Corporate Strategy and IT Investments

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Information Technology (IT) investments are becoming increasingly critical as businesses compete in a global, competitive, information-intensive environment.

Change is coming from all directions. This is particularly true in the world of information technology (IT) where the IT executive is usually in a reactive mode and often has to gamble on where technology will ultimately end up. And while some chief executives want their IT managers to go “back in the glass house where they belong,” the majority are demanding payoffs from their IT investments—business payoffs. All this in a world in which restructuring is the dominant paradigm, information technology is the dynamic catalyst, and intense competition and globalization are the norm.

Regardless of who controls the technology, most businesses in this information-intensive environment would like to see their information systems move as one with the direction taken by the business or business strategy. This must be done with increasingly pricey investment dollars that do not seem to be growing at the 30 percent annual rates that typified IT investments in the 1970s and 1980s. Now the call is for justifying the IT impact on business process improvement, quality, service, and competitiveness. Response time, system power, capacity, and backup procedures should be relegated to the background at any management presentation. Whether it is due to media hype, pressure to compete, or the so-called productivity paradox, the bottom line is that expectations from IT in many cases are sky high, while the precious few marginal investment dollars are demanding careful business justification. In other words, alignment of IT investment with business strategy is essential.

What are the investment priorities of contemporary businesses in today’s turbulent environment? Are all businesses uniform in their information systems investment priorities? And to what extent is the profile of IT investments changing with the needs of the business and its strategic direction?

Information Technology Investments

In today’s fast-moving world, neither technology nor terminology lasts very long. Interestingly, while the underlying technologies change, the business functionality of the systems themselves is relatively stable. For instance, corporations today often require system investments that

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focus on
- automation of the routine processing of orders, invoices, reservations, etc.;
- provision of information to managers and executives for better decision making;
- facilitation of the ability to compete in the marketplace;
- establishment of a corporate platform or standard;
- improvement or transformation of business processes; and
- enhancement of existing systems.

These functions form the basis for the classes of systems used in the study on which this article is based. The system investments are generally independent of any particular technology, but reflect the basic types of systems that can be used by business organizations. In some sense, the classification reflects the evolution from data processing systems of the 1960s and 1970s, which were typified by mainframe technologies; to the information and executive systems of the 1970s and 1980s, which reflected the advent of individual computing; to the competitive and transformational systems of the 1980s and 1990s, which reflect the need to bring technology from the back office to the forefront of business. While underlying technologies may have fundamentally changed from legacy systems to client-server platforms, the functionality and capability of IT to do new things for business has simply expanded.

The following set of distinct investment priorities was provided to the corporate respondents to our survey.

1. **Strategic Systems**: systems to support and influence current strategy.
2. **Traditional Development**: those applications that support transaction processing and information reporting.
3. **Decision Support Systems**: those systems that support managerial decision making, such as executive information systems, group decision support systems, expert systems, etc.
4. **Infrastructure Investment**: investment in corporate-wide technology such as database or network construction.
5. **Business Process Redesign**: those applications of IT involving major changes to existing business processes.
6. **Maintenance and Enhancement** of existing systems.

Respondents were asked to rank the six IT investments above from 1 (highest) to 6 (lowest) in terms of their “importance to your organization.” Doing so forced respondents to prioritize and make trade-offs among the various systems.

**Figure 1**

Ranking Profile of IT Investment Priorities

<table>
<thead>
<tr>
<th>IT Investment</th>
<th>Rank</th>
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<tbody>
<tr>
<td>Strategic Systems</td>
<td>1</td>
</tr>
<tr>
<td>Traditional Development</td>
<td>2</td>
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<tr>
<td>Decision Support Systems</td>
<td>3</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>4</td>
</tr>
<tr>
<td>Business Process Redesign</td>
<td>5</td>
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<tr>
<td>Maintenance</td>
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**Environment and Strategic Orientation**

One of the objectives of our study was to assess whether the investment priorities listed above were consistent across all organizations or did they really differ in some systematic way with corporate direction and environment. To assess the different aspects of corporate orientation, five characteristics were measured.

First, competitive intensity was assessed to determine whether the profile of investment priorities is different in the case of companies in highly competitive environments versus those that are not. This was assessed by asking respondents to indicate on a 7-point Likert scale (1: strongly disagree to 7: strongly agree) whether they view price competition as severe in their industry, whether firms in their industry are spending more on marketing to cope with competition, and if they viewed the competition as intense.

Second, strategy proactiveness was assessed as representing the extent to which the firm is aggressive in being the first to try new things in the marketplace. The central question here related to whether the IT investment profile of companies that were proactive would be different from companies that were not.

Respondents were asked on a similar 7-point scale if they agreed with statements on whether they view their firm as constantly seeking new opportunities, being the first to introduce new products, constantly looking for businesses to acquire, expanding capacity ahead of competition, eliminating mature operations, and adopting a risky view when making major decisions.

Then, cost strategy, differentiation strategy, and focus strategy orientations (the third, fourth, and fifth characteristics) were assessed in order to represent a well-accepted taxonomy of generic strategies. In other words, does a firm pursue a cost orientation in being the low-cost producer of a product or service (cost strategy), or does it attempt to differentiate its product or service in the eyes of the
customer (differentiation strategy), or does it segment the market and tailor the product or service (focus strategy), or does it try to do a combination of these? The impetus for many of the structural changes today is cost, while numerous organizations try to create customer loyalty by differentiating their product.

With significant improvements in customer information, the ability to narrowcast (rather than broadcast) to specific market segments is becoming an increasingly powerful means of competing. The interesting question is whether firms change their IT investment profile in accordance with their strategic orientation.

Strategic orientation was determined by asking respondents on a 7-point scale to assess whether various items were important for them to compete (1: not at all important to 7: very important). For a cost orientation, the items were efficient operations, competitive pricing, procurement of resources, and production and service procedures. For a differentiation orientation, the items were new product/service development, brand recognition, advertising, and innovative marketing. For a focus orientation, the two items were servicing special geographical markets and tailoring products/services to special customer needs.

**Findings**

The profile of IT investment priorities for the entire sample surveyed is illustrated in Figure 1. This figure provides an indication of the range and median ranking for each type of IT investment.

As is evident from the figure, systems that focus on competitive strategy are clearly the top investment priority. These systems reflect the growing number of interorganizational relationships, where suppliers of products and services attempt to build umbilical cords with their customers through information systems. Also, newer forms of relationships involving cooperation among traditional competitors or companies in different industries are becoming more common. These relationships (e.g., between Citibank and American Airlines for their mileage-for-dollar credit card program) often leverage investments in such strategic information systems. It will be interesting to see these systems evolve on the Internet platform with the current explosion of electronic storefronts and Web pages.

Investments in business process redesign (BPR) and IT infrastructure have the next highest rankings among the sample respondents. While the mean rankings of these two investments are not significantly different, the raw data suggest that more rank BPR as their first or second priority. These investments cumulatively reflect recent trends toward the newer, more flexible, and flatter organizational structure necessary for coping with continuous change. The newer storage and access media and concepts of data warehousing and data mining reflect the trend toward establishing better control of organizational data. By investing in data infrastructure and the growing cadre of networking technologies, integration and coordination among organizational subunits is promoted. This is the essence of reengineering, which promotes rethinking business processes by eliminating hand offs across departmental units, reducing redundancy, and making participants aware of the entire

<table>
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<tr>
<th>Competitive Intensity and IT Investment Priority</th>
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<tr>
<td>Mean Rank</td>
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<tr>
<td>Competitive Intensity</td>
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<td>Low</td>
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process and its deliverables rather than only a specialized task. Therefore, these two types of investments are interrelated.

More traditional investments like Decision Support Systems (DSS) and transaction processing/information reporting are lower investment priorities. In other words, while these investments might still require a significant portion of the IT budget, they might not be absorbing new investment dollars. Further, the cost/capability ratios of today's microcomputers and associated software, coupled with communications and interface technologies, make powerful information support systems for managers. Many of these systems might interface directly or indirectly with transactional databases. These internal support systems could be equated to the concept of an information utility, i.e., aspects of the information function that are essential for, but not critical to, organizational performance.

Somewhat related, but a notch lower in priority, is investment in the maintenance and enhancement of existing systems. We would expect that while the maintenance of legacy systems and older programming standards is not an investment priority, it is a necessity, given the magnitude of prior investments in traditional platforms. As organizations change to object-oriented standards and more flexible client-server architectures, maintenance and enhancement will be easier and less expensive – and necessary for coping with dynamic environments.

It should be noted that these investments, while reflecting distinct objectives, might be interrelated. Ideally, all investments in IT should be bound by the common objectives of the business.

**Investment Profiles in Different Groups**

The profiles were observed for different subgroups of the sample. These subgroups were divided based on the average score. Respondents above the average were classified in the “high” group and those below in the “low” group.

Investment profiles are illustrated for each group, with a higher average ranking indicated by a lower number. It should be noted that since the sample is large, even small differences among profiles are significant.²

Figure 2 provides the investment profile for competitive intensity. The profiles for corporations in highly competitive environments differ somewhat from those in less competitive environments. Infrastructure investments are ranked higher among
companies that face more competition, perhaps in response to the need to have a consistent flexible platform. But, surprisingly, investments in strategic systems are similar among both groups, suggesting that these systems are important for competing, regardless of the level of competition.

Figure 3 provides profiles based on high- and low-strategy proactivity. These profiles differ substantially. Of particular interest is the rank of traditional development and maintenance investments for highly proactive companies. These average rankings are substantially lower than those in less proactive companies. In other words, highly proactive companies do not view investments in traditional systems as being as important as less proactive companies. This might reflect the need of highly proactive companies to be innovative and aggressive in pursuit of new products and markets, which require IT support rather than the more stable transactional base systems. This is borne out in the observation that proactive firms rank investments in strategic systems higher than less proactive firms. Therefore, the results do seem to indicate that a firm’s proactiveness is reflected in its IT investments, particularly in promotion of market-based strategic systems rather than traditional ones.

Figure 4 illustrates profiles representing firms with a “weak” cost strategy orientation and those with a “strong” cost strategy orientation. While the profiles are similar, two observations can be made.

First, reengineering investments (i.e., business process redesign) is ranked higher in firms with a strong cost strategy. This indicates IT investments in systems that facilitate reengineering are attempting to reduce costs. The impetus for many of these reengineering projects is cross-functional integration and resource sharing and an attempt to eliminate redundant activities and improve the cost performance of the process.

Second, the remaining profile is similar, including investment ranking of strategic systems. This might suggest that strategic systems are important regardless of the cost orientation of the firm. Firms with a weak cost orientation, however, do tend to rate traditional investments and maintenance slightly lower.

The profile of firms with weak and strong differentiation strategy is illustrated in Figure 5. These profiles support the fact that companies with a strong need to differentiate will rate strategic systems investments much higher and traditional investments lower. Also, investments in DSS and such informational systems are rated higher. This means companies with a strong need to differentiate should use IT to obtain better information and to compete.

A very similar two-group profile can be observed in Figure 6 for the focus strategy. Therefore, strategic systems seem to be more important for firms pursuing product differentiation or targeting customers through market differentiation.

The results of this study show how contemporary organizations prioritize their IT investments. These investments are particularly important in an environment where change is constant, IT is becoming integral to businesses, and new investment dollars are scarce.

In general, the results indicate that leveraging IT for competing in the market is the major priority of the sample. These strategic systems are particularly important for proactive firms that seek to differentiate their products or target segments of the market, regardless of the level of competition they face. Firms in more competitive environments, however, do tend to rank infrastructural investments higher. Also, reengineering investments are particularly high in firms that push a low-cost-orientation.
While both infrastructural investments and reengineering priorities rank high, they also tend to have less variance among firms. In other words, most firms might see both these investments as necessary to gear up for the future. Firms that are more proactive and have any definite kind of orientation (i.e., toward cost, differentiation, or focus) tend to rate traditional development and maintenance lower, possibly reflecting the "utilitarian" nature of these systems. These systems are popular candidates for outsourcing, particularly in cases where standardized operations and procedures are involved.

While the IT catalyst is forcing many organizations to undertake change, the results do provide some indication of the link between business orientation and IT investment at a macro level. The tight coupling of an organization’s resources, including those related to information and technology, with business needs and orientation is essential for firms wishing to harness and direct the power of modern systems.

The measures used were adapted from various sources. They have been statistically revalidated. These analyses are not presented in this article.

*A difference of 0.2 in average rank is statistically significant.

For More Information

James K. Ho, *Prosperity in the Information Age* (Wilmette, Ill.: Infotronics, 1994).

Editor’s Comments, “Probing the Productivity Paradox,” *MIS Quarterly* 18 (1994).
