Magnet information system was designed to calculate large customers' insurance premiums on a daily basis. The company had previously collected monthly premiums in advance. Customers thus have the use of their money for a longer period of time [8].

6. *Acquire.* Information technology provides a variety of ways for customers to acquire products directly or to have them delivered more easily.

- Automated teller machines normally deliver money to customers but also dispense airline and ski lift tickets [18, 30, 36] and store coupons [9].
- New magazines, such as the *I.B. Magazette* and *Mentor*, published on computer disks, let the reader interact in novel ways with "articles" and even advertisements [12].
- Dial-up networks, such as The Source, give subscribers access to articles and columns "user published" by people from their homes and offices [41].
- Telesun Co. permits customers to download purchased software to their personal computers [17]. DRI, a subsidiary of McGraw-Hill, provides a similar capability for econometric data [33].
- INC Telecommunications [50], is also involved in downloading software but uses satellites and radio to broadcast the product to special receivers.
- Customers at the Phone In-Drive Thru Market of Los Angeles call ahead and then pick up their orders from their cars [47].

7. *Test and accept.* The customer or a third party must verify the acceptability of a new resource before putting it to use.

- The First Boston Corporation markets Shelternet, a product that matches people seeking mortgages with mortgage-granting institutions. Shelternet also analyzes buyers' credit ratings and other information, and conditionally approves them. The system is thus providing a conditional test/accept function for its mortgage-granting customers [29].
- Western Union provides a service for matching freight shippers with motor-freight carriers and checking to ensure that responding carriers have appropriate authority and insurance to qualify for the prospective load [14].
- Medicare-Glaser's drug interaction detector tests a prescription against other drugs customers may be taking and flags potential problems [15].
- Emery Worldwide provides certain customers with reports showing transit-time data that permit evaluation of Emery's delivery performance [22].

8. *Integrate into and manage inventory.* Once acquired and accepted for use, a resource must be added

to the existing inventory of resources and its usage managed.

- Westvaco, a supplier of paper products to printers, has developed WestTrak. As customer orders are about to be shipped, WestTrak informs customers' computers that an order is in transit and provides essential identifying information about the shipment. When the order arrives, receiving clerks use a wand to transmit an identifying bar code to the printer's computer, which then immediately records the availability of resources placed in inventory [23].
- General Electric Supply Company provides an interesting tool to assist customers in inventory management. Basically, GESCO commits to stock, for a specified time, a prearranged quantity of items that are purchased repetitively. The distributor in effect keeps inventories for customers [51].

9. *Monitor use and behavior.* Customers must ensure that resources remain acceptable while in inventory.

- ARA Services distributes magazines to a variety of retail establishments. Unsold magazines are returned to ARA for a refund. Returns are machine processed, which permits ARA to monitor sales information so as to make appropriate decisions about which magazines the customer should stock [39].
- Fidelity Brokerage Services' "Investors Express" lets users initiate orders to buy and sell stock and to maintain personal portfolio records. It provides a capability for customers to automatically monitor the movements of up to 18 stocks in a portfolio [31].

10. *Upgrade if needed.* If requirements change, it may be necessary to upgrade resources.

- The greeting-card distributor system described in *Specify* automatically selects appropriate greeting cards, in effect upgrading the retailer's inventory on the basis of observed market demand.
- Bergen Brunswig monitors product sales data for druggists and then uses those data to support its "Space Management" product. For a monthly fee, customers are advised on shelf arrangement and potential upgrades related to product choice [48].
- PRC LoanExpress matches people looking for mortgages with potential mortgage holders. The system provides mortgage holders with the ability to upgrade mortgage offerings as conditions change [49].

11. *Maintain.* Occasionally, the suppliers need to make repairs to keep resources in good operating condition. This may be a requirement of the transaction or simply good business practice.

- Sears uses information systems to support its maintenance service by sending out annual postcard reminders to people whose maintenance contracts are about to lapse. They also offer special package deals to customers who have made multiple appliance purchases but have yet to purchase maintenance con-

tracts. The program has boosted service revenues and benefited marketing by improving customer goodwill [8].

- Some Chevron retail dealers are now using personal computers to notify customers that they are due for service visits and to support the mechanics who maintain customers' cars. A running record of previous maintenance is also provided. This service encourages customers to consistently rely on Chevron dealers for maintenance needs [56].
- American Express offers a credit-card registry service that provides for lost or stolen cards. A call to American Express initiates appropriate notification to other credit-card providers [1].

12. *Transfer or dispose.* Customers will eventually transfer or dispose of resources. As this usually happens after a considerable amount of time, suppliers will not normally be involved. An exception occurs when the resources are rented or must for some other reason be returned to a supplier.

- Avis uses ATM-like machines to shorten the car-return process. Customers enter a few pieces of data, and the machine concludes the rental transaction, returning an itemized receipt [18].
- The Washington Hotel in Tokyo is using an automated registration "robot" to check guests in with no manual assistance and, on the way out, to "eat the key and inform you of how much you owe for cold drinks and telephone calls" [20].

13. *Account for.* Customers must monitor where and how much money is spent for resources.

- AMEXCO has combined traditional credit services with a travel-agency function. Large corporations can obtain travel services from American Express Travel Related Services, pay with a corporate credit card, and receive reports from AMEXCO on how travel funds are being spent [52].
- Many retail drug stores, as a service to their customers, provide a detailed accounting of their customers' drug purchases, for income-tax purposes. Even a small local druggist, with the aid of a personal computer, can offer this competitively attractive service.

CONCLUSION

The strategic application of IST can frequently provide firms with a competitive advantage. IST can help a firm to become the low-cost producer for a given product or service, can help it to define and service a specially defined market niche, or can help it to differentiate its product offering from its competitors'.

The importance of this trend has received attention in the literature—several authors have provided models and frameworks for classifying and categorizing strategic applications of IST. These models, for the most part, are descriptive in nature. They do not help a company to find new or innovative applications.

The CRLC model provides a more detailed descriptive model for identifying and categorizing strategic applications of IST by focusing on the possible differentiation of a firm's product from competitors' products on the basis of customer service. The application of IST to any of the CRLC stages serves to build and maintain the loyalty of a firm's customer base. At the same time, however, the model serves as a vehicle for identifying potentially important opportunities for applying IST competitively. As a firm examines its role from the CRLC perspective, it discovers opportunities to enhance its overall strategy.

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