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Robert W. Service

*Samford University*, [rwservic@samford.edu](mailto:rwservic@samford.edu)

J. L. Boockholdt

*Samford University*, [jlboockh@samford.edu](mailto:jlboockh@samford.edu)

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# Employing Information Systems for Competitive Advantage

Robert W. Service, School of Business, Samford University, rwservic@samford.edu

J. L. Boockholdt, School of Business, Samford University, jlboockh@samford.edu

## Abstract

Federal Reserve Chairman Alan Greenspan was recently quoted as saying that information technology has begun to alter, fundamentally, the manner in which we do business and create economic value. In the information age, the organizations that survive will be those which succeed in using computer-based information systems (IS's) to provide sustainable competitive advantage. "Competitive advantage" refers to the ability of an organization to provide products or services that are distinctive and more desirable than those provided by the competition.

In a 1999 article, Service and Maddox proposed a measure of an organization's ability to use its information system for this purpose. This project extends the work of Service and Maddox. It describes a mail survey of information system managers that enables the researchers to calculate the information quotient for their organizations. These measures are used to validate the theory proposed by Service and Maddox.

## Introduction

Federal Reserve Chairman Alan Greenspan was recently quoted as saying:

Information technology has begun to alter, fundamentally, the manner in which we do business and create economic value . . . [contributing to the] greatest prosperity the world has ever witnessed (Melloan, 1999, p. A27).

Greenspan further stated that these technologies did not "just happen, they were incubated," and that how it occurred could provide important lessons for organizations. This paper presents managerial, strategic, and design guidelines that can enable the use of powerful new technologies to provide better information systems (IS). This requires new approaches for those who hope to exploit these new technologies.

The current research is intended to provide organizational leaders with guidance for attaining competitive advantage through information systems. This paper has three purposes. First, we present principles that enable management to effectively identify significant IS applications. Second, we support the need for the development of IS that provide sustainable competitive advantage. Third, we present a survey instrument that could be useful in measuring how well an organization

uses IS for competitive advantage. This measure, the "information quotient" (IQ), can be determined and compared to a benchmark IQ to identify deficiencies. Our goal is to give guidelines to organizations on using the IQ instrument for guiding IS improvements.

## The Need for New Approaches to IS

The need to improve competencies in the area of IS are being driven by a combination of interacting factors. They include instantaneously available global information, accelerating technological innovation, worldwide deregulation and privatization, and the opening of markets and competition (Linkow, 1999). Continuing on these themes, Cortada and Hargraves (1999) described how IBM and other firms are moving into the "networked age." In the chapter "How The Rules of the Game Are Changing" these authors list the following multiple themes that are now defining the game of commerce and, therefore, should help us mold our IS to accommodate commerce in the future.

1. Design, build, sell, and buy anywhere, anytime.
2. Time- and location-independent work and play.
3. Free or unlimited consumer choice.
4. Free for all--no or very low entry or exit barriers.
5. Globally optimized resources (predictive, sense and respond, customer-supplier linked).
6. Global knowledge accessibility.
7. Value networks (seamless, dynamic, focused competencies, disintermediation, and assembly of new value coalitions).
8. Increasing consumer power and move to presumptions (vs. consumption), i.e., the consumer will order and schedule production and delivery of offering.
9. Electronic and physical channels will co-exist for a while.
10. Consumers will use multiple channels--physical to digital--in all aspects of their lives.
11. Customer segmentation will occur in three tiers (all of which will be used simultaneously). First by moment of value of event. Second by disposable income. Third by technology astuteness of the user.

12. Firms will become more customer-intimate and will be more precise in targeting consumers.
13. Though individuals will have network access, the degree of exploitation of interconnectivity will be higher between business and business than between business and consumer in the near term.
14. Firms will shift to Customer Life Share capture rather than Individual Transaction profitability.
15. Owning the content is no guarantee of winning the future. Owning the context (or access of navigation point) will provide most leverage.
16. Government intervention will occur on strategic issues, though it may not be successful.
17. While disintermediation will occur in many areas (direct enablement), reintermediation will occur in others (where collaboration increases group power).
18. While Business reach or brands may be more global, production and customer reach will be more through multi-local approaches.
19. Consumer preferences and adoption rates are ethnocentric despite ubiquitous channel access.
20. Different regions of the world may end up at different points.
21. Unusual global exchanges will form, e.g. risk securization and exchange (p. 26-27).

These themes illustrate the need for IS to capture, retain, and manage information from multiple sources while handling change and new avenues of interconnectivity.

Few would argue that the IS of today are powerful enough to aid in gaining a sustainable competitive advantage. Organizations now have the opportunity to gather operational and external data and manipulate it in ways that can transform the data into the basis for solid decisions. But to do this requires the transformation of data into information and the evaluation of that information using the judgment of a decision-maker. IS have the capability to take data, the raw material of living and doing business, and synthesize it in a fashion that develops useful knowledge. Then this useful knowledge can then be applied in decision making.

Decisions are merely sets of choices under varying degrees of uncertainty, and knowledge is useful in decreasing uncertainty. But information and knowledge are not enough. To attain a sustainable competitive advantage, IS must retain the right knowledge until the right time and then communicate it to those who can use it. Indeed, it seems few understand these

relationships well enough to develop truly useful information systems.

Lundeberg and Sundgren (1996) have said that we are not gathering the right data for true decision support systems. They further say it is impossible to map out all information that might be required because of the rapidly changing requirements. In a classic work, Rockart and Treacy (1980) pointed out that executive decisions are by nature ever changing and non-repetitive. Others (Baron, 1999, Flanagan and Safdie, 1999, Hackney, 1997, Inmon, 1998, and Pendse and Creeth, 1998) have suggested that business intelligence applications are now possible using data warehousing and on-line analytical processing. These are good technical solutions, but they are not solid foundations upon which to base decision support systems. In order to implement them for sustainable competitive advantage, IS need to capture the right information and provide design flexibility.

### **A Needed Managerial Perspective**

As Andrew Carnegie once said, "The only irreplaceable capital an organization possesses is the Knowledge and ability of its people. The productivity of that capital depends on how effectively people share their competence with those who can use it" (Cortada and Hargraves., 1999:p. 82). Without the commitment to generating and sharing knowledge no IS will insure a competitive edge. This commitment is the starting point of all strategic IS. Hruby (1999) said that an organization today can use "garden-variety" decision, information, material, process, and telecommunications technologies to beat their competitors. However, the management of those new technologies will transform how an organization does its business. That transformation can and will be difficult for an organization; management then becomes the initial key to a successful IS.

Marshall (1998) said that managers fail because they don't properly execute management fundamentals--selecting, directing, evaluating, and rewarding. So regardless of the IS guidelines and direction we develop in this project, people and processes must be managed effectively. This paper helps identify the criteria for effective IS application, but along with that it stresses how to manage "human capital" to gain the full potential of IS application.

One difficulty in structuring new IS applications in decision making results from individual preferences and modes of operation. Everyone has developed frames of reference, contexts, histories, and educational experiences that can lead to bad (or at least) skewed decisions. These limit our ability to use information technology (IT) in innovative ways. The list below

summarizes some of the traps that keep managers from the realizing of the full impact of IS on decision making:

1. Anchoring--Past events and our preferences--a favorite type of solution.
2. Status-quo--We believe we make rational and objective decisions: we really have an extreme bias toward perpetuating the status quo. The more choices, the stronger the pull for status quo.
3. Sunk-cost—we often continue to “throw good money after bad.”
4. Deciding without knowing the why--Why may be as important as what?
5. Propensity for confirming-evidence--We can listen to the same thing and hear different things, but we often choose to listen to only what we want to hear: applies to--read, view, ask, go, etc., that which confirms us.
6. Framing or structuring--that is the way it's presented or ask--The way a problem, opportunity, threat, situation, etc. is presented defines how we look at the problem.
7. Your models, frames, paradigms, norms, reference points, etc.--It's far better to go in knowing what yours are than to go in thinking you don't have any!
8. Poor forecasting and estimating--Extremes, recent events, preferences, get too much attention.
9. Over or under confidence--Confidence is formed by our perceptions of experiences.
10. Partiality for an approach that is on the safe side.

To avoid these common pitfalls one must exercise an extremely disciplined approach to judgements. Managers do this by listening objectively to others and considering possibilities that are outside our preconceived notions. One of IS' greatest potentials lies in helping organizational leaders make more rational decisions by pointing out biases and alternatives outside of their norms.

Goleman (1998) said that emotional maturity and soft skills play a greater role than intelligence in eventual success. Two characteristics, the ability to manage one's self and the ability to handle relationships are requirements for directing IS development.

Executives and managers are often overwhelmed by IS and IT. The amount of available information is but one of the problems. The increased speed of technological change in the area of information is outpacing the ability of most organizations to research, evaluate, test, install, and use it for competitive advantage.

## An IS Strategy for Competitive Advantage

An IS for strategic competitive advantage applies IT to the strategic needs of the organization. It provides the information needed by the organization to offer something of value, that is rare, that cannot be easily imitated, and for which no real substitute exists (Barney, 1991)

The issues that really matter in using IS for an institution's competitive advantage are not technology, speed, connectivity, nor hardware and software. Rather, they entail using IT to achieve a shared commitment of the institution's members to the satisfaction of needs of its stakeholders. These issues include achieving continuous improvements, incorporating new features that meet changing needs, and implementing systematic innovation in order to satisfy customers' perceived and expressed values. In each of these areas, information from outside of an organization matters more than information from inside it. Yet, current IS capture mostly inside information.

As Gordon (1999) said, "While knowledge management operates via computers systems, it isn't about computers--and it can't be if it is to be effective... We know people want the information they need to be successful, but information isn't useful to them if it's too complex or if it gets in the way of doing the job (p. 33). The gap between techno-hype and reality grows more obvious every day... We can't let our jobs be designed by software engineers (p. 38)."

Peter Senge observed, "The difference between a technology investment and a learning-organization investment is that people are more comfortable investing in physical capital than in human capital" ("Why organizations still aren't learning," 1999: p. 41). CEO's must be convinced that sound investments lie with people and a solid IS infrastructure--not just plant and equipment. The comments of Jacobs and Whybark in their primer on enterprise resource planning (ERP) systems apply to IS in general:

In addition to the technical details, the way the hardware and software are organized, and technically how the logic of the system functions, there is another aspect to understanding ERP. It is the management and implementation issues associated with the systems (p. vi-vii). . . . The software doesn't manage the people do (p.16). . . . You need to solve the management problems and get the relationships between functions sorted out before you can fire up the system (Jacobs and Whybark, 2000, p. 12).

Listed below are some of the management principles to be followed to insure that strategic development is directed toward using IS tools for gaining and maintaining a competitive advantage:

1. Understanding the overriding necessity of gaining a **shared commitment** to an organizational purpose that places the ultimate value on the human capital.
2. Building **human resources systems and policies** that support the hiring, training, and rewarding of people: people that see necessity for, and can add value to, the principles of speed, innovation, and recognition of the necessity to meet changing customer needs.
3. Instituting the cornerstone of improvement--**measurement**: measure something and it will improve.
4. Understanding that **relationships and discipline** are keys to successful management: applies to constituents--organizations, self and all human resources.
5. Perceiving that the new rules of commerce require a **flexible broadening** of awareness, perspectives, and alternatives.
6. Knowing that the understanding of individual and organizational **frames, and biases** are a way to expand alternatives and reach new horizons.
7. Committing to **usefulness that is defined by customers** not technology.
8. Insuring that "necessary" **function centered automation** must always override technologies centered functionality.
9. Showing that **flexibility** is the key to survival.
10. Having management recognition and rewards efforts that direct the organization toward continuous improvements, adding of new features that meet changing needs, and systematic innovation: **reward trying** not just success!
11. Knowing that **capturing information outside** of an organization matters more than inside information.

No IS will contribute to a sustainable competitive advantage without recognizing in its design the human resources, customers, relationships and ability to recognize change. The objective in IS design is to provide an IS that supports these overriding managerial essentials.

## Identifying Components for Success in IS

Managers must recognize the need to shift emphasis from the management of stability and control to

leadership directed toward speed, empowerment, flexibility and continuous improvement. Furthermore, these should be directed toward product, service, administrative, process, managerial, and organizational innovation. The power of information systems enabled by new technologies makes management to these ends especially critical for organizations to become and remain innovative; indeed, even for organizations to survive. Information systems must be flexible enough to be adaptable to changes in the organization's management and its environment.

Five things are important regarding these changed managerial objectives. First, innovation in the use of information is critical to an organization's continued existence. Secondly, all information systems' innovations, big or small, technology-based or not, are important for inclusion in strategic planning and strategic processes. Third, it is necessary to structure an organization and manage its people in a manner that fosters information systems innovation. Fourth, management cannot afford to fear proven information technology; it must be used much like we use automobiles, Faxes, airplanes, or PCs. We know the capabilities without having to understand the technology. Finally, American organizations must seek to innovate through and with information and technology, and learn to manage the process.

Technological change, specifically using information technology in information systems, has led to success for some organizations. However, using high technology for information systems does not guarantee success. And many important innovations relating to information systems for competitive advantage are mundane, involving no breakthroughs. All information innovations have the potential of providing competitive advantages, and should be viewed as critically as major technological information systems changes. How do we take advantage of the "hi-low-no-tech" IS's promised potential? Managers start by formulating an IS strategy for competitive advantage.

### Formulating an IS Strategy

A strategy that allows organizations to achieve an IS's potential is developed according to the following steps:

1. Identifying all information used in an organization value chain--or value chains.
2. Identifying potentially relevant information technologies in other industries and under scientific development.
3. Determining the likely path of change in key information technologies.
4. Determining which potential information technologies are most significant for competitive advantage and industry structure.

5. Assessing a firm's relative capabilities in important information technologies and the cost of making improvements.
6. Selecting an information technology strategy that reinforces the firm's overall competitive strategy.
7. Reinforcing business unit information technology strategies at the corporate level that support the overall corporate information technological strategy.
8. Insuring that IS strategy supports organizational strategies and fit organizational capabilities, resources and needs.

Managers who follow the above steps to formulate IS strategy, however, must implement a consistent reward structure. All too often, management says one thing and rewards for another. Managers often say they want quality and profit, yet we pay for production and sales. They preach the need for service, but measure work by number of customers handled or the length of the customer service phone call. They seek long-term profits, but manage and control by quarterly earnings. They talk about the need for innovation, but punish failure. Management's commitment to continuous innovation and change must be shown through its reward systems.

Regardless of the industry or the circumstances, getting the right people to identify the right problems is more important than determining the correct answers. So rewards must be geared toward identification and not necessarily toward solution. To help this process, an IS designed for strategic advantage must have the ability to capture, store and retrieve volumes of information from customers and potential customers. This requires implementing the IS strategy.

### Implementing an IS Strategy

Bill Gates (1999) said that how you gather, manage, and use information is the chief determinate of whether you win or lose. The information flow is the lifeblood of any business. The right information must reach the right people at the right time. He goes on to say that most organizations have the technology that they need, but they don't always know how to use what they have. Rodin and Hartman (1999) state that the only real way to make money today is to solve customers' problems. An organization must build its information technology infrastructure to add value to the business it is in.

Outlined below is a development process that has been successful in creating systems for competitive advantage. It is a repetitive process; its steps are repeated when new information or technologies become available.

It has been successful because it facilitates innovation and accommodates changes in the organization's environment.

1. Select processes for design or redesign with promising payback, risk-reward ratios, or cost-benefit projections.
2. Identify enablers for new process design.
3. Define business strategy and process vision.
4. Understand the structure and flow of current process.
5. Measure the performance of the current process.
6. Design the new process.
7. Prototype the new process.
8. Implement the process and associated systems.
9. Communicate ongoing results of the effort.
10. Build commitment towards this type of solution by obtaining feedback from users and making adjustments.

Managers can use this process to develop effective IS for competitive advantage. But the most effective way to gain and sustain competitive advantage often involves speed--in designing, building and delivering. The effective way also always involves adding value. Moreover, speed and value come from "the only difference-maker--people" (Cortada, 1995: p.3). And, most often we see exceptional performers rapidly adopting new technologies without necessarily changing niches.

Creating and spreading knowledge among the members of an organization is the essence of innovation (Sherman, 1996). The basic requirement for the creation and spread of knowledge is information. In today's fast-paced business environment, IT offers the ability to capture information from internal and external sources and the ability to categorize, maintain and update the captured information, until, finally, information becomes useful knowledge. Consider what IBM's Louis Gerstner said, "I start every day with customers, but this is an industry that starts every day with technology . . . [because] the customers are changing the way they're thinking about information technology (Schlender, 1996: p. 108)."

### **Success Components of The IS Strategy**

The above discussion includes suggestions for identifying and developing IS for competitive advantage. These suggestions, however, lead to the following questions. How do managers identify ways of deploying IS in their organizations to achieve competitive advantage? How do managers know that there is adequately serve this purpose?

Service and Maddox (1999), based on a dynamic case analysis, suggested IS related success factors in five areas: Aiming, Capturing, Balancing, Measuring, and Designing and Integrating. They defined a measure of IS effectiveness, the Information Quotient (IQ), that was composed of these factors. The success factors are summarized in Appendix 1. Service and Maddox

presented these factors as useful guidelines in developing IS for a competitive advantage.

### Measuring IS Success Components

Future directions in this research will investigate the use of the information quotient measure in actual organizations. It will provide measures of an organizational IS's ability to achieve competitive advantage, and a method of benchmarking individual organizations against a norm.

As a result of further research, feedback on the Service and Maddox article, and pilot surveys, a survey instrument was developed from the success factors shown in Appendix 1. The instrument operationalized each of the factors and ask respondents to rate the relative importance of each of the factors. It has been pilot tested with over 200 working evening MBA students taking a MIS course. In these tests the instrument has been shown to be useful in helping organizations identify where their IS are lacking, thus providing a starting point for improvements. Future plans are to administer a revised survey to a sample of organizations worldwide.

## **Conclusion**

This paper has discussed the need for new approaches to choosing applications for information technology. It has suggested that, to achieve competitive advantage for an organization, IS should be grounded in managers' needs for information rather than resulting from technological change. An organization's IS must be managed with clear direction and consistent reward structures. The paper has suggested guidelines for identifying and implementing such information systems. It has also identified components that can be measured in order to determine how well an IS serves this purpose.

Though there is work yet to be completed, significant contributions result from this paper. In its present form, it provides guidelines for managers to reconsider how they currently use IS. It also identifies issues that merit further investigation by researchers.

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## Appendix 1 - Information Systems Success Factors

### AIMING - SYSTEM ROBUSTNESS THROUGH FUNDAMENTALS

1. **Complete Database:** extends beyond information on current customers to include profiles of noncustomers: Data that merits keeping is data that is "worth" updating.
2. **Continuous upgrading:** avoids freezing the system: modifiable.
3. **Fast Innovation/New Products:** facilitates introduction of innovations through open interfaces and robust design.
4. **Linkage:** users must be able to easily link all relevant information systems inside and outside their organization.

### CAPTURING - MARKET AND CUSTOMER FOCUS

5. **Service Added:** must provide for intelligence on service performance for every product or management function.
6. **New Pricing Structures:** internally, the system must provide the ability to determine the impact of new or innovative pricing structures. Externally, the system must allow its users to create new innovative pricing structures.
7. **Low-Cost Provision:** for low cost providers, sufficient information on the competition's pricing must be maintained as well as information that might suggest potential substitutes or imitations are pending.
8. **Speed/Timing or Being First:** information that can enable management to compress time schedules, shrink delivery times, or be first to market must be maintained.
9. **Listening to Customers and Noncustomers:** keep customers' and users' requests in the IS. The organization must practice listening: seeking to understand current customers' and potential customers' requirements.
10. **Anticipating Future Needs and Maintain Maximum Flexibility:** anticipated needs become more important as more users recognize those needs. Keep the system flexible to avoid being "leap-frogged" by the competition or to avoid being unable to provide required management functions.

### BALANCING - PROVIDE MORE FUNCTIONAL LEVELS TO STRATEGY

11. **Making IS and/or IT Support Organizational Objectives:** use IS or IT to meet internal or external customers' business objectives.
12. **Point to a Distinctive Competency:** know customers' "I don't care zone," and understand your organization's "distinctive competency."
13. **Know Your Business and Apply IS/IT to Business Needs:** the key is projecting or forecasting. Fit is a key concept: the most important fit is not today's, but the fit of the future. Information on industry, substitutes, and imitations is required to understand future directions.
14. **Redesign or incremental improvement:** a useful IS must be used and modified at the same time. Many major system changes result in high levels of poor integration, nonuse, and rejection by users.

### MEASURING - BEHAVIORAL/STRUCTURAL- INFRASTRUCTURE/MANAGERIAL FOCUS

15. **Benchmarking:** requires accurate measurements before and after performance to direct further development work.
16. **Assess risks:** determine if you are attempting a "bet your company" solution and, if so, why it must be attempted.
17. **Assess infrastructure:** ID required skills and resources preceding specific IS solutions. What can be outsourced?
18. **Assess managerial impact:** how will IS design change values and work behavior, and will creativity be stymied? Does IS design support teamwork?
19. **Assess organizational structures impact:** the idea is to reduce boundaries. The IS must direct individuals and organizations to think outside their boxes, paradigms, constraints, models, and modes ; yet retain basic values, ethics, beliefs, and directions . Restrictive usage and excessive procedures will not provide a competitive advantage.
20. **Assess managerial focus:** management, that is administration and bureaucracy, must be replaced with leadership in setting direction and empowerment IS must be a leadership enabler, not an administrative tool.

### DESIGNING and INTEGRATING - IS DEVELOPMENT PROCESS

21. **Quality and Design:** quality and change control are critical to ensure that information systems do not go down and users do not get lost because the system is not available when needed. The system must be designed with aesthetics, user friendliness, and functionality as the immediate intrinsic goals.
22. **Lock-in and lock-out:** for your organization, linkage to outside systems must be easy. Customers using your system need to be locked into your IS. The competition needs to be locked out of your information system.
23. **Integrate Products:** all related information system products that a firm uses or sells need to be integrated. A separate system, such as a personnel planning or budgeting system with no link to the IS, will eventually lead to reduced use and consequently the reduced likelihood of improvements.
24. **Simple Solutions:** addressing business needs, not by investing in technology that may or may not become useful.
25. **Define Existing Processes:** processes must be understood before they can be reinvented or reengineered . An organization's IS can be programmed to provide descriptive flows of existing processes as a basis for improvements.
26. **Maintenance of Special Features:** features such as tie-ins to e-mail or the stock market must be maintained once users become dependent on them.
27. **Testing Ideas before Committing:** as important as going forward is deciding not to go forward. Prototyping, pilot testing, and other means of testing to determine whether to implement changes to the IS are critical.

**Appendix 2 - ORGANIZATIONAL INFORMATION QUOTIENT**

Please rate the items below in each of the 2 columns using a 1 to 5 scale: A 1 indicates the item is not important (for column 1) or very poor (for column 2); a 5 indicates very important (for column 1) or very good (for column).

Column 1 rates the overall **IMPORTANCE** of the competency or feature; and Column 2 rates how well your organization's IS **MEASURES** up to that competency or feature.

<b>Column 1</b>	<b>Column 2</b>
<b>IMPORTANCE</b>	<b>MEASURE</b>
___	1. Overall completeness of databases.
___	2. <b>Extent the systems are continuously upgraded.</b>
___	3. Magnitude of systems support--speed, fast innovative or new products.
___	4. <b>Scope and span of linkages.</b>
___	5. Extent added services are enabled by systems.
___	6. <b>Flexibility of systems for new pricing structures.</b>
___	7. Efficiency of systems--allowing low-cost provision.
___	8. <b>Support of systems in speed, timing or being first.</b>
___	9. Magnitude systems enable listening to customers and noncustomers.
___	10. <b>Measure to which systems allow anticipating future needs and maintaining maximum flexibility.</b>
___	11. Level that IS supports organizational objectives.
___	12. <b>Degree IS is a distinctive competency.</b>
___	13. Extent IS/IT is applied to business needs.
___	14. <b>Level to which IS allows redesign or incremental improvement.</b>
___	15. Extent IS supports benchmarking.
___	16. <b>Level which IS allows adequate risks assessments.</b>
___	17. Degree IS assists in assessing infrastructure availability.
___	18. <b>Level IS helps assess managerial impact.</b>
___	19. Level IS helps assess organizational structures impact.
___	20. <b>Magnitude of IS help with managerial focus.</b>
___	21. Extent IS design fosters quality.
___	22. <b>Level customers are locked-in to your organization by your IS, and competitors are locked-out by your IS.</b>
___	23. Level of IS products integration.
___	24. <b>Extent IS supports simple solutions.</b>
___	25. Level IS accomplishes organizational processes.
___	26. <b>Extent IS allows maintenance of special features.</b>
___	27. Degree IS allows testing ideas before committing.

Please continue on the following page.

**ORGANIZATIONAL INFORMATION QUOTIENT--OVERALL SYSTEMS MEASURES AND DEMOGRAPHICS**

Again, using the 1 to 5 scale, column 1 rates the overall **IMPORTANCE** of the competency or feature and column 2 rates how well your organization's IS **MEASURES** up to that competency or feature.

Importance	Measure
___	1. Effectiveness of systems.
___	2. <b>Efficiency of systems.</b>
___	3. Extent of competitive advantage afforded by systems.
___	4. <b>Extent to which competitive advantage is sustainable.</b>
___	5. Degree to which necessary processes are practically accomplished with the systems.
___	6. <b>Productiveness and cost efficiency of systems.</b>
___	7. IS rating as to marketplace benefits compared to major competitors.
___	8. <b>Long run viability of competitive advantage afforded by IS.</b>
___	9. Overall systems "grade."

1. What is the name of your organization (Optional)?

Number of employees:  Annual revenue:

What is your organization's primary business?

How long have you been with this organization?

2. What is the name of your department or section?

What is the size of your department?  
 Number of employees:   
 Annual revenue  or annual budget

3. Classification of your current position. (Circle as appropriate)

- Management or supervisor.  In an IS position.
- Sales.  Not in an IS position.
- Technical/Administrative (Accounting, HR, etc.)
- Other  \_\_\_\_\_

4. Where does IS report in your organization?

5. Is IS considered a strategic tool at your organization?  
 (Circle one -- yes or no).

6. Can we refer to your organization when we present our findings? (yes or no).  
 Please note that we will only report aggregate information, but we would like to list only the names of organizations that participated.

**Please add any comments you feel are appropriate:**

**Thank you for your participation.**