



IS Development: Marketing Applications Move to the Forefront

*I*nformation systems today often emphasize marketing applications over more traditional accounting/financial applications, reflecting growing emphasis on consumer relations. A recent survey of IS managers reveals many organizations are devoting the majority of IS resources to marketing applications regardless of CEO and organizational characteristics.

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Information Systems (IS) began as a support tool for basic internal activities such as accounting and have evolved to be an integral part of the way a firm functions in its external environment. IS is continually being evaluated for its potential to support boundary spanning functions such as marketing. This is not a new concept: Kotler first proposed the concept of a marketing information system nearly thirty years ago, yet it has only been in the last decade that telecommunications technologies have evolved to the point that IS could effectively meet marketing's real-time computing needs.

The evolution of IS in marketing has followed a pattern that is similar to that in other functional areas. It was first used to support internal activities such as forecasting, warehouse

allocation, order entry, and internal report generation. In the 1980s, marketing managers began to use decision support systems and expert systems for support of more unstructured decision making such as how to respond to competitor activities or whether to offer a new product. Today, many sales representatives carry computers in their briefcases that are far more powerful and less costly than the early mainframes in Kotler's day.

The number of firms using IS to support marketing applications has steadily increased over the years. According to a 1991 survey by Higby & Farah, only one-third of the firms surveyed in 1971 used IS for marketing; by 1985 this number had increased to 75%; and 90% of the firms surveyed in 1991 used IS to support marketing. Marketing departments are using com-

puting technology for a variety of applications including telemarketing, on-site market analysis, planning strategy, automating the sales process, and for geographic information systems in which they map customer demographics, sales, and trends in the market.

This study assesses the extent to which IS is used by three common functional units: marketing/sales, accounting/finance, and manufacturing/operations. Because we are making comparisons across a variety of functional applications, and because there is ample evidence of the type of marketing applications that are supported, we do not examine specific applications. The ability of IS to position the firm competitively in the marketplace through use of technology is becoming increasingly crucial to the very survival of IS in many firms. This study can help the savvy IS professional gain advantage by becoming more aware of this growing trend in the IS marketplace.

In addition, findings provide information about the CEO support that IS might expect for this movement. For example, if the CEO has an accounting background, will marketing be short-changed? The relationship between various CEO/organizational characteristics and the IS emphasis in each of these units is examined to assess differences among CEOs of firms that emphasize particular functional areas (See Appendix A on page 40).

What IS Managers Revealed

A questionnaire was mailed to a systematic random sample of 252 IS managers listed in Standard and Poor's Register of Corporations, Directors, and Executives. Forty (40) usable questionnaires were returned for an adjusted response rate of 17%. The relatively low response rate may be partially due to the use of IS managers to report on CEO traits. However, senior IS managers often provide more usable responses than do CEOs, and it is often easier to obtain usable responses from them than from CEOs.

Although a large number of firms equally distribute IS application development among all functions, these findings profile firms that emphasize a particular functional area (Figure 1). Of these firms, 60% emphasize the marketing/sales function. This is consistent with the findings of a recent *Computerworld* survey by Sullivan-Trainor in which 58% of respondents reported that sales/marketing receive the most IS attention, followed by manufacturing and finance.

Accounting/finance applications were among the first to be automated and supported by IS, yet they are not the primary area of emphasis in many IS shops today. Most accounting applications consist primarily of basic, organization independent functions that are homogeneous among firms. There is a proliferation of financial software packages ranging from those appropriate for small, single owner businesses to large, multinational corporations.

going changes. Firms have found that in order to compete in the global marketplace, they must focus more attention on product quality, a concept that has been redefined by global competition which has placed renewed emphasis on the role of consumers in quality. Thus, in order to compete effectively, firms must be able to discern what customers want, and they must be flexible and responsive to customer specifications.



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Thus, there is less need to focus on the development and maintenance of accounting applications because they can be easily purchased and coupled with continuous upgrade agreements from external sources. A report in the June 1992 issue of *Datamation* indicates that 80% of an organization's accounting needs can be met with any number of available vendor products.

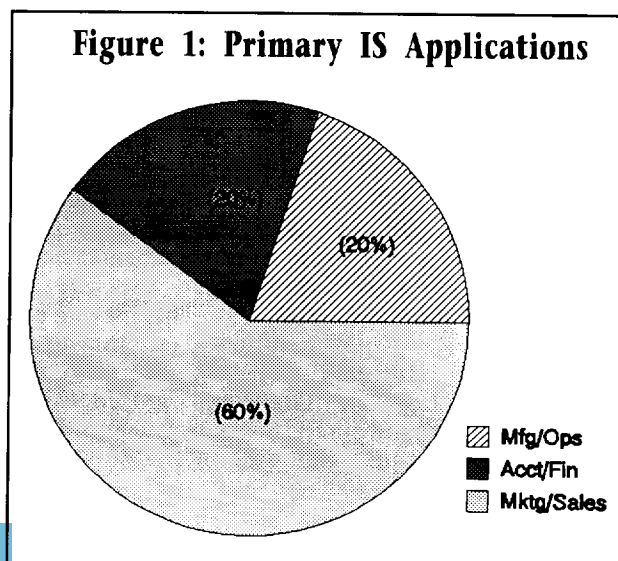
While support of accounting applications was becoming standardized, marketing/sales activities were under-

Flexibility is an important key to competitive advantage and often requires real-time responses to satisfy a variety of customer needs.

The effective use of computer systems is increasingly recognized as a critical component of a firm's ability to market products competitively. For example, one of the first questions asked by the new president of a major U.S. furniture manufacturer was why the company's salesforce had no portable computers: the short answer:

"they will soon." [4] Many companies have implemented or are considering implementing automated salesforce systems.

Because of the strategic nature of gaining market share, marketing is a function that is non-homogeneous among organizations. Off-the-shelf strategic marketing packages are not common, and customer relations are too critical to be entrusted to outsiders. Therefore, information systems for many marketing applications must be



developed internally: hence, the large number of firms for which marketing is the primary IS application.

The Role of IS

Table 1 profiles the proportion of respondents that emphasized each functional area with regard to each CEO/organizational characteristic that was examined.

IS may be a part of the product/service a firm offers, such as Federal Express, or it may support the provision of the product or service as in most manufacturing settings. IS applications are primarily marketing/sales oriented in 83% of the firms in which IS is part of the product or service (Table 1).

In these firms, responsiveness and flexibility to customers may actually be part of the product, thus the emphasis on marketing/sales applications.

Table 1: CEO/Organizational Influence on Functional Area IS Emphasis

CEO/Organizational Characteristic	Acct/Fin*	Mfg/Ops	Mktg/Sales
IS is part of product/service	17	0	83
IS supports product/service	21	29	50
CEO Tenure: <=5 years	11	11	77
(time as CEO > 5 & <= 15 years)	25	25	50
at that firm) > 15 years	33	17	50
CEO Background: Acct/Fin	0	40	60
Mktg/Mgt	10	10	80
Other	50	25	25
CEO Origin: Promoted in firm	20	27	53
External hire	20	0	80

* Percent of respondents emphasizing each functional area

However, IS applications are marketing oriented in 50% of the firms in which IS provides support for the provision of the product or service. Manufacturing/operations applications are emphasized in 29% of these firms, whereas no firm in which IS is part of the product or service emphasizes manufacturing applications.

Although manufacturing applications are organization critical, responsibility for them has traditionally been shared with the engineering area, thus information technology resources devoted to manufacturing are partially funded from outside the IS area. In most manufacturing firms, IS supports the provision of the product, rather than being part of the product:

hence the lack of manufacturing emphasis in the IS area of the latter.

CEO Influence

The CEO significantly influences the choice of applications that IS develops via budgets, project approval, and resource allocation. A profile of applications reveals characteristics of CEOs who support various IS activities. Characteristics examined included how long the CEO has held that position at his/her current firm, CEO's functional background, and whether the CEO was promoted from within the organization or hired from another firm.

CEO Tenure

The majority of CEOs emphasize marketing/sales applications regardless of tenure in the position (Table 1). However, CEO tenure does have a bearing on the extent of emphasis. The largest group of firms that emphasize

marketing/sales have CEOs who have been in the position 5 years or less (77%). On the other hand, only one-half of the firms who have had the same CEO longer than 5 years emphasize marketing/sales.

Experience reflects knowledge and tradition. CEOs with over 15 years experience are the largest group (33%) for which IS primarily supports the accounting function. This may be partially explained by the fact that the IS tradition is steeped in accounting applications. These experienced executives bring to their jobs the knowledge and understanding of the importance of this activity, thus the continual emphasis on the accounting/finance function.

In contrast, CEOs with medium levels of experience (between 5 & 15 years) are the largest group to emphasize manufacturing/operations applications (25%). At the time these CEOs rose to their positions in the late 1970s and early 1980s, the computer revolution in manufacturing was in full force. The decreasing cost of software development, maintenance, and hardware coupled with technological breakthroughs enabled a multitude of smaller and mid-sized firms to adopt applications that were traditionally reserved for large organizations. For example, in the early 1980s a proliferation of Material Requirements Planning (MRP) packages for small scale systems emerged, whereas prior to this, only multi-billion dollar firms could justify using MRP.

In addition, during the time period in which these experienced CEOs started their executive tenure, organizations were placing a renewed emphasis on the efficiency of the manufacturing/operations function in response to the global marketplace. Productivity, quality control, scheduling, and production control moved to the forefront of organizational issues; thus, the emphasis on developing information systems for these functions CEOs with this level of experience bring with them insights into the use of manufacturing/operations applications to gain competitive advantage.

Less experienced CEOs (5 years or less) have come to the head of the organization in a different era. In the late 1980s, a renewed emphasis was placed on the customer. Newer CEOs are more likely than their more experienced counterparts to take an active role in IS management, and therefore be more aware of IS opportunities to better meet customer demands. Hence the overwhelming majority of firms with relatively new CEOs that primarily develop IS applications to support marketing.

CEO Functional Background

Although experience may affect the allocation of the IS resource, it appears that the functional background of CEOs does not (Table 1). Even CEOs with accounting/finance backgrounds do not emphasize accounting applications to a large extent: in this survey, no CEO with an accounting or finance background utilizes IS primarily for accounting/finance applications. Sixty percent of them emphasize marketing/sales and 40% emphasize manufacturing and operations.

As expected, the vast majority of CEOs with marketing or management backgrounds emphasize marketing/sales applications (80%). Presumably, CEOs with marketing or management backgrounds have greater insights into the importance of consumer relations and strategic marketing than do those with other backgrounds — thus their emphasis on marketing/sales. On the other hand, an accounting background may provide the CEO with insight into the extensive array of existing accounting applications, thereby

extent than do executives who are more internally focused.

Conclusions and Implications

Overall, the industry has moved toward the use of IS to support the renewed emphasis on customer relations. Although these findings are based on descriptive statistics from a small sample, it appears that when firms emphasize IS applications in a particular functional area, that area is marketing. Table 2 profiles firms in

ambitious and that IS people are often do not distinguish between real and ideal benefits.

There is also evidence of large dollar investments in IS in companies where that investment is extremely underutilized [9]. IS managers who take advantage of this and provide the firm with opportunities for automating marketing/sales support will be instrumental in leading their companies into the future.

At the same time they will help secure the position of IS in a world where outsourcing and downsizing are commonplace, and in which IS is increasingly being called upon to be more knowledgeable about the business as well as the technology.


However, IS commitment to support marketing applications is not enough. First of all, IS professionals have minimal contact with customers, thus marketing must clearly communicate to IS what they need to better serve the customer. Next, IS professionals may have little contact with the users of these marketing information systems. The time users are able to devote to an IS development project is a major constraint on any project, but the limits may be exacerbated in some marketing applications.

For example, when developing an on-site market analysis system for a sales force that is only in the office one week out of each month, it may be very difficult to gain access to the salespeople who will actually be using the system.


Salespeople often do not use the technology they are given because they do not understand its benefits, are not trained to use it, are unaware of many of its features, or feel threatened by automation. Marketing managers must be aware of these issues and work with IS to remove obstacles to proper communication between developers and the users. For example, many salespeople are paid commissions based on total sales.

Given a choice between contacting customers and earning commissions or learning to use a computer system and not earning commissions, most will choose the former. Thus, marketing managers must have an appropriate reward system in place so that the sales force has an incentive to work with IS.

IS must also be willing to spend the time necessary to find out what



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generating a search for IS needs in other functional units.

Only 25% of CEOs with other backgrounds (including MIS, mathematics, engineering, and liberal arts) emphasize marketing applications. CEOs whose backgrounds are not tied to one of the three primary functional areas, are more inclined to emphasize the traditional accounting/finance functions.

CEO Origin

Whether the CEO is promoted from within the organization or hired from outside is also expected to influence the distribution of IS applications. However, marketing/sales applications are emphasized regardless of CEO origin (Table 1). Even so, CEOs who are promoted from within the firm do not emphasize marketing/sales to the extent as those who are hired from outside (53% and 80%, respectively).

An interesting finding is that no CEO in this survey who was hired from outside the firm emphasizes the manufacturing function. One explanation is that CEOs who rise up through the ranks of the firm have more of an internal focus than do those who are brought in from other firms. Externally focused executives may emphasize boundary spanning functions such as marketing to a greater

which marketing applications are most emphasized.

The movement toward increased IS support of marketing/sales is more pronounced in industries in which IS is actually a part of the product or service. Furthermore, in these firms, the CEO has been in his/her position less than five years, has a marketing or management background, and was hired from outside the company.

Many firms that have brought in new CEOs from outside the firm in the last few years in order to improve market share and gain competitive advantage are emphasizing the strategic use of information systems to meet these goals. Because of the critical and information intensive nature of customer orientation, firms that want to remain on the leading edge of their fields must include IS in every aspect of operations particularly in customer oriented planning and operations.

Although findings indicate that firms are committing substantial IS resources to marketing/sales, the extent to which marketing is taking advantage of opportunities afforded by this commitment is unclear. Taylor, in *Sales and Marketing Management*, has reported that the automation of marketing process is too

marketing really needs and to distinguish between real and ideal benefits. A sophisticated geographic information system is worthless if there are no real benefits (e.g., increased market share; decreased lost sales) to using it.

Because of the IS backlog of work, IS developers are often reluctant to spend a large amount of time analyzing

For example, going on the road with the sales force may be necessary to better understand their needs. The interest marketing is expressing in computer technology and the evidence that IS is responding are both encouraging signs of the increasing awareness of the benefits of computer technology. However, IS and marketing must continue to work closely together to

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Table 2: Profile of Firms Emphasizing Marketing/Sales Applications in IS

CEO/Organizational Characteristic	Marketing/Sales Emphasis*
IS is part of product/service	1
IS supports product/service	2
CEO Tenure: <= 5 years	1
> 5 & <= 15 years	2 **
> 15 years	2
CEO Background: Acct/Fin	2
Mktg/Mgt	1
Other	3
CEO Origin: Promoted in firm	2
External hire	1

* Ranking of responses where a rank of 1 indicates the largest proportion of that category emphasized marketing/sales IS applications over other functional area applications

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ing current work/information flows and determining what is currently done. However, spending more time in systems analysis often improves the quality of the final system. IS must be willing to do what it takes to fully understand the needs of marketing.

effectively take advantage of the opportunities provided by today's powerful computing technology.

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Appendix A
Survey Questions Used in this Study to Measure Organizational/CEO Traits

1. Which of the following best describes the role of information in your organization?
 - a. Part of the product/service (e.g. banking, publishing...)
 - b. Provides support for provision of the product/service (e.g. manufacturing, distribution...)
2. To the best of your knowledge, how many years has the CEO/ President been in his/her current position?

less than 1 1-5 6-10 11-15 over 15 not sure
3. To the best of your knowledge, what is the educational background of the CEO/President?

Accounting Finance Marketing Management MIS Mathematics Engineering Other (please specify) not sure
4. Was the CEO/President promoted from within the company? Yes No