

## **Information systems as a strategic partner in organizational performance**

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### **ABSTRACT**

Initially seen as a support function, Information Systems (IS) department's importance has increased as the business environment has grown more dynamic and the power to collect, assess, and disseminate information has expanded. Properly implemented information systems have become an even more valuable strategic resource – one that any organization can use to improve its competitive advantage. IS departments are rapidly becoming strategic partners with other business functions and integral to the general success of the organization. This work summarizes key issues related to the changing role of IS in the business environment for senior practitioners and strategic planners focusing on legal, marketing, HR and corporate governance.

Keywords: Information systems, strategy, competitive advantage, management, technology

## **INTRODUCTION**

The world is a rapidly changing canvas that visits a dynamic and turbulent environment on senior managers (Boudreau, Loch, Robey, & Straud, 1998), changing how Information Systems (IS) are used and needed in each organization. The power to collect, assess, and disseminate information is a valuable strategic resource that any organization can use to improve its competitive advantage. At the same time, technological advances are changing rapidly, thus requiring frequent updates in hardware and software as well as new competencies for IS professionals. As strategic managers face the challenges of optimizing the use of information systems, they are called to address a number of issues so they can make informed and effective decisions. A failure to understand the nature of the changing environment and the associated consequences is certain to cause decision-making that is slow to meet the challenges of the global market, thus creating a strategic disadvantage for the late mover. Managers must not only understand the role of IS in corporate governance and corporate strategy formulation, but how the accepted norms of this role are changing over time. This focus of this work is not on areas where IS have been extensively applied, such as accounting or finance, but in relation to areas where it has seen increasing applicability such as legal, marketing, HR and corporate governance. This summary touches on key issues related to these changing roles for senior practitioners involved in corporate governance and senior-level strategic planning.

## **THE IS RELATIONSHIP TO STRATEGIC GOVERNANCE**

The changing environment of IS includes numerous issues that strategists must consider as they make IS decisions. Some of the trends related to IS include flattened organizational hierarchies, increasing reliance on intellectual capital, greater reliance on outsourcing and strategic alliances, changing demographics, consumer focus, and a need to organize and control an increasingly complex and turbulent environment (McNurlin, Sprague, & Bui, 2009). Further, IS evolution is often at the heart of environmental complexity and turbulence, often causing organizations to spend millions of dollars to remain competitive. These changes require new competencies for IS leaders as well as IS technologists. They also require new competencies for non-IS employees and senior managers. The complexity and turbulence of these changes create an unrelenting need for continued education and system updating, along with increasing demands for transparency. All are associated with significant costs for any organization, both in terms of financial investments and in terms of effort to manage the related changes processes themselves. The challenge becomes one of balancing constrained resources with a need to remain competitive.

Even the mission of the IS function itself is changing, evolving from a focus on efficiency and effectiveness in a support role to a focus on enterprise performance as the foundation for competitiveness in a rapidly changing market. In many cases, IS becomes the backbone for customer management and even product delivery. With this new direction, IS becomes a strategic partner in organizational performance, working on a level comparable to other functions such as accounting, marketing, and human resources. Strategically, this is a notable change in status, because it moves IS from a position of supporting the traditional business functions, to one of enabling them, thereby becoming a strategic necessity and a full partner in the success of the organization.

All of this change places strong demands on IS governance in terms of the roles and responsibilities that are required of senior managers with respect to IS decision making. The change in organizational IS status brings with it a change in the roles of the Chief Information Officer (CIO), a change that more closely aligns the function of IS leadership with that of chief executive officers. For example, the CIO of the State of California “serves as IS advisor, leader, strategic planner, and collaborator” (California, 2007). There is no mention of the CIO as a technologist or as a technology manager. The proliferation of change and standardization of IS infrastructures has driven a bifurcated role for CIOs. While some CIOs are still focusing on cost minimization through leveraging IS infrastructure, others have become less focused on technical management and more on leveraging IS processes as competitive advantages (Chun & Mooney, 2009). Similarly, McNurlin, Sprague, & Bui (2009) posits that currently there are four roles for the CIO, namely, leading, governing, investing, and managing. In these four roles, the bifurcated nature of the CIO role is evident with three of the four roles focusing on strategic direction and one role continuing to focus on technology management.

Along with the changing nature of the CIO and technology management roles, senior managers are challenged to address changing assumptions that underlay strategic decision making with respect to technology. These assumptions result from a rapidly changing environment, an environment that many senior leaders find daunting to assess and understand. For example, Kelly and Erickson (2005) give the example of Radio Frequency Identification (RFID) use by Benetton that caused a public outcry concerning privacy issues and forced a reversal of the decision to implant RFID chips in clothing as a means of tracking. Other ethical concerns that are likely to arise include security, legal issues, and voluntary and informed consent. Nonetheless, understanding the underlying assumptions that provide strategic advantage can give any organization a significant advantage through the strategic application of IS resources.

One assumption that every senior manager needs to understand is that there is pervasive ambiguity throughout strategic decision-making. Because the environment is dynamic and turbulent, strategic managers are less capable of making precise forecasts about the future. Less precision in forecasts indicates a need for current, accurate, and transparent information, one of the competencies that can be developed through tactical IS implementation. Well engineered IS processes provide leverage against the ambiguity that is inherent in a turbulent environment and provide transparency in an environment that demands increasing accountability.

Another assumption that senior managers need to be aware of is that, because of rapid technology proliferation, the window for creating strategic advantage through IS implementation is considerably shorter than it has been in years past and continues to grow even shorter. This indicates a need to recognize opportunities as they emerge, so that strategies can be developed in a timely manner to create advantage through IS implementation. For example, the time from design to completion for many clothing manufacturers is still several months. Through the innovative use of information technology, one manufacturer has created a competitive edge by streamlining the design-to-delivery time to 3 weeks, thus creating a significant advantage over other clothing manufacturers (Apparel Search, 2010). Similarly, Wal-mart and Ford have used IS applications to improve their business processes to provide strategic advantage. Wal-mart’s inventory management system has eliminated the need for purchase orders while Ford’s automated accounts payable function has eliminated the need for 300 staff positions (Lacity, 2010; Kelly and Erickson, 2005).

Another changed assumption is the need for IS to be recognized as a full partner in the success of any organization, from the smallest of organizations that need to post information online to satisfy customer expectations to the very large organizations significant online revenue-generating divisions. This shift is apparent with companies such as United Parcel Service that now is described as “the technology company that delivers packages” (Brewster & Dalzell, 2007, p. 145). Similarly, through careful architecture and principles development, Dow Corning recently moved the CIO position to one of equal authority to that of other chief officers, thus creating a natural connection between IS strategy and business strategy (Weill & Ross, 2004).

There is also a necessary assumption that IS technologists must be educators as well as technologists, and senior leaders of all organization divisions cannot lead an innovative, global enterprise without being educated in IS initiatives. If senior managers want innovation, they need to learn about information technology. Davenport (1993) identifies ten IS activities that facilitate innovation, including:

“... identifying and selecting processes for redesign, identifying enablers for new process design, defining business strategy and process vision, understanding the structure and flow of the current process, measuring the performance of the current process, designing the new process, prototyping the new process, implementing and operationalizing the new process and associated systems, communicating ongoing results of the effort, and building commitment toward the solution at each step.” (p. 200)

Additionally, there is evidence to suggest that, when managers are engaged with IT, a business is more likely to leverage IS initiatives into a successful business opportunity, and consequently, into a strategic advantage (Lacity, 2010).

Finally, because relationships between companies often lead to strategic advantage, one must recognize the assumption that technologies facilitate relationships. Whether the relationships are with customers, front line employees, strategic allies, or other senior leaders, IS creates an environment of accessibility that fosters productive relationships. In this way, IS helps level the competitive playing field for many organizations, allowing small, that is geographically localized, organizations to have worldwide access to customers, and worldwide organizations to have seemingly local access to employees. In terms of governance, use of IS can create ethical issues with any of these stakeholders. For example, Mujtaba (2003) investigates the multiple issues that are involved when using information technologies to monitor employees and opens the discussion for leaders' consideration before implementing an information technology. Nonetheless, if communication is the process through which people are connected with others to create relationships, then IS has become the conduit for modern relationships.

Taken together, these assumptions along with the changing environment and emerging governance roles are a call for senior managers to revisit strongly held beliefs about the IS function, because they may point to potentially serious gaps in IS strategy, which often lead to error and strategic disadvantage. “The fundamental error that most companies commit when they look at technology is to view it through the lens of their existing processes. They ask, ‘How can we use these new technological capabilities to enhance or streamline or improve what we are already doing?’ Instead they should be asking, ‘How can we use technology to allow us to do things that we are not already doing?’” (Hammer & Champy, 1993, p. 85).

## THE IS RELATIONSHIP TO HUMAN RESOURCE MANAGEMENT

In many organizations, IS and Human Resources Management (HRM) have become full strategic partners at the governance level. The strategic potential of HRM is well recognized as effective HRM practices support business goals and objectives. (Noe, Hollenbeck, Gerhart, & Wright, 2010, p. 4; Wofford, 2002, p. 135). Jack Welch, former CFO and retired CEO of General Electric, said that “CEOs should value their HR managers as much as their chief financial officers.” (Trainor, 2009).

Organizations increasingly recognize the impact of radical changes like globalization, technology and hypercompetition, particularly in the knowledge and service industries where “... innovative and creative employees hold the key to organizational knowledge providing a sustainable competitive advantage ... Human capital is difficult for competitors to imitate.” (Kavanagh & Thite, 2009, p. 10). Indicative of such changing paradigms, the relationship of HRM and IS continues to evolve as have the assumptions on sustaining competitive advantage as it relates to HRM. In years past, the assumption was that IS was a support function that provided technology to help HRM meet its objectives. The changing paradigm gives us the new assumption that IS is a strategic partner with HRM in executing decentralized HR initiatives. IS staff are often responsible for outsourcing, purchasing, or developing new technological solutions. Partnering with HRM is the obvious solution for many of the coordination issues related to bringing contracted human capital to bear on corporate initiatives. Similarly, HRM typically evaluates in-house delivery of services vs. outsourcing, particularly those involving e-HR vendors. CEOs need to have the right HR and IS staff that can work together to encourage, foster, and assess collaboration between those involved in order to maintain efficient and effective staffing and compensation structures. Given the expanding role of IS and HRM and the growing tendency for organizations to rely more heavily on knowledge capital rather than skill capital, it is often the case the required knowledge capital must be acquired. Typically, hiring qualified individuals is not an easy task (Buckley, 2008, p. 6), and can be cost prohibitive for smaller projects. However, developing the talent of displaced, highly skilled workers may be a strategically sound solution. Choosing to grow requisite expertise and knowledge in-house makes for a much more versatile and stable work force, but doing so requires a close partnership between HR and IS functions. HR provides input into the typical functions of compensation, training management, etc. IS provides needs assessment related to expertise, often along with actually providing much of the technology-related training necessary.

The specific knowledge, skill sets, and technical competence that are needed is often a difficult question to answer. In terms of supporting the HRM function itself, there are several types of IS applications that were once managed completely by the HRM function of organizations but are now managed by the IS/HRM partnership. Some enhance organizational performance through lowering transactional costs, others enhance business intelligence, and still others foster employee collaboration. The first focuses on data, storage, processing and flows, improving transaction efficiency (Stauss & Jedrassczyk, 2008, p. 22) through electronic data processing (EDP). The needs met by early versions of these systems were simple and were common to most businesses, which led to general-purpose HRM software. This is no longer the case. Highly specialized systems have developed that require a more technology-heavy management process. Dedicated HRM servers, often with ties to enterprise-wide processing systems, typically require specialists to maintain. Hence, the importance of a solid relationship between IS and HRM. The second type of application focuses on management information



systems (MIS) aimed at middle managers. These business intelligence systems include a broad category of systems for, “analyzing and providing access to specialized data to help enterprise users make better business decisions.” (Kavanagh & Thite, 2009, p. 425). Though business intelligence is a term often used to describe the collecting of information regarding the environment external to the organization, it also refers to understanding the forces at work within the company. Hence, there is the need for an active partnership between HRM and IS. IS provides the technology platform, and HRM works with the employees to define appropriate levels of information regarding the human component to production and management. Related to these systems are those that provide highly-specialized analytical power that augments knowledge workers in the middle tiers of the organization’s hierarchy. These decision support systems (DSS) are often used to assist, or even replace, workers with tasks that have in times past been labor-intensive. For example, maintaining inventory levels at a large retailer such as Wal-mart would be impossible without a small army of inventory managers or a very specialized inventory management system. More often than not, the most cost-effective solution is not the small army of inventory managers. On factory assembly lines, decision support systems are often more efficient at detecting quality problems through statistical methods than are their human counterparts. Where such systems now work in real-time and with a much lower variance in data measurement than when performed by humans, losses related to poor quality are much more tightly controlled.

Additionally, cost of labor entails much more than wages, salaries, and benefits. Costs related to recruiting, selecting, orienting, training, turnover, compensation, labor/employee relations, legal compliance, health and safety, conflict resolution and HR information security drive up overall labor costs. IS helps to lower these costs by partnering with HRM to provide and maintain applications related to reducing transaction costs related to these HRM functions. The assumption now is that an HRM department cannot be effective unless these functions are managed by an IS solution that ties HRM to the rest of the organization’s business systems.

Enterprise Resource Planning (ERP) had at its roots, among other things, a standalone payroll solution to improve the efficiency and accuracy of processing payroll. Because of HRM’s increasing complexity and frequency of change with regard to regulatory compliance needs, it has been one of the last business functions to systematically develop applications to replace the paperwork and related processes for each subfunctional HRM area. Over time, vendors such as SAP and PeopleSoft have used technology to assist firms with costly HR processes and integrate them with other organizational information systems. With Oracle’s release of PeopleSoft 9.1, end-to-end HR, from planning, hiring, on-boarding, setting business objectives and starting the employee working is brought into one holistic solution (Oracle, 2010). Such applications continue to transform the way HR functions (Zeidner, 2008). Small to medium enterprises are now able to pay vendors for only the application modules they want, such as payroll or training management, and only for the time used. This type of solution is known as utility computing, in which the user of an off-site information system is charged only for the amount of processing time used, much like one pays a small amount for electricity when only a small amount is used. This significantly lowers the cost and startup time for new application implementation. It also often removes the need for the organization to spend valuable IS manpower maintaining a routine system. The routine maintenance of these HRM solutions is performed by the outsourced HRM application provider. An added benefit of these systems is that employees typically have the ability to access their employee information while away from the organization. Many times, employees are able to perform some tasks online,

rather than by physically going to the HR offices. These Employee Self-Service modules enable employees to access their data anywhere, such as payroll information, updating contact information, accessing copies of the employee handbook or benefits manual, signing up for training classes, and in some cases, applying for vacation and notifying their supervisor of a sickness-related absence. Though many organizations are becoming more cautious in implementing organization-wide ERP solutions in such a changing competitive environment, the HRM functions of ERP appear to be here to stay (Wailgum, 2007).

Similar to the employee-self-service portals, enterprise portals enable individuals to interact electronically with corporate systems, or even with other employees. A web-based HR Knowledge Portal is a browser-based solution that uses Internet technology to provide managers access to databases and applications that allow them to work off-site on tasks related to things such as salary planning, workforce budgeting, skill analysis, and performance appraisal. Note, however, that while these types of systems improve access for legitimate users, they also bring security concerns. Again, the solution lies with a strong partnership between the IS function and the HRM function to oversee security needs. There is evidence to support the claim that employee retention is improved when an effective ERP is in place (Buelen, 2009). Additionally, these solutions, that is those solutions that provide off-site access for employees, also facilitates the continuation of many HRM functions following catastrophic work-stoppages such as during national emergency, or when employees are located in extremely remote regions without easy access to HRM departments. All that is required to access these systems is often a source of electricity and an available satellite signal. In short, a small and relatively secure HRM department with solid a IS partnership can provide HRM functionality anywhere in the world.

Newer developments in HR information systems (HRIS) include e-HR, or HR functions made available through cell phone networks and mobile telephone devices, on a 3G network. These systems often facilitate group collaboration by allowing workflow to be routed through smart-phone like devices such as Apple's iPhone (Fan, 2009). According to the CedarCrestone 2009-2010 HR Systems Survey White Paper, 112<sup>th</sup> Annual Edition, the most significant development in allowing workflow routes to include mobile devices relates to corporate social networking (CedarCrestone, 2010). Early adopters have more than 100% higher sales growth than those who were slower to adopt this technology. These tools support collaboration in online social networking systems such as Facebook, Myspace, LinkedIn, and others, and have been useful in recruiting both employees and customers, advertising and marketing products and organizations, and knowledge sharing between customers, employees, and other stakeholders. The use of these types of systems is currently in an explosive stage of growth. Of the 1,008 organizations from around the world who responded to a recent survey, 80% reported that rather than pulling back, the weak economy incentivized expenditures on business process improvement and innovation (CedarCrestone, 2009).

Another lesser known, but valuable and rapidly growing, result of partnerships between IS and HRM is the practice of using the web for innovative learning techniques. However, Dell, ADT, FedEx, and Volvo are using customized training simulations, podcasts, Second Life virtual experiences and other learning solutions to answer training needs (Wright, 2010). Trainers now working with IS technologists to create training solutions that harness the power of gaming, social media, and virtual worlds.

A large-scale survey with a sample of 2,336 organizations in 23 European countries reveals that e-HR is a common practice throughout Europe, with two-thirds of all respondents having access (Strohmeier & Kabst, 2009, p. 495). The highest adoption rates were typically

among organizations in Eastern post-communist countries. Since the sample in the survey included a broad range of industries and sizes of organizations, it suggests that if a firm has not adopted e-HR, it may be at a strategic disadvantage globally. Additionally, size was a significant factor related to adoption, with adoption rates being higher among medium and small-sized firms.

While there are tangible benefits to adopting these and other HR-related information systems, one intangible benefit relates to employee satisfaction, which often improves with quicker and more accurate responses from the HR department. More importantly, these systems free valuable HR manpower to focus on strategic utilization of available human resources to sustain competitive advantage.

Just because a great technology for a HRIS has been found and has enthusiastic champions, successful implementation is not guaranteed. There have been many costly failures. David Fairhurst, the senior HR officer of McDonald's Restaurants for Northern Europe, shared seven people requirements, identified by the consulting firm Changefirst, that are key to successful information systems implementation success:

- 1.) leadership awareness and support of the change
- 2.) involvement of people in creating and sustaining a successful change process
- 3.) support for employees to change their behavior to fit new ways of working
- 4.) solid, consistent plans for communication, training, and rewards
- 5.) commitment to change at all levels of the organization
- 6.) measuring and monitoring measurables related to changes
- 7.) developing change leadership in the organization.

Note that these place primary emphasis on the people issues and secondary emphasis on the technology related to the change (Fairhurst, 2009, p. 19). Other than addressing these people-related issues, proper and complete documentation of the planning and development of an HRIS system is thought to be one of the most important determinants of successful system implementation and continued improvement (Kavanagh & Thite, 2009, p. 17).

One key vulnerability associated with the increased use of HRIS is the potential for HRIS failure due to employee sabotage. One only needs to look at online news sources to see that many organizations have been the victim of employee-placed viruses, deleted files, corrupted databases, and even stolen customer identity information and proprietary corporate information assets. Consequently, security is an important issue, particularly because of legal privacy obligations with personnel records. Such information can have a significant black market value, or can be valuable to dismissed employees as they seek employment with competitors. It is important in planning to identify potential vulnerabilities to the criminal use of corporate information, such as can be found in HR and other divisional systems. Again, the partnership between IS and all other functions becomes a necessity when securing these strategic assets.

## **THE IS RELATIONSHIP TO MARKETING**

Marketing is about creating, communicating, and delivering value. Organizations must provide this value to their stakeholders - consumers, partners, investors - and do so while meeting their own objectives. While all stakeholders must derive some type of value from their continued interaction with an organization, the key stakeholders are consumers, the ultimate users of an organization's offerings in the marketplace. Whether they are individuals, other organizations, or the government, activities that meet their needs and wants must remain at the



forefront of the strategic planning process if an organization desires to be profitable over the long term (O'Connor, 2008). For an organization's market offering to be viewed as of value, the benefits derived from a product's features, brand, or support services must outweigh the costs incurred - financial, time and effort - to obtain them. Though this view of marketing seems almost elementary, it is necessary to return to basics when considering the relationship between marketing functions and IS in the new strategy paradigm. In short, traditional marketing efforts are no longer the primary communications or product delivery route with the customer (Jackson, 2007). The new assumption is that these channels have been replaced with supplier- and customer-facing information systems.

Keeping in mind that marketing is about the provision of value, several trends related to IS are pertinent to discussions of marketing and marketing strategy. As is the case with other organizational functions, IS has often been considered a support function, but this is no longer the case. Changes in the technological, societal, and competitive environments have prompted radical shifts in the role of IS. From a behind-the-scenes support function, IS has now become an integral part of an organization's efforts across the value chain (Gunasekaran & Ngai, 2004).

Applications of IS to a value strategy are generally intended to keep unit costs low. IS had early and significant contributions where it was heavily involved in creating efficiencies in supplier cultivation, logistics, and operations. A number of strategic applications, such as just-in-time inventory systems for manufacturing and computerized quick response systems in retailing are but a couple of the many examples of IS moving beyond a support function and becoming a partner in creating strategic value by integrating the value chain within an organization's physical boundaries. However, the trend for some time now has been for IS to move outside organizations and interface directly up and down the value chain, integrating and automating much of the communications process. In particular, sourcing, outsourcing, and co-supplier collaboration are three areas of rapid growth in value-chain integration that are being driven by IS. It is not just the communication channels that are being redefined, but also the products themselves, or at least what the customer thinks the products are.

Products are blends of goods and services. Many times it is possible to separate a product into its component parts and have them produced or provided in a more efficient manner. The expansion and depth of services outsourcing is only one example of a trend based on this premise (Stauss & Jedrassczyk 2008). Organizations offering products with large and identifiable service components must always balance the level of customer service that consumers desire with the costs involved in providing it. Some organizations have sought to source the more labor-intensive functions in locations where labor costs are lower, such as outsourcing help-desk functions offshore. IS has made shifts such as these possible. Services as varied as customer service by hotels, X-ray evaluations by hospital radiology departments, and tax preparation by accounting firms are now regularly outsourced to more inexpensive labor markets, such as India, the Philippines, and Mexico. Over time, as services continue to become a larger and larger component of market offerings and the technological infrastructure in these and other outsourcing locations improves, there will be increased pressure to outsource knowledge-intensive activities such as these to offshore locations, provided that the costs can be passed on to the consumer and satisfactory service quality is maintained (Tanner, 2004). The assumption that IS merely facilitates these activities is no longer valid. The new assumption is that IS takes a leading role in planning, organizing, leading, and controlling these functions. In short, management of service delivery to the customer is no longer in the hands of the traditional marketing professionals with IS providing support. Rather, it is the other way around. IS

oversees the bulk of the outsourcing efforts, with marketing providing support as needed. Such has also become the case when dealing with other, non-customer, organizations.

Michael Hammer (2001) suggests that collaboration with non-competitors is an area in which cost-savings may also be obtained. If two organizations have the same customer groups but do not offer competing products, they have the potential to coordinate their efforts for mutual gain. Such cooperative efforts offer the potential to greatly reduce costs through the sharing of similar resources and at the same time improve responsiveness. This approach to operational excellence involves the synchronization of operations between organizations, which is built on integrated information sharing between firms, a hurdle that is rapidly disappearing due to digital communication technology. Too much integration, however, can ruin a good thing. Integration with other organizations usually takes a fair amount of resources to set up effectively and, when it is created in excess, the ability to rapidly re-orient communication channels to other organizations may become a costly affair. The new assumption is that heavily integrated relationships with other organizations, including suppliers, are only worthwhile when they involve critical processes that hold the potential to provide significant value (Kahn & Mentzer, 1996). These integrated communication paths must be managed, just as with any other resource. However, a key factor to consider with regard to automated communications channels with other organizations reaches far beyond mere functionality. It must also address the human behavior factors associated with corporate cultures of other organizations, namely, information security. Again, the IS leadership becomes more than a mere support group. They are a key partner in the developing, implementing, and managing of extra-organizational integrated communication channels.

Similarly, as organizations require improved integrated communication channels between remote sites, organizational functions, and even between individuals, security remains a key consideration. For example, many organizations adopt a product leadership strategy that drives the technology development of production and operation functions. Besides potentially shifting some of the associated costs to cheaper locations as was mentioned earlier, IS partnerships allow organizations to develop specialized communication channels that facilitate group work efforts throughout the entire product development, production, and delivery processes. By using IS to create a team design approach that includes team members from outside the R&D department and communication through specialized knowledge portals, R&D efforts be spread across a larger array of people, locations and organizational functions to help eliminate problems that may remain undiscovered until production of the completed design (Lee, Kim, & Koh, 2008).

When organizations adopt a value strategy that involves high levels of customer intimacy, the focus is on fostering long-term customer relationships. It has long been assumed that the typical customer would interact with an organization in face-to-face sales or service settings, which led the drive for a well-trained sales staff that was particularly adept at developing face-to-face relationships. This assumption is no longer valid. Consumers have shifted from a largely brick and mortar world in the past with its inherent restrictions, such as limited hours of operation and the associated travel time, to one that incorporates e-business as well. The competitive environment has shifted to a world in which a larger body of consumers expect and desire communication from anywhere, and at any time on any day or night, for information gathering, decision making, purchasing, arranging delivery, and product support. Additionally, by integrating organizational databases with online customer portals, customers have come to expect the ability to customize the communications channel to their individual needs. For firms to meet the expectations of this new breed of customers, IS cannot be

considered a mere support function. Rather, as was mentioned before, IS takes the lead role in developing these customer-side communication channels with other organizational functions taking on a support role.

Another trend that requires consideration involves how organizations have come to view the typical customer. The trend has been for organizations to shift from treating consumers as one large market with uniform needs, to treating them as smaller and smaller segments of a market with differing groups of needs. This has been one factor in driving the demand forces from primarily a supply-push environment to a demand-pull environment. In supply-push, organizations typically developed and produced products for a group based on the needs of the average group member, then “pushed” what they produced to consumers. Consumers might or might not get the blend of benefits and costs that they truly desired but options were limited. The application of IS technology has radically changed this perspective. IS has allowed organizations to reduce the size of market segments down to smaller and smaller numbers, even down to individual consumers. Closer contact, even one-to-one relationships, between the buyer and the seller have driven the development of a different business model, that of demand-pull. In this model, interaction between the consumer and the organization is unique to the individual, customer communication is more personalized, and the customer is more involved in the product development process. One way in which product customization may be implemented is by allowing customers to select among the components of a good or service so that it more fully fits the individual customer’s preferences and provides greater value. Under this model, consumers create demand for a personalized version of the product, which is then “pulled” through the organization to the individual consumer. This approach capitalizes on consumer desires to have goods and services tailored to their individual needs and thus more fully providing the benefits they desire and restricting the costs they want to avoid (McNurlin et al., 2009). While this seems fundamentally simple, it has one underlying requisite. It is imperative that the customer receive what the customer asks for. This one requirement often places the demand-pull model outside the reach of mass production, unless a system can be brought to bear that can track individual customer specifications, along with the specific production unit, throughout the production, delivery, and servicing processes. The sheer volume of information that must be tracked through a mass-customization production system is typically beyond the reach of organizations without heavily integrated production systems, driven by IS-backed production management systems. Though it could be argued that IS still is primarily a support function when it comes to tangible-product production, heavily integrated production systems are not as easily reconfigured as they once were. Proper operation of such systems requires strong ties between the IS and the Production functions of an organization for the production system to satisfy customer demands (Volkoff, Strong, & Elmes, 2005). Note, however, that customer demands for situational control do not begin with getting what they ask for. Rather, these demands actually begin during the customer’s intelligence-gathering process, when the customer is deciding what to purchase in the first place.

Self-service is one area in which consumers have shown a strong interest in doing business on their own if they desire to do so. Consumers want to be able to access a firm’s website to collect information, compare products, and make purchases if desired. Such processes rest on the integration of IS throughout the organization. The strategic value to the organization lies in encouraging consumer empowerment, thus creating greater value in the eyes of consumers (Pires, Stanton, & Rita, 2006). Organizations may also gain additional intangible benefits from the greater loyalty that consumer involvement fosters, as well as from freed-up employees being

able to shift their efforts from customer interaction to other types of work. Unfortunately, tangible and intangible gains gotten by passing some control to the customer are often accompanied by increased exposure to risk, especially as it relates to the management of information assets such as confidential customer data, regulatory compliance records, and other confidential organizational information (Gauzente & Ranchhod, 2001).

## **THE IS RELATIONSHIP TO LAW AND ETHICS**

Information-based products and services industries are among the economy's largest and fastest sources of employment growth. The main medium for growth in these industries is expected to be the persistent evolution of technology, along with increasing efforts to integrate information resources to enhance productivity and expand market opportunities. With respect to executives and company heads, the use of IS introduces a host of new issues and concerns. Among the issues that executives must consider is the issue of which areas of IS should receive the focused application of resources in terms of time, manpower, and money. Many executives would agree that the basic areas of investment should include improved IS governance, infrastructure development, and possibly outsourcing of standardized, low-risk business functions to external service providers. IS security, however, is one area where the risk is so great that most organizations opt to maintain direct control rather than outsource. With the increasing security risks associated with prolific sharing of proprietary or confidential information, information security has emerged as a significant investment focus (Allen & Westby, 2007). Unfortunately, many executives have difficulty embracing increased investment in security because the risks are often less tangible, especially involving those areas of cyberspace where many of the key players are relatively anonymous, such as potential customers, snooping competitors, and even foreign governments. Conceptually, this is similar to consumers that have a clear understanding of the importance of locking their doors at night, but have difficulty with the concept of controlling the amount of information they reveal in online communication environments. Often, executives as well as consumers are not sure where protection begins and ends, whether protection is sufficient, and even what information must be protected from whom.

It has been stated recently that, "Technology is the latest theatre in the war on terror, with computer networks that control our vital infrastructure vulnerable to attack..." (Allard, 2008). With this in mind, executives should make security a priority for investment. By not investing in security, executives may create vulnerabilities to various attacks by both consumers and employees, which often take the form of a legal confrontation. Because IS is used in the majority of industries to manage everything from single small organizations to large webs of supplier networks, if security were not given a higher priority than earlier practices, vital information would slip through the web of portals, access points, unlocked databases, and improperly secured firewalls. While the need for security proprietary corporate information, such as patent information, trade secrets, and the like, has been understood by most successful companies for many decades, recent trends toward more intimate relationships with consumers and employees alike has led to a significantly increased risk to organizations due to mismanagement of security related to these areas (Erickson & Howard, 2007). The occurrence of a recent string of high-profile security debacles has led to litigation that now holds senior executives personally accountable for the management of security by the organizations they manage. This trend in legislation has led to a new assumption that protecting against the



improper release of confidential information, and that protecting the accuracy of released information, is no longer something for which the organization only is held accountable. It is now the personal responsibility for the individual executives. As one example, consider the Sarbanes-Oxley Act, which came about because of information-related issues at WorldCom, Enron, and several other companies. This legislation was a direct answer to a lack of accuracy in released financial information resulted from the acts of senior executives (Botts, 2004). Similarly, both the Gramm-Leach-Bliley Act of 1999, and the Health Insurance Portability and Accountability Act of 1996, mandate protection of certain types of consumer information and provide for specific criminal penalties for those that fail to exercise their mandated security responsibilities (Scholl & Hollander, 2003).

In short, managers at all levels can be classified as fiduciaries of the information that their companies store and maintain. The term fiduciary is generally defined as a person who holds assets in trust for a beneficiary. Moreover, it is generally illegal for a fiduciary to misappropriate whatever is being held in trust for personal gain. Similarly, executives are generally not allowed to misappropriate the information being held or permit the information being held to be under-secured. As fiduciaries, there is a duty to safeguard that information to a certain reasonable level of protection. In the legal field, numerous types of lawsuits can be brought when a person or entity failed to do all that is possible in protecting a certain class of persons or assets. Put another way, a fiduciary is at increased risk for lawsuit failing at their fiduciary duty, whether it be a duty of appropriate levels of care or even a duty of loyalty. The same would be true for executives that allowed their IS infrastructure to be compromised because of a lack of security investment. Whether or not an executive has the technology skills to adequately understand all aspects of information security is no longer relevant. Simply holding the position of a governance-level manager brings accountability to address IS-related issues, included information security. Nevertheless, many organizations still fail to maintain adequate security, which is leading to increased targeting by those that can profit from an organization's poor security management. Particularly, issues related to protecting consumer identity are growing at an alarming pace (Milne, Rohm, & Bahl, 2004).

Unfortunately, once a consumer's or employee's identity is stolen, dealing with the result may be a formidable task and may involve prolonged communications with multiple credit reporting bureaus, businesses, and may even involve answering criminal accusations perpetrated by wrong-doers in the customer or employee's name. This process is typically expensive and time-consuming, involving multiple layers of specialists in law, law enforcement, and financial management, among others. As fiduciaries, executives should be aware of this and be mindful of any perceived fiduciary duty. The assumption that customers and employees can be treated as anonymous entities in a group of many is no longer valid. Now, executives must take a personal interest in the protection of their individual interests related to information security.

Another significant issue related to law and IS involves the global shift to doing business on the World Wide Web, referred to as cyberspace. It was not that long ago that most consumers dealt primarily with organizations with only a brick and mortar existence for a majority of their business transactions. Doing business in cyberspace, however, raises issues of jurisdiction. Specifically, the issue of a lack of jurisdiction has not yet been addressed by society's legal systems. Jurisdiction is normally associated with clear and definite boundaries, or a clearly defined geographic presence. Cyberspace has neither. Jurisdiction has become an intensely important subject to executives because of the way in which companies transact business. When a company does business in cyberspace, the specifics of which laws apply, which taxes are due,



and even which consumer protections may be applicable becomes clouded (Wilske & Schiller, 1998). Consider the example of a fictitious company headquartered in China, serving its customers from a website that pulls together information from web servers across Europe and does its banking in Switzerland. If a customer in Alabama placed an order for a product online, and paid for the order with a credit card from a Bank in Canada, and the product was actually produced in South Africa, and shipped by a contracted carrier from some other country, where would the customer turn if their money was taken and the product never arrived? To what legal authority would that customer turn? In short, most legal systems have not yet addressed these types of issues involving jurisdiction, and because executives are still charged with protecting the interests of their consumers and employees, this has led to the new assumption that significantly increased attention to the security and accuracy of information is a key component to corporate survival.

Moreover, cyberspace has evolved so rapidly that it is almost impossible to enact laws fast enough to cope with the issues that flow from the lack of jurisdiction. Of course, most companies and consumers are attracted to cyberspace's openness, which is one of the key components that drive its evolution and adoption by all parties. However, from a security standpoint, cyberspace's openness is also one of the most significant sources of risk. Because clear definitions of jurisdiction currently do not apply in cyberspace as it does in the real world, many businesses act as though there were a total lack of accountability for all parties. Because of this, and of increased anonymity in cyberspace, identifying sources of information, both incoming and outgoing, becomes problematic (Post, 1996). Again, the only solution available at present is a dedicated effort led by IS that brings specialized knowledge workers and investment resources together to protect information traffic from improper monitoring or tampering.

## CONCLUSION

It should be obvious by now that viewing IS as a support function is no longer sufficient. Executives should work to avoid the once-common practice of just dumping scarce resources on IS-related projects. Rather, executives should remember to view IS from a strategic standpoint, working to maximize their return on investments by using IS to their advantage. The management of IS-related issues is a dynamic process that takes into consideration the ability that IS brings to an organization to become more flexible in answering the forces of the competitive environment. Thus, executives responsible for any organizational function should be mindful to partner with IS wherever possible, or risk failure. Organizations that do not include IS as a key strategic function will likely be doomed to failure also. Executives must constantly monitor their alignment with the overall business strategy, which must also include an overall IS strategy, especially as the competitive environment changes, technology changes, customer expectations change, and regulatory requirements change.

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