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Abstract approved:

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Objectives The purpose of this study was to investigate the need for a technology acquisition tool to be used in the capital purchasing process in health care organizations.

Design Multi-method approach consisting of interviews of ten executives of health care organizations. A written survey was then mailed to Chief Executive Officers at all hospitals in Arizona, Oregon, and Washington.

Measurements Perceptions were assessed utilizing a mail survey on which CEOs self-ranked themselves on a scale that represented the five adopter categories contained in the Diffusion of Innovation theory, along with several questions regarding the perceived attributes of innovations. Several questions then

measured the need for a technology acquisition tool and what items should be included in a technology assessment tool.

Results The response rate was 18%. Descriptive analysis revealed that 93% of responding CEOs felt that the presence of a technology acquisition tool would help key decision makers during the capital acquisition process. CEOs of the respondent hospitals perceived themselves as more readily adapting new technologies or innovations. The perceived attributes of the innovations Compatability, Complexity, Trailability, and Observability were all supported by responses while Relative Advantage was not.

Major Themes The results support the importance of perceived attributes within the Diffusion of Innovation theory. The use of the Diffusion of Innovation theory to design implementation strategies for a capital acquisition tool may increase its chances for success. While CEOs differed on the types of processes they currently used, they all supported the development and use of a technology acquisition tool.

A Technology Acquisition Tool For Key Decision Makers

by
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I understand that my dissertation will become part of the permanent collection of Oregon State University libraries. My signature below authorizes release of my dissertation to any reader upon request.

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Stephen Self, Author

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CHAPTER 1

INTRODUCTION

Problem Statement

Key decision makers do not have enough resources, time for proper negotiation, or complete knowledge of all of the items that need to be included in the negotiation process prior to technology acquisition. Few facilities have a formal process for new equipment acquisition or the necessary forms that would accompany a well-designed procurement process. What would the effect of a well developed and formalized acquisition tool have on capital equipment resource allocation and the subsequent measures of return on investment and end user satisfaction?

Background

The healthcare environment today is one of increasing pressure to improve quality, control costs, maintain safety, and enhance customer satisfaction. Healthcare costs have risen faster than the domestic product in most years since 1960 (Bozic et al, 2004). National health care spending is forecast to outpace gross domestic product (GDP) growth each year during the next decade, causing health's share of the GDP to rise from 16 percent in 2004 to 20 percent in 2015 (Borger et al, 2006).

Cost containment measures such as the Oregon Health Plan, proliferation of managed care, and HCFA's implementation of DRG's and APC's have

severely limited the resources available to healthcare organizations. The cost of healthcare in the United States continues to be a major concern for third party payers, government agencies, patients, and health care providers.

There is a growing body of literature suggesting that technology advances are a major factor in the growth of healthcare spending (Bozic et al, 2004). Nearly every healthcare management article published in the 1990's pointed to technology acquisition and use as being primarily responsible for the increase in health care costs in the United States (Bozic et al, 2004). In a review of health care spending, Baker et al stated: "It is commonly accepted that advances in technology have been one of the most important drivers of health care spending growth over the past several decades, if not the most important driver" (2003).

As a result, how health providers allocate funds is an important topic for researchers and practitioners. This subject is of particular concern for purchases of new equipment because of the high cost of new technology and the increasing speed at which this technology becomes obsolete. An organization can easily spend a significant portion of its available resources on one high-priced piece of technology only to find it does not perform as desired. They then find themselves in a legal quandary as to the remedy to this problem. This makes it of vital importance to pay special attention to the terms and conditions of these purchases and their subsequent service contracts.

Historical Overview

Today's fragmented healthcare system was born of the early United States tradition of individualism and reluctance to accept any governmental intervention (Peirce, 2000). Early healthcare institutions were known as 'almshouses' which existed primarily to care for the poor and indigent.

In his book *The Social Transformation of American Medicine*, Paul Starr (1982) identified three phases of development that shaped the current hospital. Phase I lasted from approximately 1751 until the mid-1800's. Phase I featured the development of voluntary and public hospitals. Voluntary hospitals were supported primarily by donations while taxes supported public hospitals.

Phase II spanned from the mid-1800's until 1890. "Particularistic" hospitals treated special populations which included children or specific diseases such as tuberculosis. Phase II ended with approximately 172 hospitals existing in the United States.

Phase III lasted from 1890 until 1920 with for-profit hospitals first appearing. By the end of Phase III, more than 4,000 hospitals of multiple types had been established plus an additional 521 mental illness hospitals had been built.

Throughout all three phases, the hospital was evolving from an institution of social welfare to one of medical science. At the same time, the hospital was moving from being organized as a charity to a business and from an orientation towards the poor to a focus on medical professionals and their patients. As a part

of this reconstitution, the hospital moved from the periphery to the center or hub of medical education and medical practice, and developed three separate lines of authority: medical/clinical; administrative; and governing (Barton, 1998).

As the United States rebuilt its industrial base following World War II, a shortage of hospitals and providers was declared. To remedy the hospital shortage, the Hospital Survey and Construction Act of 1946, also referred to as the Hill-Burton Act, initially provided funds for hospital construction in rural areas (Barton, 1998). During this time period the federal government also increased dramatically the budget of the National Institutes of Health, and in 1965 implemented the Medicare and Medicaid programs (Williams and Torrens, 2002). This was also a time of growing interest in the social and organizational structure of health care. During this time, major attention was directed, for the first time, toward the financing of health care with the resulting growth of health insurance plans, such as Blue Cross and Blue Shield, in the nonprofit sector and numerous commercial insurance companies in the for-profit sector (Williams and Torrens, 2002). Also during this time period the federal "War on Poverty" resulted in health care being widely considered more as a right and not a privilege.

Since the early 1980's the health care system in the United States has moved to an era of limited resources, restriction of growth, and reorganization of the methods of financing and delivery of care. This includes the growth of the

influence of economic market forces in the shaping of health care in America (Williams and Torrens, 2002).

Reimbursement policies implemented by Medicare and insurance plans have caused a decrease in the number of inpatient days provided by hospitals each year and reduced operating size of most hospitals. On all sides there has been increasing pressures for smaller size, greater efficiency, and control of health care costs (Williams and Torrens, 2002).

The 1990s and early 2000s have witnessed the appearance of many new organizational pressures and models in health care as a result of economic marketplace developments. The HMO that existed in relatively few numbers before the 1980's grew in the 1990's is still present in throughout the country, but has now decreased in market share. Joint ventures have been formed between previously separate entities within the health system which provide a variety of services (Campbell et al, 1998). As of 2005, HMO's had 21 percent of employer-sponsored insurance enrollment. Preferred Provider Organizations (PPO's) had 61% of market share with Point of Service (POS) and Conventional plans at 15 and 3 percent respectively (AHA, 2006).

Technology

New technology began to appear and grow rapidly after the turn of the century. World War II fostered an incredible surge of research endeavors that were assisted after the war by major financial support for research provided by the National Institutes of Health. By the year 2001, technology had become such

a major diving force in the American health care system, and such a contributor to rising expenditures for health care, that it is being challenged, primarily to reduce the use of technology or at least to control its growth. The emphasis is no longer solely on unhindered growth and expansion, but rather on careful evaluation and controlled use and availability. At the same time that the use of technology is a subject for control and possible reduction, the number of people in the American population with limited access to this same technology has continued to grow (Williams and Torrens, 2002).

Current Status

The number of community hospitals peaked at 6,310 in 1975; in 1993 the community hospital count was about the same as it was in 1960 (5,768). The number of hospital beds has followed a similar pattern, with a peak of 1,087,850 beds available in 1985, but only 992,375 beds available in 1993 (Barton, 1998). Only about 5 percent of all hospitals are federal, and more than half of all hospitals are not-for-profit institutions. The distribution for hospital bed size shows 44 percent of all hospitals having fewer than 100 beds and only 6 percent having 500 or more beds (Barton, 1998). According to the American Hospital Association, in 2006 there are 4,936 community hospitals with a total of 802,311 beds (AHA, 2006).

The hospital sector is still very fragmented in comparison with other sectors. Despite a wave of mergers and acquisitions in the 1990s, 30 percent of licensed hospitals are not a part of a multi-hospital system. Even within such

systems, capital planning decisions are largely made at the individual hospital level (Coye and Kell, 2006). This leads to hundreds of individual decisions which commit the majority of capital available to health care for the future.

Hospitals are often accused of adopting technology too rapidly or haphazardly. Conversely, health care as a whole is accused of adopting many beneficial technologies too slowly (including those that are hospital based) and generally being too slow to innovate (Institute of Medicine, 2001). The purchase of new technology, including IT and major medical equipment, reached 51 percent of all hospital capital spending in 2001. Although overall capital spending remained relatively flat in the late 1990s, hospital executives reported an increase in this decade, and spending is expected to climb an average of 14 percent per year. Hospitals are relying more on earnings from operations to finance capital investments, which makes technology acquisition more challenging for low-margin institutions (Coye and Kell, 2006).

Leaders of health care organizations need to insure that scarce resources are being spent wisely. Capital planning committees usually make major decisions regarding technology adoption, but few studies have documented the decision-making processes or the outcome of the acquisition (Friedman and Goes, 2000).

The purchasing process is only the first step in what can be a long term relationship between the organization, the vendor, and the organizations many customers. The steps used during this process determine the nature of this

relationship during subsequent years. What happens if the equipment doesn't perform properly and/or service personnel must be utilized? What happens if the primary customers are unsatisfied with equipment performance? What is the best way to control total costs over the life of the equipment? Being prepared up front for all possible outcomes is the best way to insure success.

Research Questions

The following research questions will be addressed:

1. Do health care organizations utilize technology acquisition tools when purchasing capital equipment with values exceeding $100,000?
2. Would the presence of a technology acquisition tool help key decision makers during the capital equipment resource allocation process?
3. What effect would a technology acquisition tool have on the organization's bottom line as measured by return on investment for the new technology?
4. How would the utilization of a technology acquisition tool effect end user satisfaction levels with capital equipment purchases in health care organizations?

Need for the Study

There is limited research in the area of purchasing for health related organizations. In fact, to date the author has found no previous research that directly links an acquisition tool to customer satisfaction and equipment life cycle cost savings in health care institutions. This research will open the door for

further development of tools to be used in this process. This study will benefit all health organizations by identifying areas of possible non-compliance with State and Federal regulations. Further, this research will identify the need for tools that provide an avenue for legal recourse should it be needed. This research could be extended to other types of health facilities as well as various purchasing processes across other lines of business.

Assumptions

A self-report questionnaire was used as the measurement tool. It is necessary to assume that all respondents answered the questionnaire honestly and completely. This is a reasonable assumption given the professional status of the respondents. To further encourage their honesty, the identity of the individual respondents will be held in strict confidence. This fact was communicated in the survey instruction portion of the survey instrument.

Delimitations

This study is delimited to all hospitals in Arizona, Oregon, and Washington. The respondents were the healthcare organization's Chief Executive Officer as the key decision maker responsible for the procurement of all equipment.

Limitations

This survey was limited in length to approximate an average response time of 10 minutes. It focused on specifics of healthcare purchasing. The survey represents a specific moment in time. Since this is a snapshot in time, responses

may only represent those who were currently or recently involved in the purchasing process. Respondents may self-limit themselves by working at an organization that is advanced in the techniques being studied. As a result, the respondents may be proud of their accomplishments and more likely to share by filling out the survey. Non-respondents may also be of a specific type who would choose to not respond for the opposite reason. They may be unaware of or simply not using the techniques being measured. Consequently, they may be afraid they will call attention to themselves and may therefore be under-represented in our study. This survey only included hospitals in Arizona, Oregon, and Washington, which may limit the ability to extrapolate to other states.

Definition of Terms

New equipment acquisition tool

This refers to the formalized process that includes policies and procedures that a facility might have in place for the procurement process and the paper trail that supports this process. Examples of these forms would include documentation signed by the vendor supporting state and federal laws and regulations as well as defining the warranty process in a way that is different than the sellers standard warranty statements. Other examples might include a specific form generated at the individual facility level that must be signed by each vendor in order to participate in the bid process. This form would define specific remedies available to the facility under various possible conditions.

Customer satisfaction

This refers to the level of satisfaction of the end user of the equipment. Example: Did the equipment meet or exceed their expectations? Is the customer happy with performance of the vender and their equipment after the sale?

Equipment life cycle cost savings

The standard business life cycle costs of the equipment produce measurable cost savings over current equipment. Example: Is the facility able to document the savings promised at the time of sale? Will the equipment be usable for the duration of the equipments supposed lifecycle? For instance, will the technology outdate before it is paid for or will it physically survive the duration of the required lifecycle?

Literature Review Of Key Topics

New Equipment Acquisition Tool

The business world has long recognized the need for a standardized approach to the purchasing process. Techniques have been developed and polices put in place to insure that the companies best interests are kept in mind during the entire process. When major capital outlays occur, it is not uncommon for teams of experts to be called into place to protect the share holder's best interest. Review of the current literature has not revealed this to be the case in health care. In fact in an article relating to the purchase of biomed equipment Shaffer and Shaffer (1995) found that there was a general lack of standardization to this process.

Technology assessment (TA) is any process of examining medical technology used in care, and reporting properties such as safety, efficacy, feasibility, indications for use, cost, cost effectiveness; and social, economic, and ethical consequences, whether intended or unintended (Rettig, 1997). Several major governmental units are responsible for limited aspects of TA (e.g., the FDA for drugs and devices), but a centralized and authoritative governmental body for TA does not exist (Barton, 1998).

One of the earliest federal government efforts at TA was the National Center for Health Care Technology, which existed from 1978-82. In 1983 the Office of Health Technology Assessment (OHTA) was established at the National Center for Health Services Research (NCHSR), which subsequently became the Agency for Health Care Policy and Research (AHCPR). AHCPR had limited funds to conduct TAs and experienced agency wide funding reductions in 1996. AHCPR is now Agency for Healthcare Research and Quality (AHRQ). The Office of Technology Assessment (OTA) was established in the early 1970s to respond to congressional requests for technology assessments in many fields including health but was abolished in 1996 (Barton, 1998).

The private sector has also had a role in TA. The Institute of Medicine (IOM), a unit of the National Academy of Sciences, sponsored a Council on Health Care Technology from 1986 to 1990. A national forum has recently proposed that IOM establish a national program, the IOM Roundtable on

Evidence Based Medicine, for the forecasting and assessment of emerging technology (Coye & Kell, 2006).

Because technology is not centralized, no assurance that the use of all technologies will be accessed in a timely manner exists. This makes assessment of technology during the acquisition phase of vital importance. The important function of how best to assess and review these technologies remains unexplored and varies from hospital to hospital (Rosenstein et al, 2003).

Many authors point to the development of a proper Request For Proposal (RFP) as the first step in the procurement process. This first step in the acquisition and implementation process is critical as a correctly written RFP aids the development of a solid platform for technology purchase and implementation (Couris et al, 1999). This process can also help identify any additional costs that may be associated with any project. A comprehensive RFP can delineate alignment or misalignment of the project with the healthcare organizations core mission thereby assisting in the optimization of capital resources.

According to Couris, the RFP should begin with an outline of the organization's mission and vision statements along with business goals. The proposed technology should be aligned with the organization's stated objectives in each of these areas. The RFP documents the objectives for the technology as stated by the end users. The organization must clearly prioritize and specify all system requirements according to their level of importance. Three different specification categories must be included: technical requirements, operational

requirements, and business processes. Highly detailed specifications are needed through out the RFP (1999).

The RFP provides structure to the process but an acquisition tool would require vendor signature up front that companies are willing to conform to a standardized set of rules and guidelines. This would keep CEOs from wasting time on vendors that are not willing and/or able to provide services at the required base level. The RFP then complements the acquisition tool by further defining all required equipment and their associated costs. The acquisition tool sets a level playing at the start that all vendors must meet. It takes away at least some of the ability of vendors to use smoke and mirror techniques by over emphasizing the pros and never listing the cons. It will also help illuminate areas of non-compliance with State, Federal, or organization rules and regulations. Healthcare organizations are usually left on their own to figure these things out.

Customer Satisfaction

Customer satisfaction has long been the staple of the business environment. While the measurement process itself sparks discussion as to a possible Hawthorne affect (Peterson & Wilson, 1992), it is generally agreed that one of the overall goals of any organization is to improve its customer satisfaction levels (Berkowitz, 1996). HCFA has sponsored several discussions of improvement of customer satisfaction in the managed care environment (Freidman, 1995). Little has been written about the procurement process and its

effect on satisfaction levels of the end users of major capital acquisitions in health care.

Many technologies that should reduce medical errors have been abandoned because of problems with their design, their impact on workflow, and general dissatisfaction with them by end users. For technologies to be used effectively they must be designed to be usable (easy to use) and useful (will improve job performance, efficiency, and/or quality) (Karsh, 2004). How technology is implemented into an organization can influence end user satisfaction.

If implementation is designed such that potential end users (nurses, physicians, pharmacists, etc) believe that (a) their jobs will change for the worse, (b) their work will become worse relative to another group, (c) the organization is benefiting from the new technology at their expense, or (d) this change will be as bad as the previous changes, there is an increased likelihood that end users will reject the new technology (Karsh, 2004). The design of the equipment evaluation process and its effect on implementation is essential in assuring end user acceptance and effective use of the new technology.

Management commitment to the new technology can have an effect on end user satisfaction and the success of the project. The reasons for the new technology should be made clear in order to reduce uncertainty about the new technology and to foster positive attitudes toward the technology. Being clear

about the reasons for the new technology also helps in the development of measures of success as well as the accountability for the change (Karsh, 2004).

A structured program for implementation is another indication of management commitment and may serve to reduce resistance to change. A structured program might take a variety of forms including a multidisciplinary transition team, clear direction for end users and managers as to where to go for help, and structured communication networks between supervisors and workers to deal with the new technology (Karsh, 2004).

Well designed training programs can help promote end user acceptance of technology. Well designed training not only transfers knowledge and skills about the technology, but it can also bring understanding of the technology through education and can create feelings of involvement in decisions (Karsh, 2004).

End user participation in new technology implementation can also increase the likelihood of end user acceptance and satisfaction levels. Empirical evidence suggests a link between participation and improved performance, job satisfaction, role strain, commitment, and reduced stress (Karsh, 2004). Participation in the purchasing process by the end user could improve satisfaction with the equipment purchased by improving their job satisfaction and performance by reducing the stress caused by the fear of the unknown.

Despite the perceived potential of Information Systems projects to enhance the performance of healthcare organizations, many experience low

acceptance and slow diffusion or failure and discontinuations of the whole project. Observers and analysts attribute this to various causes related to different perspectives (Wetzel, 2001).

First, traditional practices, patterns, and routines are obstructed or altered. They affect the cooperation and professional relationships between individuals and groups. Second, frequent difficulties in projects such as the lack of system integration or frequent interruptions and delay in the implementation processes overshadows its discernable improvements and benefits. Third, the implementation process itself is an extensive source of difficulty since it depends heavily on the integration of the system into complex, organizational settings (Wetzel, 2001).

Equipment Life Cycle Costs

The literature devoted to equipment life cycle cost in the business world is far too extensive to be covered here. These subjects are also covered in a wide range of educational materials. The health care arena has also devoted many publications to this subject (Berkowitz, 1996, Barton, 1999). However, I found no references relating the purchasing process in health care facilities and it's relation to the attainment of expected life cycle costs of the equipment.

The decision to purchase new equipment in the manufacturing industry has always been based upon the return on investment (ROI) calculation. The ROI determines mathematically if a new machine pays for itself in terms of reduced expenses or increased profits.

Many healthcare organizations invest significant time and effort in an attempt to track return on their investment. Some organizations have begun to question the value of this effort due to the increasing integration between technology and business processes and operations. The pervasive impact of technology now means that in many cases technology is so inextricably intertwined with people and processes that the identification of specific technology related benefit streams is of marginal value (Axson, 2001).

A related influence is the realization that many technology investments have failed to deliver the expected returns, not because of technology failures, but because of poor process design or inadequate training or education. The best method to measure the ROI is through three areas: people, process, and technology, and then translating these into quantifiable returns related to utility of the products and services offered and the cost of delivering them (Axson, 2001).

Axson (2001) indicates an investment evaluation would address the following:

1. Training workers to work effectively on the system and have experts close by when there is an issue for assistance (people).
2. Getting worker input on the design of the product. Having a work group to continually review the system and make recommendations and changes to the system (process).

3. Returns to be gained from implementing a new technology (technology).

Once investments are viewed in this manner, it becomes easier to define expected benefits and then measure returns on these investments. One other consequence is that this demands the creation of a multi-skilled, cross-functional team with shared accountability and responsibility for success. No longer can users point fingers at IT and vice versa, because the degree of mutual dependency for success is explicit (Axson, 2001).

Organizations use a variety of methods to evaluate payback. These include economic value added (EVA) to measure the after tax operating profits, a standard cost/benefits analysis to measure ROI, and historical analysis. However the most common method is still the net present value (NPV) method to determine if the initiative justifies the investment (Violina, 2000).

Equipment Safety

The literature is rich with examples of equipment safety measures in the modern business world (McAdams, 1989). OSHA has been active across all industries. JCAHO in cooperation with OSHA has written many standards relating to equipment safety in the healthcare environment (Stano, 2000). I found no research relating to a standard equipment procurement process in health care facilities and its effect on equipment safety and assurance of meeting all state and federal regulations.

The Institute of Medicine (IOM) report "To Err is Human" exposed the magnitude of serious problems related to patient safety in healthcare systems. Despite our best efforts we are needlessly harming patients. It is estimated that each year in the United States, between 44,000 and 98,000 individuals die from potentially preventable injuries associated with medical care in hospitals (IOM, 2000). The current healthcare system is not designed to insure better patient safety. Increasing complexity and fragmentation of care, rapidly expanding medical knowledge, increasing use of technology and shifting healthcare needs from diagnosis and treatment of single, acute problems to the long-term management of multiple, interrelated chronic conditions are posing new challenges for the health care system to cope with (Ralston & Larson, 2005).

In the last ten years, healthcare has endured three external initiates, reflecting the public's concern in safety, costs, and information privacy and security. In 1996, Congress passed the Healthcare Insurance Portability and Accountability Act (HIPAA). HIPAA was enacted as a health insurance reform measure to protect health insurance coverage for those workers that change or lose employment. HIPAA contains administrative simplification provisions that establish standards that facilitate the portability of health information between providers, health plans, and employers. The electronic transfer of information created the need for rules to assure the security of protected health information (Zambuto, 2004).

The second initiative came from the previously mentioned series from the IOM. The IOM's second report on quality in the nation's healthcare system, Crossing the Quality Chasm-A New Health System for the 21st Century, states that the "development and application of more sophisticated information technology systems is essential to enhance quality and improve efficiency" and called for a national commitment to build an information infrastructure capable of supporting all facets of healthcare delivery (IOM, 2001).

Finally, the Leapfrog group, a coalition formed by the Business Roundtable of over 135 organizations that provide healthcare benefits, focused national attention on three issues in response to the first IOM report on patient safety, To Err is Human: Building a Safer Health System (IOM, 2000). One of these initiatives was Computer Physician Order Entry (CPOE), the replacement of paper prescriptions with direct physician entry of drug orders into a computer. Leapfrog estimated that this type of system could reduce serious medication mistakes by up to 86% (Leapfrog, 2006).

Each of these initiatives is driving the adoption of newer technology in healthcare. These initiatives impact the technology of data acquisition, storage, display, and interconnection. They affect patient safety in ways not encountered in the past, and they add complexity to the processes of technology planning, acquisition, and support (Zambuto, 2004).

The United States Food and Drug Administration (FDA) is responsible for the regulation of medical devices. The FDA's medical device activity is

conducted primarily by the Center for Devices and Radiological Health. Although FDA authority over medical devices dates back to the 1930s, the modern era of medical device regulation began with the 1976 Medical Device Amendments to the Food, Drug, and Cosmetic Act (Wegner et al, 2005). This act provided for the premarket regulation of medical devices; that is, clearance via a 510(k) or approval via a premarket approval (PMA) was required before a device could be marketed in the United States. Closely related to the premarket process are such activities as good manufacturing practices, design controls, recalls, safety alerts, and reporting requirements (Wegner et al, 2005).

Although market forces are becoming stronger, Devers et al found that the Joint Commission of Accreditation of Healthcare Organizations (JCAHO) has been the primary driver of hospitals' patient safety initiatives. These initiatives can be grouped into three related areas: (1) developing better processes for reporting, analyzing, and preventing sentinel events (this includes responding to sentinel event alerts, particularly those concerning patient falls and use of restraints); (2) meeting patient safety standards, including increasing hospital leaderships knowledge of, and accountability for, patient safety, and creating a non-punitive culture; and (3) meeting all or specific JCAHO patient safety goals, particularly improving communication and the accuracy of patient identification (2004).

The Institute for Healthcare Improvement (IHI) is a non-profit organization dedicated to helping hospitals prioritize and implement patient

safety initiatives. On going research and peer education by public and private organizations is a major facilitator of patient safety. Organizations view research to evaluate what safety initiatives are most cost effective and how to better implement them. Patient safety research sponsored by AHRQ and private foundations, and IHI activities that help facilitate implementation are examples of how organizations use this type of information (Devers et al, 2004).

Summary

The business world has long recognized the need for a standardized approach to the purchasing process. Review of the current literature has not revealed this to be the case in health care. There is a lack of information available to key decision makers regarding standardized processes and the usefulness of the forms that accompany these processes. This research evaluates the need for a technology acquisition tool and its usefulness to the key decision makers during the procurement of capital equipment.

CHAPTER 2

LITERATURE REVIEW

This chapter discusses literature relevant to the research purposes of this dissertation. The chapter begins with a review of the structure of healthcare organizations as professional bureaucracies and institutions. Next, the diffusion of innovation theory is presented which will provide the needed structure for understanding the methods and results sections.

Theoretical Perspective

Professional Bureaucracies

Traditionally, healthcare organizations are viewed as professional bureaucracies where the key transformation tasks are imbedded in clinicians and where there is a need for an extensive administrative staff to manage infrastructure demands (Anderson and McDaniel, 2000). This bureaucratic configuration relies on the standardization of skills rather than work processes or outputs for its coordination and so emerges as dramatically different from the machine bureaucracy (Mintzberg, 1981).

The machine model (bureaucracy theory) relies on a complex system of highly prescribed rule sets, formalized control, and hierarchical authority structures that are intended, despite their intricacies, to simplify the organization's ongoing operations and led to simple, well-defined responses, even in the face of shifting environmental conditions (Ashmos et al, 2002). In

the professional bureaucracy, expertise and specific know-how of officers (generally achieved by professional education) are more important than in the bureaucratic style of implementation. The competence of the officer and the definition of the domain of work are derived not only from the formally described tasks and division of work inside the bureaucracy, but also from the expertise, opinions, and claims of the professional group (Havinga & Terpstra, 2001; Weber, 1964).

Because the professional bureaucracy relies for its operating tasks on trained professionals-skilled people who must be given considerable control over their own work-the organization surrenders a great deal of its power not only to the professionals themselves but also to the associations and institutions that select and train them in the first place (Mintzberg, 1981). The resulting structure is very decentralized with power over decisions flowing down the hierarchy to all levels of professionals.

On the other hand, the support staff is typically very large to back up the high priced professionals. This staff does the simple and routine jobs that the professionals avoid. As a result, parallel hierarchies emerge in the professional bureaucracy-one democratic with bottom-up power for the professionals, a second autocratic with top-down control for the support staff (Mintzberg, 1981). We will concentrate on the function of the CEOs as the key decision makers in the procurement process. Based on professional bureaucracy, the CEO will be

responsible for the details of the process as the physicians and other licensed professionals will not want to be bothered with the minutiae.

Institutional Theory

It is also helpful to think of healthcare organizations as a group of similar institutions. Institution theory contends external norms, rules, requirements, and relationships cause organizations to conform in order to receive legitimacy and support. By conforming, organizations in similar institutional environments evolve to resemble each other or become isomorphic with their environment. Institutional environments emphasize rewarding organizations for having structures and processes that are in conformance with the environment (Shortell & Kaluzny, 2000).

Continuous quality improvement efforts could be viewed as a response to newly emerging norms and practices within the healthcare services environment. These norms are being driven by the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) which has adopted continuous quality improvement as the basis for new accreditation requirements and by the National Committee for Quality Assurance (NCQA) which has developed quality criteria for health plans. National awards have been created to recognize institutions that exert leadership in continuous improvement efforts. Organizations quality efforts could then be motivated not by concerns over its quality or efficiency of care but by negative perceptions of external groups if it did not pursue continuous quality improvement (Shortell & Kaluzny, 2000).

How organizations acquire technology tends to follow similar patterns. Hospitals tend to be members of group purchasing organizations. These memberships could foster similar patterns of purchasing processes since the members themselves set the rules and conformance is insured by peer pressure. Pressure to have similar or better equipment than their competitors also drives which equipment institutions purchase (Coye & Kell, 2006). This pressure to have the same equipment as neighboring facilities drives hospitals to sometimes purchase expensive capital equipment without regard to ROI, end user satisfaction, or any other basic guiding principles.

Diffusion of Innovation

To better understand how a standardized approach to the purchasing process in a healthcare organization could improve outcomes, a diffusion of innovation perspective will be utilized. This approach will provide the framework of how functions like the procurement of new technology work in a healthcare organization.

Diffusion is the social process by which an innovation spreads through a social system over time (Webster, 1971). Diffusion is a series of adoption decisions made by individuals within a system. Adoption is an individual decision making process which involves change and therefore also includes risk taking.

The study of diffusion of innovation focuses on three basic clusters of influence that correlate with the rate of spread of change: (1) perception of the

innovation; (2) characteristics of the people who adopt the innovation, or fail to do so; and (3) contextual factors, especially involving communication, incentives, leadership and management (Berwick, 2003).

Perceptions of an innovation predict between 49% and 87% of the variance in the rate of spread (Rogers, 1995). Five perceptions of change as understood by possible adapters are most influential. The most powerful of these is the perceived benefit of the change. Individuals are more likely to adopt an innovation if they believe it will help them. The more knowledge that individuals have about the expected consequences of an innovation the more likely they are to adopt it. Rogers calls this the reduction in uncertainty and centers on the relative risk versus benefit as perceived by the individual.

The second important perception of change is an innovation must be compatible with the values, beliefs, past history, and current needs of individuals. In order to spread quickly, a change must be in tune with the current needs and belief systems.

A third factor affecting the rate of change is the complexity of the proposed innovation. Two other perceptions that predict the spread of an innovation: trialability (whether or not a proposed adopter believes he or she can find a way to test the change on a small scale without implementing it everywhere at first) and observability (the ease at which potential adapters can watch others try the change first) (Berwick, 2003). Changes are adopted faster

when they are perceived to have benefit, compatibility, simplicity, trialability, and observabilty.

A second cluster of factors that helps explain the rate of spread of an innovation is that associated with the personalities of the individuals among whom spread might occur, i.e., the potential adopters (Berwick, 2003). Decision makers can be classified according to the time of adoption as follows: innovators (the first 2.5% to adopt); early adopters (the next 13.5%); early majority (the next 34%); late majority (the next 34%); and laggards (the last 16%) (Webster, 1971).

Innovators tend to be socially disconnected. They are not opinion leaders but can be thought of as strange or weird. They are tolerant of risk and have a fascination with novelty. Innovators are also very willing to travel in order to learn. In health care, physician innovators may be thought of as mavericks or may appear to be heavily invested personally in a specialized topic (Berwick, 2003).

Early adopters are opinion leaders who are socially well connected. They communicate with innovators and amongst themselves. They have the resources and risk tolerance to try out new things. They are experimenters who are usually trying out several things at once. Crucial to diffusion, early adopters are watched by others. In health care settings, they are probably often chosen as elected leaders or representatives of clinical groups, and they are the likeliest targets for sales representatives (Berwick, 2003).

Early majority members watch the early adopters. They do not travel as much to learn. They learn mainly from people they know well and are less dependant on science and theory when deciding to test a change. Early majority members are also more risk adverse than early adopters. They are more ready to hear about innovations that deal with relevant, local issues than general background improvements. Physicians in the early majority are readier to try those innovations that meet their immediate needs than those that are simply interesting ideas (Berwick, 2003).

Late majority members are even more conservative than the early majority. While the early majority looks to the early adapters for signals about what is safe to try, the late majority looks to the early majority. They will adopt an innovation when it is the status quo, watching for local proof. They do not trust remote sources of information. Physicians in this group will adopt the standard of practice for their location (Berwick, 2003).

Laggards are individuals that Rogers terms their point of reference as the past (1995). They are traditionalists who make choices that are wise and useful to the community or organization. They are the physicians who swear by the tried and true (Berwick, 2003).

A third cluster of influences on the rate of diffusion of innovation has to do with contextual and managerial factors within an organization or social system that encourage and support, or discourage and impede, the actual process of spread (Berwick, 2003). Organizations may be nurturing environments for

innovators by offering them praise and resources. Since the early majority learns about innovation from social and local interaction with early adopters, organizations that promote these activities may see faster diffusion of changes.

Rogers also points out those leaders have several styles of dissemination, making innovative decisions as of three types: optional, collective, and authority (1995). The task for management is to match the strategy for change to the social context.

Diffusion follows a curve with a tipping point, after which it becomes difficult to stop a change from spreading further. Changes acquire their own momentum on the ascending portion of the adoption curve between 15% to 20% adoption (Rogers, 1995). This empirical finding makes theoretical sense in view of the social dynamics in the population model of adoption. Once innovators and early adopters have embraced a change, the model asserts that the early majority will follow their lead if they can interact with them, and, once those in the early majority have done so, the late majority will discover that the majority has changed direction and will feel comfortable in changing too (Berwick, 2003).

Successful diffusion then depends more on how an organization interacts with its innovators, early adopters, and the interaction between early adopters and the early majority than with any other groups.

Technology related studies using diffusion of innovations.

Suther and Goodson investigated Texas physicians' perceptions of genomic medicine as an innovation. The study utilized diffusion of innovations

as a framework. A state wide representative sample of primary care physicians practicing in Texas responded to a mailed survey. The survey measured primary care physicians' perceptions of five characteristics of genomic medicine as an innovation. Findings suggested that among the five characteristics measured genomic medicine's relative advantage, compatibility with current practice, it's complexity, and observability were the strongest predictors of likelihood to adopt genomic medicine tasks into primary care practice (2004).

Ash used diffusion of innovation theory to study organizational factors that influence information technology diffusion in academic health sciences centers. She studied diffusion of end user online literature searching, the computer based patient record, and electronic mail systems utilizing 1335 individuals working in informatics and library areas at 67 academic health science centers in the United States. A written survey was sent to randomly selected individuals. The conclusion of the study was organizational attributes are important predictors for diffusion of information technology innovations while individual variables differ in their effect on each innovation (1997).

Mustonen-Ollila and Lyytinen identified factors that affected over 200 information system process innovation adoption decisions in three organization environments over a period that spanned four decades. Their analysis was based on diffusion of innovations theory. Their results showed that several DOI factors strongly affect information systems process innovation adoption. These include user need recognition, availability of technological infrastructure, past

experience, own trials, autonomous work, ease of use, learning by doing and standards. Yet they also found that a large number of information system process innovation adoptions followed no discernable pattern (2003).

Summary

Traditionally, healthcare organizations are viewed as professional bureaucracies where the transformation tasks are imbedded in clinicians and where there is a need for an extensive administrative staff to manage infrastructure demands. Based on professional bureaucracy, the CEO will be responsible for the details of the process as the physicians and other licensed professionals will not want to be bothered with the process. It is for this reason that we concentrate on the function of the CEOs as the key decision makers in the procurement process.

Institution theory contends external norms, rules, requirements, and relationships cause organizations to conform in order to receive legitimacy and support. By conforming, organizations in similar institutional environments evolve to resemble each other or become isomorphic with their environment. Institutional environments emphasize rewarding organizations for having structures and processes that are in conformance with the environment.

The study of diffusion of innovation focuses on three basic clusters of influence that correlate with the rate of spread of change: (1) perception of the innovation; (2) characteristics of the people who adopt the innovation, or fail to

do so; and (3) contextual factors, especially involving communication, incentives, leadership and management.

Previous technology related studies using diffusion of innovation theory include physicians' perceptions of genomic medicine, information technology in academic health centers, and information system process innovation adoption decisions.

CHAPTER 3

RESEARCH DESIGN AND METHODS

The purpose of this study was to investigate the need for a technology acquisition tool to be used in the capital purchasing process in health care organizations.

This chapter discusses the methodology and research design utilized for data collection. The details about the pilot activity, the survey subjects, the survey questionnaire, procedure for administering the survey, and the method of data analysis are presented.

Pilot Activities

Prior to the final design of this study, ten corporate officers of healthcare organizations were interviewed. They were initially contacted by electronic mail and by phone to confirm the interview times. An additional cover letter (Appendix B) along with an Informed Consent form (Appendix C) was emailed to the interviewees prior to the scheduled interview session. Also included in this interview packet was a complete set of the questions to be used for the interview (Appendix D).

The interview sessions were held in the interviewee's offices. Interviews lasted from 45 to 60 minutes. At the beginning of the interview, each interviewer reviewed the Informed Consent form (Appendix C) prior to signature and were asked if they had any additional questions. Each interviewee was

instructed that the interview would be completely confidential. They were also informed that a paper copy of the transcribed interview and a paper copy of the results would be made available to them should they request one. The interview followed the outline as presented in Appendix D. The interviewee's were also informed that the interviewer would audio record the interviews as well as take field notes.

A professional transcriptionist transcribed the results of the interviews (Appendix H). The transcriptionist returned all paper copies and recordings to the researcher. The interview results were divided by interview questions with subsequent patterns or trend identified.

Questions for the interview addressed some basic demographic information regarding how long these corporate officers had been in their current positions. A question was asked regarding whether or not they had used a formal purchasing process or more specifically, if they had used a technology acquisition tool.

Additionally, several questions attempted to assess what the corporate officers perceived benefits of a technology acquisition tool were and if they have opinions regarding the value of such a tool.

These corporate officers were then given a copy of the proposed survey instrument and were be asked to evaluate each question. Changes were made per these experts advice and incorporated into the final version (Appendix F).

Statement of Research Questions

The following research questions were addressed:

1. Do health care organizations utilize technology acquisition tools when purchasing capital equipment with values exceeding $100,000?
2. Would the presence of a technology acquisition tool help key decision makers during the capital equipment resource allocation process?
3. What effect would a technology acquisition tool have on the organization's bottom line as measured by return on investment for the new technology?
4. How would the utilization of a technology acquisition tool effect end user satisfaction levels with capital equipment purchases in health care organizations?

The Sample

A survey was sent to 239 Chief Executive Officers at all hospitals in the states of Arizona, Oregon and Washington. A list of all hospitals was obtained from the Arizona, Oregon and Washington Hospital Associations websites. This list included the addresses and phone numbers of the CEO's at each facility.

Study Procedure

Protection of human subjects

Oregon State University's Institutional Review Board approved study procedures for the protection of Human Subjects before survey was sent.

The cover letter included with the survey instrument and questionnaire explained to the respondents the purpose of the study and that participation was optional. A copy of the letter can be found in Appendix E. A copy of the address labels were printed for each states database of CEOs. A unique identification code was assigned to each CEO and placed on the tracking sheet and listed on the survey. Self addressed envelopes were included in the mailing. Respondents were requested to return the survey in that envelope only. As the surveys were returned, the code numbers were circled on the printed lists so that the respondents did not receive follow-up. The envelopes and any other identifying information were separated from the surveys. Follow-up surveys which were sent to non-respondents were tracked by the same procedure. The cover letter also offers a copy of the results. If respondents requested copies, this was tracked separately from the identifying information.

Interview data was recorded and transcribed. An alphabetic coding system was assigned to each interviewee and was used to identify transcribed copies of the interviews and field notes. The recordings were erased and the field notes along with the tracking lists were destroyed at the conclusion of this study.

Design of the survey instrument

Since limited resources prohibited direct observation or interview, a self-report questionnaire was utilized as the measurement tool. The researcher measured satisfaction using a scale model. A very popular method of scale

model measurement utilizes a five point Likert scale to quantify levels of satisfaction (Williams, 1996) which yields ordinal data. Please refer to Appendix F for a complete copy of the questionnaire.

The author addressed content validity for the survey by having the ten expert corporate officers review the survey for content. Content validity is an especially important characteristic of questionnaires, examinations, inventories, and interviews that attempt to evaluate a range of information by selected test items or questions (Portney, 2000). This sample group of respondents was chosen from the population list of subjects to accurately represent the final group of respondents. This use of industry experts helped design and validate the survey data.

Design of interview questions

The interview questions were questions asked on the survey tool. Questions were designed to address the need for a technology acquisition tool. Additional questions were designed to address the five perceived attributes of innovations (Rogers, 1995). One question each was designed to address: Relative Advantage, Compatibility, Complexity, Trialability, and Observability.

Survey methods

The survey method followed the Total Design Method (TDM) as recommended by Dillman (1978, Salant and Dillman, 1994). The cover letter was designed to provide background information regarding technology acquisition tools. It then described the purpose, research, and practical usefulness

of the study and emphasized the importance of each individual's response. Finally, a description of the confidentiality safeguards, the offer of a summary of results, and the contact information for questions were presented. The letter was printed on Oregon State University, Department of Public Health letterhead and was signed with the department chair and the candidate's professional title.

Following TDM, the survey was reproduced in booklet format and mailed along with a self addressed business reply envelope. Each return envelope was addressed to the candidate at Oregon State University, Department of Public Health. The packet was mailed using the U.S Postal service on June 13,2008. An additional packet was mailed to non-respondents on July 10, 2008.

Data Analysis

Data analysis for this study used two different methods. The descriptive analysis reviewed the distribution of the variables between and among the "Assessing The Need For A Technology Acquisition Tool For Key Decision Makers" survey. Secondly, the results of the interviews were reviewed to identify patterns and trends in each interview question within the interview transcripts. The major patterns and trends were compared to the perceived attributes of innovations of Diffusion of Innovation.

The results of the survey were entered into SPSS (Statistical Package for the Social Sciences) v.11.01. Data for each of the questions were entered with coded numbers. Responses that contained too little data were removed from the

analysis. If a few of the surveys contained missing elements for some of the questions, they were considered in the analysis of those variables.

Selected variables were analyzed in SPSS using tables, histograms, and descriptive statistics.

CHAPTER 4

RESULTS

Data analysis for this study is divided into survey data and interview analysis. Survey data analysis focuses on descriptive analysis. The descriptive analysis reviews the distribution of the variables between and within the "Assessing The Need For A Technology Acquisition Tool For Key Decision Makers" survey. Interview responses are grouped by interview question with themes emerging within each question identified.

This chapter is organized with survey analysis following major research questions. A separate section details the responses concerning the design of a Technology Acquisition tool. Interview responses are also listed by each question.

Survey Analysis

Analysis of "Assessing The Need For A Technology Acquisition Tool For Key Decision Makers" survey is divided into descriptive analysis of the variables and investigation of the main research questions. The research questions are:

1. Do health care organizations utilize technology acquisition tools when purchasing capital equipment with values exceeding $100,000?
2. Would the presence of a technology acquisition tool help key decision makers during the capital equipment resource allocation process?

3. What effect would a technology acquisition tool have on the organization's bottom line as measured by return on investment for the new technology?
4. How would the utilization of a technology acquisition tool effect end user satisfaction levels with capital equipment purchases in health care organizations?

Descriptive Analysis

This descriptive analysis includes review of the variables and their distributions. Histograms and tables are used to show the number of respondents, frequencies, and skewness when appropriate.

A total of 43 surveys were returned out of 239 sent for a response rate of 18 %. Respondents from Arizona returned 11 of 86 or 12.8%. Oregon respondents returned 19 out of 62 for a response rate of 30.6 %. Washington respondents returned 14 of 91 or 14 %. Of the 43 total responses, 25.6% were from Arizona, 44.2% were from Oregon, and 30.2% were from Washington (Table 4.1).

Table 4.1 State Hospital Located In

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	AZ	11	25.6	25.6	25.6
	OR	19	44.2	44.2	69.8
	WA	13	30.2	30.2	100.0
	Total	43	100.0	100.0	

For how many years, altogether, have you worked at your current position level?

A question asked how many years, altogether, had respondents worked at their current position level. Respondents were asked to include all organizations in which they had been employed at the same position level. As shown in Table 4.2, 32.6% (N=14) had been at their current position level for 0 to 5 years, 23.3% (N=10) had been at their current position level for 6 to 10 years, 9.3% (N=4) had been at their current position level for 11 to 15 years, and 34.9% (N=15) had been at their current position level for greater than 15 years.

Table 4.2 Years Worked At Current Position Level

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 to 5 yrs	14	32.6	32.6	32.6
	6 to 10 yrs	10	23.3	23.3	55.8
	11 to 15	4	9.3	9.3	65.1
	> 15 yrs	15	34.9	34.9	100.0
	Total	43	100.0	100.0	

Is your organization part of a multi-hospital system?

When asked if their facility was part of a multi-hospital system, 37.2% (N=16) replied yes while 62.8% (N=27) replied no (Table 4.3)

Table 4.3 Part of Multi-Hospital System?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	16	37.2	37.2	37.2
	No	27	62.8	62.8	100.0
	Total	43	100.0	100.0	

What is the bed capacity of your hospital?

The CEOs reported that the average bed capacity of the facilities they worked at was 69.8% (N=30) less than 100 beds, 18.6% (N=8) 100 to 249 beds, 4.7% (N=2) 250 to 399 beds, and 7% (N=3) greater than 400 beds as shown in Table 4.4.

Table 4.4 Bed Capacity of Facility

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	< 100 Beds	30	69.8	69.8	69.8
	100 t0 249 Beds	8	18.6	18.6	88.4
	250 to 399 Beds	2	4.7	4.7	93.0
	> 400 Beds	3	7.0	7.0	100.0
	Total	43	100.0	100.0	

Please circle the number of the statement that describes your usual reaction to a new innovation.

Respondents self-ranked themselves on the interval scale of 1-5 to represent their usual reaction to new innovations. These five levels represent the Diffusion of Innovation theory's adopter categories. Underlines were used for emphasis. "I am usually the first CEO in my area to try a new innovation" represented Innovators; "I am usually one of the first few CEOs in my area to try a new innovation" represented Early Adopters; "I usually try a new innovation one I have seen other CEOs in my area use it successfully" represented Early Majority; "I will only try a new innovation once I have seen many other CEOs in my area use it successfully" represented Late Majority; and "I am usually one of the last CEOs in my area to use new innovations" represented the Laggard

category. A total of 43 responded to this question with no missing cases (Table 4.5). Responses revealed 6 or 14% Innovators, 23 or 53.5% Early Adopter, 13 or 30.2% Early Majority, 1 or 2.3% Late Majority, and no Laggards with a mean of 2.2 and a standard deviation of 0.71. This normal distribution was positively skewed, meaning that more respondents perceived themselves as more readily adopting new technology (Figure 4.1).

Table 4.5 Diffusion of Innovation Adopter Categories

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Innovators	6	14.0	14.0	14.0
	Early Adopters	23	53.5	53.5	67.4
	Early Majority	13	30.2	30.2	97.7
	Late Majority	1	2.3	2.3	100.0
	Total	43	100.0	100.0	

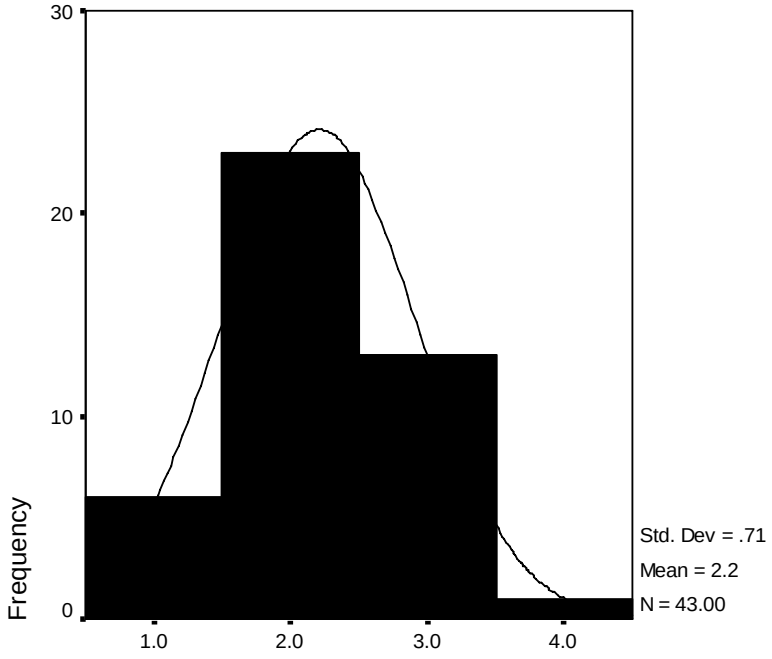

Figure 4.1 Diffusion of Innovation Adopter Categories

Considering the current method of capital acquisition; do you think a technology acquisition tool will be an improvement from the current system?

The next question accessed the relative advantage of the technology acquisition tool by asking if an acquisition tool would be an improvement over the current system. 41.9% (N=18) replied that a technology acquisition tool would be an improvement over the current system, 9.3% (N=4) stated that it would not be an improvement, while 48.8% (N=21) were not sure as shown in Table 4.6.

Table 4.6 Diffusion of Innovation - Relative Advantage

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	18	41.9	41.9	41.9
	No	4	9.3	9.3	51.2
	Not Sure	21	48.8	48.8	100.0
	Total	43	100.0	100.0	

Most people feel that there needs to be a balance between adapting the innovation to your workflow and adapting your workflow to the innovation. How important, if at all, is it that a new innovation is compatible to your current system?

This question assesses the respondent's opinion of the importance of compatibility of a new innovation to the current system. The respondents were asked to rate the importance of compatibility on a five point scale. No one rated compatibility as not at all important, 18.6% (N=8) rated compatibility as somewhat important, no one rated compatibility as neither important nor unimportant, 55.8% (N=24) rated compatibility as somewhat important, and 14% (N=6) rated compatibility as very important as shown in Table 4.7.

Table 4.7 Diffusion of Innovation - Compatibility

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Unimportant	8	18.6	18.6	18.6
	Neither	5	11.6	11.6	30.2
	Somewhat Important	24	55.8	55.8	86.0
	Very Important	6	14.0	14.0	100.0
	Total	43	100.0	100.0	

How important, if at all, do you think it is that a capital acquisition tool is easy to use at your facility?

This question assesses the respondent's opinion of the importance of complexity or ease of use of a new innovation. The respondents were asked to rate the importance of complexity on a five point scale. No one rated complexity as not at all important, 2.3% (N=1) rated complexity as somewhat unimportant, One CEO rated complexity as neither important nor unimportant (1%, N=1), 39.5% (N=17) rated complexity as somewhat important, and 55.8% (N=24) rated complexity as very important as shown in Table 4.8.

Table 4.8 Diffusion of Innovation - Complexity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Unimportant	1	2.3	2.3	2.3
	Neither	1	2.3	2.3	4.7
	Somewhat Important	17	39.5	39.5	44.2
	Very Important	24	55.8	55.8	100.0
	Total	43	100.0	100.0	

How important, if at all, is it that you are able to try out a new acquisition tool before it is implemented?

This question asked CEOs if they felt it was important to try out a new acquisition tool before it was implemented. The respondents were asked to rate the importance of trialability on a five point scale. One CEO rated trialability as not at all important 2.3% (N=1) and one CEO rated trialability as somewhat unimportant 2.3% (N=1). No one rated trialability as neither important nor unimportant, 27.9% (N=12) rated trialability as somewhat important, and 67.4% (N=29) rated trialability as very important as shown in Table 4.9.

Table 4.9 Diffusion of Innovation - Trialability

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Important	1	2.3	2.3	2.3
	Somewhat Unimportant	1	2.3	2.3	4.7
	Somewhat Important	12	27.9	27.9	32.6
	Very Important	29	67.4	67.4	100.0
	Total	43	100.0	100.0	

How important, if at all, would it be for CEOs to have an opportunity to see a demonstration of a new technology acquisition tool?

This question determined the level of importance that CEOs placed on observability or the opportunity to see a demonstration of a new technology acquisition tool before adopting it. The respondents were asked to rate the importance of observability on a five point scale. No one rated observability as not at all important, 2.3% (N=1) rated observability as somewhat important, 14% (N=6) rated observability as neither important nor unimportant, 37.2% (N=16)

rated observability as somewhat important, and 46.5% (N=20) rated compatibility as very important as shown in Table 4.10.

Table 4.10 Diffusion of Innovation - Observability

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Unimportant	1	2.3	2.3	2.3
	Neither	6	14.0	14.0	16.3
	Somewhat Important	16	37.2	37.2	53.5
	Very Important	20	46.5	46.5	100.0
	Total	43	100.0	100.0	

Design of Technology Acquisition Tool

Please indicate whether or not the presence of each of the following items would be important for vendor compliance to your organization policies.

Chief Executive Officers were then asked to indicate whether or not (yes, no, or not sure) the presence of the following 15 items would be important for vendor compliance to their organizational policies (Figure 4.2).

Equipment safety and regulatory requirements (a)

All CEOs responded that equipment safety and regulatory requirements were important for vendor compliance to their corporate policies (100%, N=43).

Software and firmware revisions (b)

Survey results showed 86% (N=37) felt that software and firmware revisions were important for vendor compliance, while 2.3% (N=1) said they were not important, and 11.6% (N=5) were not sure of the importance of these items.

Technical support (c)

Ninety-five percent of CEOs felt that technical support was important in relation to vendor compliance to corporate policy (N=41), 2.3% felt it was not important (N=1), and 2.3% were not sure (N=1).

Training for operator (d)

When asked if training for the operator was important for vendor compliance to corporate policies, 90.7% (N=39) said yes, 2.3% (N=1) said no, and 7% (N=3) were not sure.

Training for biomedical personnel (e)

When asked if training for the biomedical personnel was important for vendor compliance to corporate policies, 67.4% (N=29) said yes, 11.6% (N=5) said no, and 20.9% (N=9) were not sure.

Installation procedures (f)

Installation procedures were considered important in relation to vendor compliance by 86% (N=37) of CEOs, while 4.7% (N=2) said no, and 9.3% (N=4) were not sure.

Acceptance timeframe (g)

Survey results showed 76.7% (N=33) felt that acceptance timeframe was important for vendor compliance, while 11.6% (N=5) said it was not important, and 11.6% (N=5) were not sure of the importance of this item.

Acceptance testing procedures (h)

When asked if acceptance testing procedures were important for vendor compliance to corporate policies, 74.4% (N=32) said yes, 11.6% (N=5) said no, and 14% (N=6) were not sure.

Warranty period (i)

Warranty period was considered important in relation to vendor compliance by 93% (N=40) of CEOs, while 4.7% (N=2) said no, and 2.3% (N=1) were not sure.

Uptime guarantee (j)

Survey results showed 86% (N=37) felt that uptime guarantee was important for vendor compliance while 14% (N=6) said it was not important.

Equipment failure procedures (k)

When asked if equipment failure procedures were important for vendor compliance to corporate policies, 83.7% (N=36) said yes, 4.7% (N=2) said no, and 11.6% (N=5) were not sure.

Power requirements (l)

Power requirements were considered important in relation to vendor compliance by 81.4% (N=35) of CEOs, while 7% (N=3) said no, and 11.6% (N=5) were not sure.

Documentation of maintenance (m)

Survey results showed 83.7% (N=36) felt that documentation of maintenance was important for vendor compliance, while 7% (N=3) said it was not important, and 9.3% (N=4) were not sure of the importance of this item.

Payment terms (n)

When asked if payment terms were important for vendor compliance to corporate policies, 93% (N=40) said yes, 4.7% (N=2) said no, and 2.3% (N=1) were not sure.

Shipping terms (o)

Shipping terms were considered important in relation to vendor compliance by 81.4% (N=35) of CEOs, while 11.6% (N=5) said no, and 7% (N=3) were not sure.

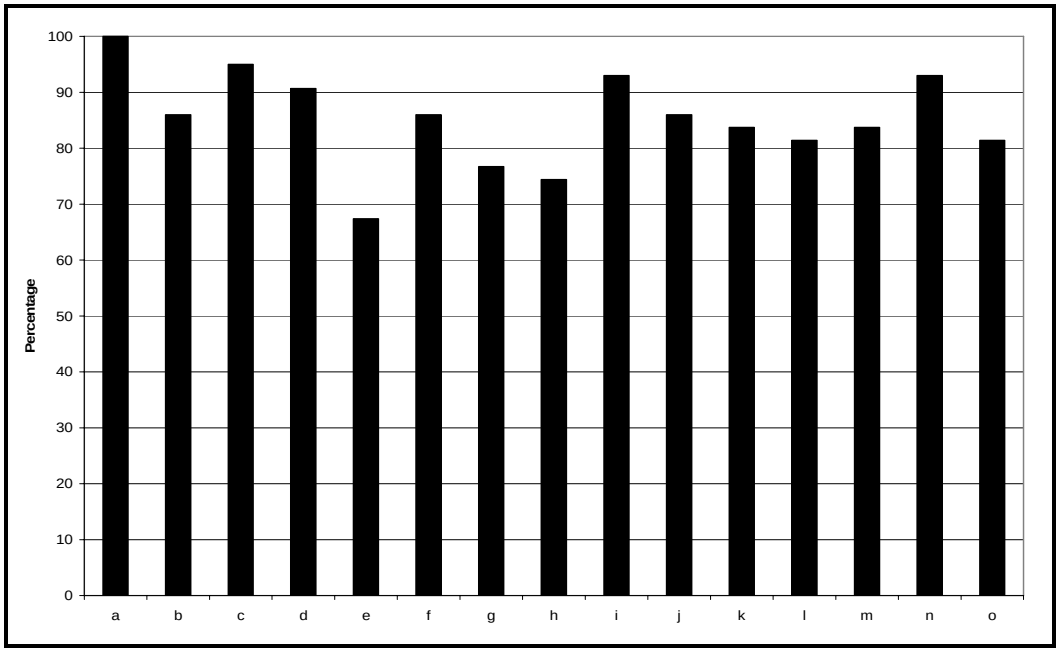

Figure 4.2 Items Rated Important for Vendor Compliance (percent of CEOs indicating yes)**.**

Please indicate the level of importance for each of the following items to be included in an acquisition tool.

Chief Executive Officers were then asked to rate on a five point scale the importance of including the following 15 items in an acquisition tool (Figure 4.3).

Equipment safety and regulatory requirements (a)

CEOs responded that equipment safety and regulatory requirements were important to include in an acquisition tool by 2.3% (N=1) somewhat unimportant, 4.7% (N=2) neither important nor unimportant, 41.9% (N=18) somewhat important, and 51.2% (N=22) very important.

Software and firmware revisions (b)

Survey results showed 2.3% (N=1) felt that software and firmware revisions were neither unimportant nor important to include in an acquisition tool, while 41.9% (N=18) said they were somewhat important, and 55.8% (N=24) felt they were very important to include.

Technical support (c)

CEOs felt that technical support was important to include in an acquisition tool, 2.3% felt it was neither unimportant nor important (N=1), 20.9% (N=9) felt it was somewhat important, 76.7% (N=33) felt it was very important.

Training for operator (d)

When asked if training for the operator was important to include in an acquisition tool, 9.3% felt it was neither unimportant nor important, 25.6%

(N=11) said it was somewhat important, and 65.1% (N=28) said it was very important.

Training for biomedical personnel (e)

When asked if training for the biomedical personnel was important to include in an acquisition tool, 2.3% (N=1) said it was not important, 4.7% (N=2) said it was somewhat unimportant, 20.9% (N=9) felt it was neither unimportant nor important, 32.6 (N=14) felt it was somewhat important, and 39.5% (N=17) felt it was very important.

Installation procedures (f)

Installation procedures were considered important to include in an acquisition tool by, 2.3% (N=1) of CEOs stating it was neither unimportant nor important, while 34.9% (N=15) said it was somewhat important, and 51.2% (N=22) said it was very important.

Acceptance timeframe (g)

Survey results showed 7% (N=3) felt that acceptance timeframe were somewhat unimportant to include in an acquisition tool, while 11.6% (N=5) said it was neither important nor unimportant, 37.2% (N=16) said it was somewhat important, and 44.2% (N=19) felt it was very important.

Acceptance testing procedures (h)

When asked if acceptance testing procedures were important to include in an acquisition tool, 7% (N=3) said it was somewhat important, 11.6% (N=5) said

it was neither unimportant nor important, 39.5% (N=17) said it was somewhat important, and 41.9% (N=18) felt it was very important.

Warranty period (i)

Warranty period was considered important to include in an acquisition tool by 4.7% (N=2) neither unimportant nor important, while 23.3% (N=10) said somewhat important, and 72.1% (N=31) felt it was very important.

Uptime guarantee (j)

Survey results showed 2.3% (N=1) felt that uptime guarantee was somewhat unimportant to include in an acquisition tool while 11.6% (N=5) said they were neither unimportant nor important, 27.9% (N=12) felt it was somewhat important, and 58.1% (N=25) felt it was very important.

Equipment failure procedures (k)

When asked if equipment failure procedures were important to include in an acquisition tool, 2.3% (N=1) said it was somewhat important, 14% (N=6) said they were neither unimportant nor important, 27.9% (N=12) said somewhat important, and 55.8% (N=24) said they were very important.

Power requirements (l)

Power requirements were considered important in to include in an acquisition tool by CEOs, 4.7% (N=2) said somewhat important, 9.3% (N=4) said they were neither unimportant nor important, 34.9% (N=15) said somewhat important and 51.2% (N=22) felt they were very important.

Documentation of maintenance (m)

Survey results showed 7% (N=3) felt that documentation of maintenance was somewhat unimportant to include in an acquisition tool, while 11.6% (N=5) said they were neither unimportant nor important, 32.6% (N=14) said they were somewhat important and 48.8% (N=21) said they were very important.

Payment terms (n)

When asked if payment terms were important to include in an acquisition tool, 14% (N=6) said they were neither unimportant nor important, 23.3% (N=10) said they were somewhat important, and 62.8% (N=27) felt they were very important.

Shipping terms (o)

Shipping terms were considered important to include in an acquisition tool by CEOs with 4.7% (N=2) saying they were somewhat unimportant, 14% (N=6) said they were neither unimportant nor important, 34.9% (N=15) said they were somewhat important, while 46.5% (N=20) said they were very important.

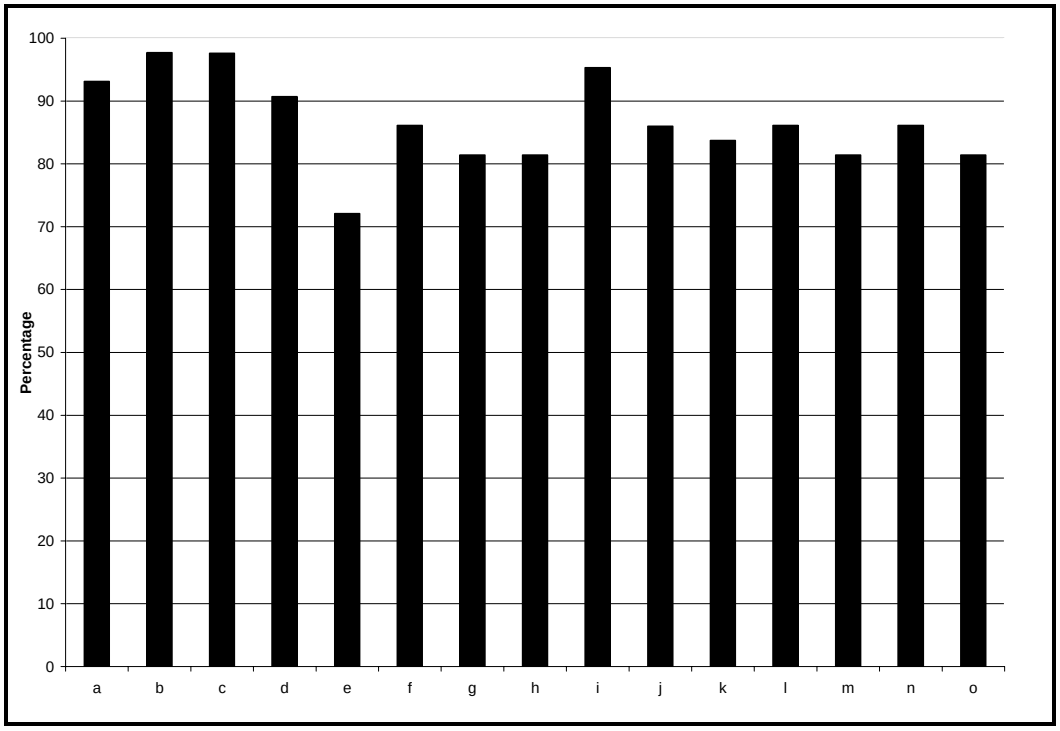

Figure 4.3 Inclusion of Items In Acquisition Tool Rated Important
(combined percentages for somewhat important and very important)

Please indicate the level of importance by rating the following items in relation to measuring return on investment.

Chief Executive Officers were then asked to rate on a five point scale the importance of including the following 15 items in relation to measuring return on investment (ROI) (Figure 4.4).

Equipment safety and regulatory requirements (a)

CEOs responded that equipment safety and regulatory requirements were important in relation to measuring ROI by 4.7% (N=2) not important, 9.3% (N=4) somewhat unimportant, 25.6% (N=11) neither important nor unimportant, 30.2% (N=13) somewhat important, and 30.2% (N=13) very important.

Software and firmware revisions (b)

Survey results showed that 4.7% (N=2) CEOs felt that software and firmware revisions were not important, 7% (N=3) were somewhat unimportant, 9.3% (N=4) were neither important nor unimportant in relation to measuring ROI, while 37.2% (N=16) said they were somewhat important, and 41.9% (N=18) felt they were very important to include.

Technical support (c)

CEOs felt that technical support was important in relation to measuring ROI, 4.7% (N=2) said it was not important, 4.7% (N=2) said it was somewhat unimportant, 18.6% (N=8) felt it was neither important nor unimportant, 30.2% (N=13) felt it was somewhat important, 41.9% (N=18) felt it was very important.

Training for operator (d)

When asked if training for the operator was important in relation to measuring ROI, 4.7% (N=2) said it was not important, 4.7% (N=2) said somewhat unimportant, 20.9% (N=9) felt it was neither important nor unimportant, 32.6% (N=14) said it was somewhat important, and 37.2% (N=16) said it was very important.

Training for biomedical personnel (e)

When asked if training for the biomedical personnel was important in relation to measuring ROI, 4.7% (N=2) said it was not important, 11.6% (N=5) said it was somewhat unimportant, 23.3% (N=10) felt it was neither important

nor unimportant, 30.2 (N=13) felt it was somewhat important, and 30.2% (N=13) felt it was very important.

Installation procedures (f)

Installation procedures were considered important in relation to measuring ROI by, 7% (N=3) of CEOs stating it was not important, 9.3% (N=4) somewhat unimportant, 20.9% (N=9) neither important nor unimportant, while 32.6% (N=14) said it was somewhat important, and 30.2% (N=13) said it was very important.

Acceptance timeframe (g)

Survey results showed 7% (N=3) felt that acceptance timeframe were not important in relation to measuring ROI, 4.7% (N=2) somewhat unimportant, while 25.6% (N=1) said it was neither important nor unimportant, 41.9% (N=18) said it was somewhat important, and 20.9% (N=9) felt it was very important.

Acceptance testing procedures (h)

When asked if acceptance testing procedures were important in relation to measuring ROI, 2.3% (N=1) said it was not important, 7% (N=3) said it was somewhat important, 30.2% (N=13) said it was neither important nor unimportant, 41.9% (N=18) said it was somewhat important, and 18.6% (N=8) felt it was very important.

Warranty period (i)

Warranty period was considered important in relation to measuring ROI by 9.3% (N=4) neither important nor unimportant, while 34.9% (N=15) said somewhat important, and 55.8% (N=24) felt it was very important.

Uptime guarantee (j)

Survey results showed 2.3% (N=1) felt that uptime guarantee was somewhat unimportant in relation to measuring ROI while 14% (N=6) said they were neither important nor unimportant, 34.9% (N=15) felt it was somewhat important, and 48.8% (N=21) felt it was very important.

Equipment failure procedures (k)

When asked if equipment failure procedures were important in relation to measuring ROI, 14% (N=6) said it was somewhat important, 27.9% (N=12) said they were neither important nor unimportant, 23.3% (N=10) said somewhat important, and 34.9% (N=15) said they were very important.

Power requirements (l)

Power requirements were considered important in relation to measuring ROI by CEOs, 9.3% (N=4) said unimportant, 9.3% (N=4) said somewhat unimportant, 30.2% (N=13) said they were neither important nor unimportant, 25.6% (N=11) said somewhat important and 25.6% (N=1) felt they were very important.

Documentation of maintenance (m)

Survey results showed 7% (N=3) felt that documentation of maintenance was not important in relation to measuring ROI, while 9.3% (N=4) said somewhat unimportant, 23.3% (N=10) said they were neither important nor unimportant, 39.5% (N=17) said they were somewhat important and 20.9% (N=9) said they were very important.

Payment terms (n)

When asked if payment terms were important in relation to measuring ROI, 7% (N=3) said they were somewhat unimportant, 11.6% (N=5) said they were neither important nor unimportant, 39.5% (N=17) said they were somewhat important, and 41.9% (N=18) felt they were very important.

Shipping terms (o)

Shipping terms were considered unimportant in relation to measuring ROI by 2.3% (N=1) CEOs, 9.3% (N=4) saying they were somewhat unimportant, 27.9% (N=12) said they were neither important nor unimportant, 27.9% (N=12) said they were somewhat important, while 32.6% (N=14) said they were very important.

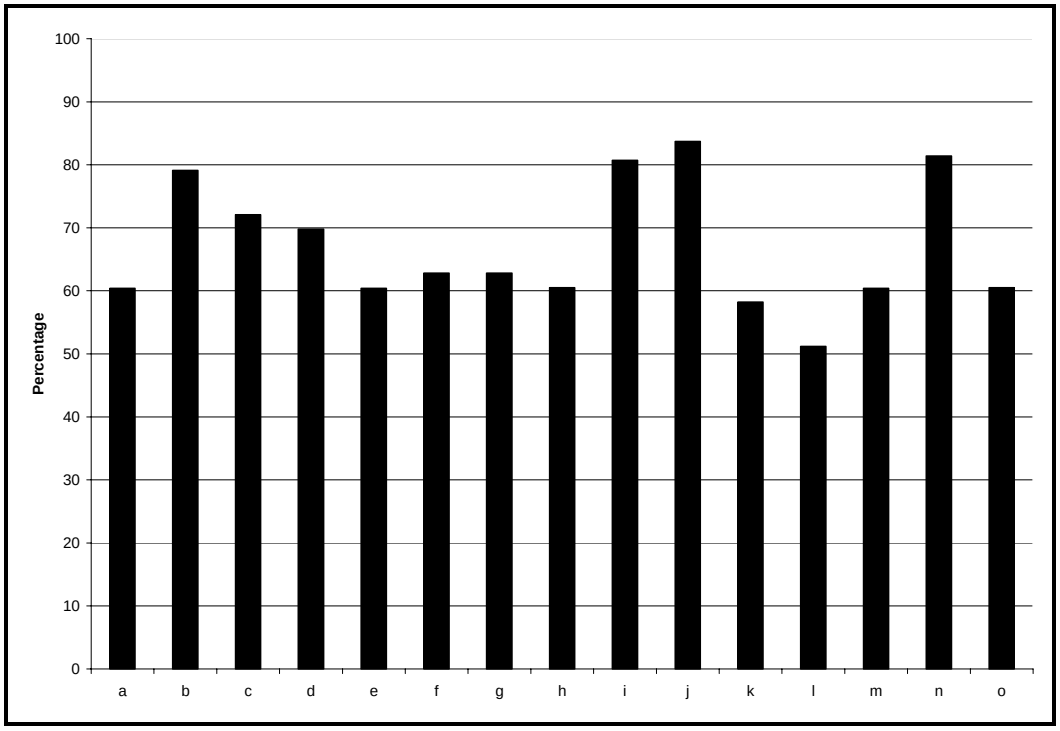

Figure 4.4 Items Rated Important In Relation To ROI (combined percentages for somewhat important and very important)

Please rate the level of importance for the following in relation to end user satisfaction.

Chief Executive Officers were then asked to rate on a five point scale the importance of including the following 15 items in relation to measuring end user satisfaction (Figure 4.5).

Equipment safety and regulatory requirements (a)

CEOs responded that equipment safety and regulatory requirements were important in relation to measuring end user satisfaction by 2.3% (N=1) not important, 11.6% (N=5) neither important nor unimportant, 30.2% (N=13) somewhat important, and 55.8% (N=24) very important.

Software and firmware revisions (b)

Survey results showed that 4.7% (N=2) CEOs felt that software and firmware revisions were 2.3% (N=1) somewhat unimportant, 11.6% (N=5) were neither unimportant nor important in relation to measuring end user satisfaction, while 34.9% (N=15) said they were somewhat important, and 48.8% (N=21) felt they were very important to include.

Technical support (c)

CEOs felt that technical support in relation to measuring end user satisfaction, 7% (N=3) felt it was neither unimportant nor important, 9.3% (N=4) felt it was somewhat important, 83.7% (N=36) felt it was very important.

Training for operator (d)

When asked if training for the operator was important in relation to measuring end user satisfaction, 2.3% (N=1) felt it was neither unimportant nor important, 18.6% (N=8) said it was somewhat important, and 79.1% (N=34) said it was very important.

Training for biomedical personnel (e)

When asked if training for the biomedical personnel was important in relation to measuring end user satisfaction, 2.3% (N=1) said it was not important, 4.7% (N=2) said it was somewhat unimportant, 3.6% (N=14) felt it was neither unimportant nor important, 16.3% (N=7) felt it was somewhat important, and 44.2% (N=19) felt it was very important.

Installation procedures (f)

Installation procedures were considered in relation to measuring end user satisfaction by 9.3% (N=4) of CEOs stating it was somewhat unimportant, 16.3% (N=7) neither unimportant nor important, while 41.9% (N=18) said it was somewhat important, and 32.6% (N=14) said it was very important.

Acceptance timeframe (g)

Survey results showed 4.7% (N=2) felt that acceptance timeframe were not important in relation to measuring end user satisfaction, 9.3% (N=4) somewhat unimportant, while 37.2% (N=16) said it was neither unimportant nor important, 25.6% (N=11) said it was somewhat important, and 23.3% (N=10) felt it was very important.

Acceptance testing procedures (h)

When asked if acceptance testing procedures were important in relation to measuring end user satisfaction, 4.7% (N=21) said it was not important, 7% (N=3) said it was somewhat unimportant, 37.2% (N=16) said it was neither unimportant nor important, 18.6% (N=8) said it was somewhat important, and 32.6% (N=14) felt it was very important.

Warranty period (i)

Warranty period was considered important in relation to measuring end user satisfaction by 4.7% (N=2) not important, 7% (N=3) somewhat unimportant, 23.3% (N=10) neither unimportant nor important, while 25.6% (N=11) said somewhat important, and 39.5% (N=17) felt it was very important.

Uptime guarantee (j)

Survey results showed 9.3% (N=4) felt that uptime guarantee was neither unimportant nor important in relation to measuring end user satisfaction while 25.6% (N=11) felt it was somewhat important, and 65.1% (N=28) felt it was very important.

Equipment failure procedures (k)

When asked if equipment failure procedures were important in relation to measuring end user satisfaction, 14% (N=6) said they were neither unimportant nor important, 30.2% (N=13) said somewhat important, and 55.8% (N=24) said they were very important.

Power requirements (l)

When power requirements were considered in relation to measuring end user satisfaction by CEOs, 9.3% (N=4) said they were unimportant, 9.3% (N=4) said somewhat unimportant, 25.6% (N=11) said they were neither unimportant nor important, 20.9% (N=9) said somewhat important and 35.9% (N=15) felt they were very important.

Documentation of maintenance (m)

Survey results showed 4.7% (N=2) felt that documentation of maintenance was not important in relation to measuring end user satisfaction, while 4.7% (N=2) said somewhat unimportant, 20.9% (N=9) said they were neither unimportant nor important, 44.2% (N=19) said they were somewhat important and 25.6% (N=11) said they were very important.

Payment terms (n)

When asked if payment terms were important in relation to measuring end user satisfaction, 16.3% (N=7) said they were not important, 11.6% (N=5) said they were somewhat unimportant, 32.6% (N=14) said they were neither unimportant nor important, 16.3% (N=7) said they were somewhat important, and 23.3% (N=10) felt they were very important.

Shipping terms (o)

Shipping terms were considered unimportant in relation to measuring end user satisfaction by 14% (N=6) CEOs, 11.6% (N=5) saying they were somewhat unimportant, 39.5% (N=17) said they were neither unimportant nor important, 16.3% (N=7) said they were somewhat important, while 18.6% (N=8) said they were very important.

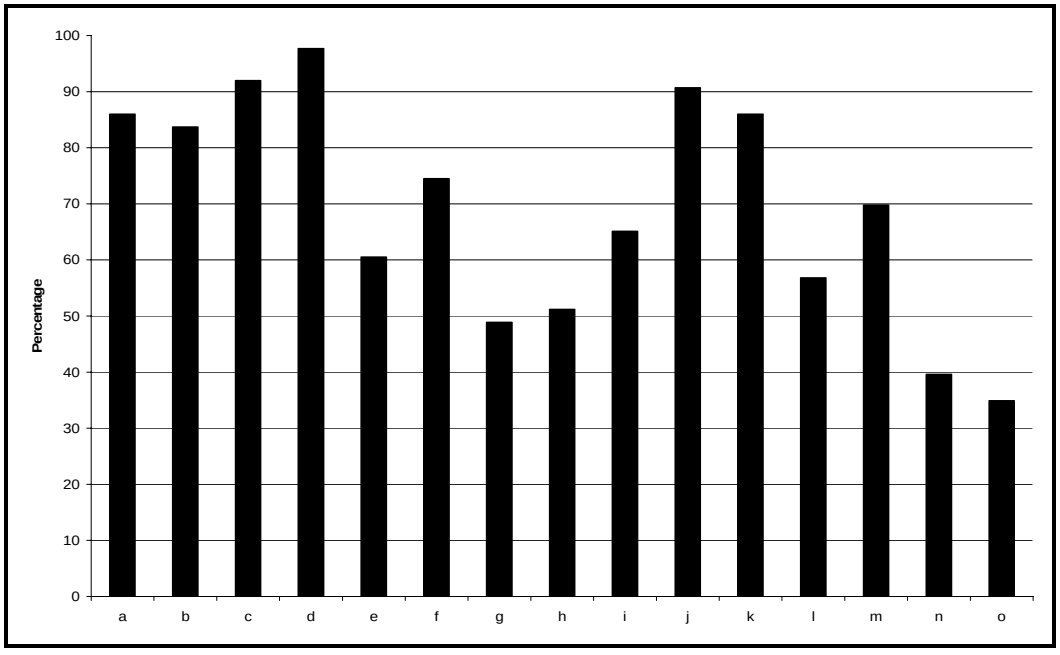

Figure 4.5 Items Rated Important In Relation To End User Satisfaction
(combined percentages for somewhat important and very important)

What else would you like to say about equipment acquisition at your facility and the use of an acquisition tool?

One respondent commented that he worked at a critical access hospital and each capital expenditure was very thoroughly examined as they could not afford to do it again. Another CEO added that they would like to have an electronic process for approval.

Another individual stated that the capital decisions are more complicated than these systems allow for which opens the door for any systems that can help with this process. Another individual added that having a tool that would assure you are looking at all pieces of the puzzle would be very helpful.

Analysis of Research Questions

Research question one: Do health care organizations utilize technology acquisition tools when purchasing capital equipment with values exceeding $100,000?

Responses to the survey show that 88.4% of CEOs state that their organization utilizes technology acquisition tools. A 2X4 cross tabulation table was computed and a chi-squared test was applied. Positive trends are seen in the relationship between the adopter categories of Innovators, Early Adopters, and Early Majority and those CEOs whose organizations currently utilize a formal capital acquisition process. This relationship is not statistically significant (Tables 4.11 and 4.12).

Table 4.11 Currently Utilize Formal Capital Acquisition Process? * Diffusion of Innovation Adopter Categories (Cross Tabulation)

			Diffusion Of Innovation Adopter Categories				
			Innovators	Early Adopters	Early Majority	Late Majority	Total
Currently Utilize Formal Capital Acquisition Process?	No	Count	0	3	2	0	5
		Expected Count	.7	2.7	1.5	.1	5.0
		% within Currently Utilize Formal Capital Acquisition Process?	.0%	60.0%	40.0%	.0%	100.0%
		% within Diffusion Of Innovation Adaptor Categories	.0%	13.0%	15.4%	.0%	11.6%
		% of Total	.0%	7.0%	4.7%	.0%	11.6%
	Yes	Count	6	20	11	1	38
		Expected Count	5.3	20.3	11.5	.9	38.0
		% within Currently Utilize Formal Capital Acquisition Process?	15.8%	52.6%	28.9%	2.6%	100.0%
		% within Diffusion Of Innovation Adopter Categories	100.0%	87.0%	84.6%	100.0%	88.4%
		% of Total	14.0%	46.5%	25.6%	2.3%	88.4%
Total		Count	6	23	13	1	43
		Expected Count	6.0	23.0	13.0	1.0	43.0
		% within Currently Utilize Formal Capital Acquisition Process?	14.0%	53.5%	30.2%	2.3%	100.0%
		% within Diffusion Of Innovation Adopter Categories	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	14.0%	53.5%	30.2%	2.3%	100.0%

Table 4.12 Currently Utilize Formal Capital Acquisition Process? * Diffusion of Innovation Adopter Categories (Chi-Square Tests)

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.144(a)	3	.766
Likelihood Ratio	1.938	3	.585
Linear-by-Linear Association	.409	1	.522
N of Valid Cases	43		

a 5 cells (62.5%) have expected count less than 5. The minimum expected count is .12.

A follow-up question was asked to determine if an official RFP was utilized at each facility. A 2X4 cross tabulation table was computed and a chi-squared test was applied. Positive trends are seen in the relationship between the adopter categories of Innovators, Early Adopters, and Early Majority and those CEOs whose organizations currently utilize a formal RFP. This relationship is not statistically significant (Tables 4.13 and 4.14).

Table 4.13 Currently Use Official Request for Proposal? * Diffusion of Innovation Adopter Categories
(Cross Tabulation)

			Diffusion Of Innovation Adopter Categories				
			Innovators	Early Adopters	Early Majority	Late Majority	Total
Currently Use Official Request For Proposal?	Yes	Count	4	17	8	1	30
		Expected Count	4.2	16.0	9.1	.7	30.0
		% within Currently Use Official Request For Proposal?	13.3%	56.7%	26.7%	3.3%	100.0%
		% within Diffusion Of Innovation Adopter Categories	66.7%	73.9%	61.5%	100.0%	69.8%
		% of Total	9.3%	39.5%	18.6%	2.3%	69.8%
	No	Count	2	6	5	0	13
		Expected Count	1.8	7.0	3.9	.3	13.0
		% within Currently Use Official Request For Proposal?	15.4%	46.2%	38.5%	.0%	100.0%
		% within Diffusion Of Innovation Adopter Categories	33.3%	26.1%	38.5%	.0%	30.2%
		% of Total	4.7%	14.0%	11.6%	.0%	30.2%
Total		Count	6	23	13	1	43
		Expected Count	6.0	23.0	13.0	1.0	43.0
		% within Currently Use Official Request For Proposal?	14.0%	53.5%	30.2%	2.3%	100.0%
		% within Diffusion Of Innovation Adopter Categories	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	14.0%	53.5%	30.2%	2.3%	100.0%

Table 4.14 Currently Use Official Request for Proposal? * Diffusion of Innovation Adopter Categories

(Chi-Square Tests)

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.065(a)	3	.785
Likelihood Ratio	1.339	3	.720
Linear-by-Linear Association	.017	1	.896
N of Valid Cases	43		

a 5 cells (62.5%) have expected count less than 5. The minimum expected count is .30.

To further analyze how formal the capital acquisition process was, each CEO was asked if they currently had a formal process for vendor compliance. The CEOs response was 79.1% affirmative. A 2X4 cross tabulation table was computed and a chi-squared test was applied. Positive trends are seen in the relationship between the adopter categories of Innovators, Early Adopters, and Early Majority and those CEOs whose organizations currently utilize a formal RFP. This relationship is not statistically significant (Tables 4.15 and 4.16).

Table 4.15 Currently Have Formal Process For Vendor Compliance? * Diffusion of Innovation Adopter Categories (Cross Tabulation)

			Diffusion Of Innovation Adopter Categories				
			Innovators	Early Adopters	Early Majority	Late Majority	Total
Currently Have Formal Process For Vendor Compliance?	Yes	Count	4	21	8	1	34
		Expected Count	4.7	18.2	10.3	.8	34.0
		% within Currently Have Formal Process For Vendor Compliance?	11.8%	61.8%	23.5%	2.9%	100.0%
		% within Diffusion Of Innovation Adopter Categories	66.7%	91.3%	61.5%	100.0%	79.1%
		% of Total	9.3%	48.8%	18.6%	2.3%	79.1%
	No	Count	2	2	5	0	9
		Expected Count	1.3	4.8	2.7	.2	9.0
		% within Currently Have Formal Process For Vendor Compliance?	22.2%	22.2%	55.6%	.0%	100.0%
		% within Diffusion Of Innovation Adopter Categories	33.3%	8.7%	38.5%	.0%	20.9%
		% of Total	4.7%	4.7%	11.6%	.0%	20.9%
Total		Count	6	23	13	1	43
		Expected Count	6.0	23.0	13.0	1.0	43.0
		% within Currently Have Formal Process For Vendor Compliance?	14.0%	53.5%	30.2%	2.3%	100.0%
		% within Diffusion Of Innovation Adopter Categories	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	14.0%	53.5%	30.2%	2.3%	100.0%

Table 4.16 Currently Have Formal Process For Vendor Compliance? * Diffusion of Innovation Adopter Categories (Chi-Square Tests)

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.317(a)	3	.150
Likelihood Ratio	5.569	3	.135
Linear-by-Linear Association	.348	1	.555
N of Valid Cases	43		

a 6 cells (75.0%) have expected count less than 5. The minimum expected count is .21.

Research question two: Would the presence of a technology acquisition tool help key decision makers during the capital equipment resource allocation process?

Respondents replied with 93% saying yes they thought the presence of a technology acquisition tool would help key decision makers during the capital acquisition process. A 2X4 cross tabulation table was computed and a chi-squared test was applied. Positive trends are seen in the relationship between the adopter categories of Innovators, Early Adopters, and Early Majority and those CEOs who felt that a technology acquisition tool would be helpful. This relationship is not statistically significant (Tables 4.17 and 4.18).

Table 4.17 Would Technology Acquisition Tool Help Decision Makers? * Diffusion of Innovation Adopter Categories (Cross Tabulation)

			Diffusion Of Innovation Adopter Categories				
			Innovators	Early Adopters	Early Majority	Late Majority	Total
Would Technology Acquisition Tool Help Decision Makers?	Yes	Count	5	23	11	1	40
		Expected Count	5.6	21.4	12.1	.9	40.0
		% within Would Technology Acquisition Tool Help Decision Makers?	12.5%	57.5%	27.5%	2.5%	100.0%
		% within Diffusion Of Innovation Adopter Categories	83.3%	100.0%	84.6%	100.0%	93.0%
		% of Total	11.6%	53.5%	25.6%	2.3%	93.0%
	No	Count	1	0	2	0	3
		Expected Count	.4	1.6	.9	.1	3.0
		% within Would Technology Acquisition Tool Help Decision Makers?	33.3%	.0%	66.7%	.0%	100.0%
		% within Diffusion Of Innovation Adopter Categories	16.7%	.0%	15.4%	.0%	7.0%
		% of Total	2.3%	.0%	4.7%	.0%	7.0%
Total		Count	6	23	13	1	43
		Expected Count	6.0	23.0	13.0	1.0	43.0
		% within Would Technology Acquisition Tool Help Decision Makers?	14.0%	53.5%	30.2%	2.3%	100.0%
		% within Diffusion Of Innovation Adopter Categories	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	14.0%	53.5%	30.2%	2.3%	100.0%

Table 4.18 Would Technology Acquisition Tool Help Decision Makers? * Diffusion of Innovation Adopter Categories (Chi-Square Tests)

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.084(a)	3	.253
Likelihood Ratio	5.192	3	.158
Linear-by-Linear Association	.099	1	.753
N of Valid Cases	43		

a 5 cells (62.5%) have expected count less than 5. The minimum expected count is .07.

If an acquisition tool contained the items in Q14 you marked as "somewhat" or "very important", would it help you determine vendor choice?

In a follow-up question, Chief Executives were asked if inclusion of the items they marked somewhat or very important in an acquisition tool would help them determine vendor choice. Ninety-three percent (N=40) said yes while 7% (N=3) said no it would not as shown in Table 4.19.

Table 4.19 Would Inclusion Of These Items Help Determine Vendor Choice?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	40	93.0	93.0	93.0
	No	3	7.0	7.0	100.0
	Total	43	100.0	100.0	

Research question three: What would the effect of a technology acquisition tool have on the organization's bottom line as measured by return on investment for new technology?

Respondents were asked if their organizations tracked the effect of capital purchases to its bottom line. The response rate was not as strong for ROI with 67.4% responding yes they did. A 2X4 cross tabulation table was computed and a chi-squared test was applied. Positive trends are seen in the relationship between the adopter categories of Innovators, Early Adopters, and Early Majority and those CEOs whose organizations tracked ROI for new purchases to their organizations bottom line. This relationship is not statistically significant (Tables 4.20 and 4.21).

Table 4.20 Does Organization Track Capital Purchase ROI? * Diffusion of Innovation Adopter Categories
(Cross Tabulation)

			Diffusion Of Innovation Adopter Categories				
			Innovators	Early Adopters	Early Majority	Late Majority	Total
Does Organization Track Capital Purchase ROI?	Yes	Count	4	17	7	1	29
		Expected Count	4.0	15.5	8.8	.7	29.0
		% within Does Organization Track Capital Purchase ROI?	13.8%	58.6%	24.1%	3.4%	100.0%
		% within Diffusion Of Innovation Adopter Categories	66.7%	73.9%	53.8%	100.0%	67.4%
		% of Total	9.3%	39.5%	16.3%	2.3%	67.4%
	No	Count	2	6	6	0	14
		Expected Count	2.0	7.5	4.2	.3	14.0
		% within Does Organization Track Capital Purchase ROI?	14.3%	42.9%	42.9%	.0%	100.0%
		% within Diffusion Of Innovation Adopter Categories	33.3%	26.1%	46.2%	.0%	32.6%
		% of Total	4.7%	14.0%	14.0%	.0%	32.6%
Total		Count	6	23	13	1	43
		Expected Count	6.0	23.0	13.0	1.0	43.0
		% within Does Organization Track Capital Purchase ROI?	14.0%	53.5%	30.2%	2.3%	100.0%
		% within Diffusion Of Innovation Adopter Categories	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	14.0%	53.5%	30.2%	2.3%	100.0%

Table 4.21 Does Organization Track Capital Purchase ROI? * Diffusion of Innovation Adopter Categories
(Chi-Square Tests)

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.017(a)	3	.569
Likelihood Ratio	2.281	3	.516
Linear-by-Linear Association	.241	1	.623
N of Valid Cases	43		

a 5 cells (62.5%) have expected count less than 5. The minimum expected count is .33.

Research question four: How would the utilization of a technology acquisition tool effect end user satisfaction levels with capital equipment purchases in health care organization?

Respondents were asked if their organizations tracked end user satisfaction for purchases of capital equipment that costs more than $100,000. The response rate was affirmative with 58.1% responding yes they did. A 2X4 cross tabulation table was computed and a chi-squared test was applied. Positive trends are seen in the relationship between the adopter categories of Innovators and Early Adopters and those CEOs whose organizations tracked end user for new purchases to their organizations. More Early Majority respondents said that they did not. This relationship is not statistically significant (Tables 4.22 and 4.23).

Table 4.22 Does Organization Track End User Satisfaction? * Diffusion of Innovation Adopter Categories

(Cross Tabulation)

			Diffusion Of Innovation Adopter Categories				
			Innovators	Early Adopters	Early Majority	Late Majority	Total
Does Organization Track End User Satisfaction?	Yes	Count	4	16	4	1	25
		Expected Count	3.5	13.4	7.6	.6	25.0
		% within Does Organization Track End User Satisfaction?	16.0%	64.0%	16.0%	4.0%	100.0%
		% within Diffusion Of Innovation Adopter Categories	66.7%	69.6%	30.8%	100.0%	58.1%
		% of Total	9.3%	37.2%	9.3%	2.3%	58.1%
	No	Count	2	7	9	0	18
		Expected Count	2.5	9.6	5.4	.4	18.0
		% within Does Organization Track End User Satisfaction?	11.1%	38.9%	50.0%	.0%	100.0%
		% within Diffusion Of Innovation Adopter Categories	33.3%	30.4%	69.2%	.0%	41.9%
		% of Total	4.7%	16.3%	20.9%	.0%	41.9%
Total		Count	6	23	13	1	43
		Expected Count	6.0	23.0	13.0	1.0	43.0
		% within Does Organization Track End User Satisfaction?	14.0%	53.5%	30.2%	2.3%	100.0%
		% within Diffusion Of Innovation Adopter Categories	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	14.0%	53.5%	30.2%	2.3%	100.0%

Table 4.23 Does Organization Track End User Satisfaction? * Diffusion of Innovation Adopter Categories

(Chi-Square Tests)

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.135(a)	3	.105
Likelihood Ratio	6.512	3	.089
Linear-by-Linear Association	1.986	1	.159
N of Valid Cases	43		

a 4 cells (50.0%) have expected count less than 5. The minimum expected count is .42.

Interview Analysis

Ten corporate officers of healthcare organizations were interviewed. The interview questions are listed along with a summary of responses with supporting quotations. Patterns are identified when present. The interview transcripts are attached as Appendix H.

How many years have you worked at your current position level?

The number of years worked in the current position or position of a similar level ranged from 3.5 to 32 years. Females ranged from 3.5 to 20 years while their male counterparts ranged from 7 to 32 years as a corporate officer.

What is your age?

The age of the interviewees ranged from 44 to 55. Female interviewee's ranged from 44 to 53 in age while the male interviewees ranged from 47 to 55 in age.

What is your gender?

There were four female interviewees and 6 male interviewees.

Is your organization part of a multi-hospital system?

Six of the interviewees were part of a multi-hospital system. Three were actually employees of a company that provided services to a multi-hospital system and were partial owned by that system. One interviewee was an employee of a multi-hospital system but he was the CEO of a surgery center system which was a partnership between the system and surgeons.

Is your hospital: less than 100 beds, 100-250 beds, or greater than 250 beds?

Seven of the interviewees had responsibilities which included facilities in all of the categories. One interviewee worked at a facility which had greater than 250 beds, one worked at a facility which had less than 100 beds, and one was the CEO of multiple surgery centers all of which had less than 100 beds.

Please tell me which of the following statements best describe your usual reaction to a new innovation:

I am usually the first CEO in my area to try a new innovation.
I am usually one of the first few CEOs in my area to try a new innovation.
I usually try a new innovation once I have seen other CEOs in my area use it successfully.
I will only use a new innovation once I have seen many other CEOs in my area use it successfully.
I am usually one of the last CEOs in my area to use new innovations.

This question attempted to assess where the interviewees were as adopters of new innovations on the scale according to the theory of diffusion of innovation. Two interviewees rated themselves as the first to try a new innovation. Six interviewees rated themselves as one of the first to try a new innovation while two said they would try a new innovation once they had seen other CEOs use an innovation successfully. All four female interviewees rated themselves as one of the first few CEOs to try a new innovation. The males where evenly distributed with two each responding that they were the first to try a new innovation, one of the first to try anew innovation, or would try a new innovation once they had seen other CEOs try it.

Everyone is used to the current method of capital acquisition. Do you think a technology acquisition tool will be an improvement from the current system?

This question speaks to the relative advantage of a technology acquisition tool over the current method. All interviewees responded positively stating that an acquisition tool would be an improvement over the current system. Executive A stated "our system is not a formalized as I would like it to be". Multiple executives echoed this sentiment with Executive D adding "an acquisition tool has to do with thinking what are the important things about the equipment and what am I going to use it for". Executive G felt that his "organization had a good system but that it relied heavily on people experience not a tool". Executive H felt that "the tool might organize people better but that it was not a big leap". Executive I speculated "this tool would be extremely beneficial to many other organizations".

Most people feel that there needs to be a balance between adapting the innovation to your workflow and adapting your workflow to the innovation. How important do you think that compatibility of the innovation to your current system is?

This question asks how about the importance of compatibility of a new innovation to the current system. All executives stated that compatibility to the current system was important. Several also stated that it was always important to weigh the benefit of the new innovation against the effort of changing an existing process. Executive A represented several others when he said "in our culture here we are so used to adapting to new technology that we are willing to change if the innovation can be shown to be valuable". Executive B stated "I think it is critical,

too often it is the other way around". Executive D used EMR as an example, "we are adapting the technology to the workflow". Executive I stated "the innovation shouldn't have to be compatible to the current system because that defeats the purpose of innovation".

How important do you think it is that capital acquisition tool is easy to use at your facility?

This question rated the executives' opinion on the importance of complexity of a new innovation by asking the importance of ease of use. All executives felt that ease of use was an important factor for the adoption of a new innovation. Executive A stated "I like easy, easy is good. However the value of the tool is more important than the ease". Executive B felt it was critical while executive C felt it was not the most important factor as long as he could see the benefits of adopting the new innovation.

How important is it that you are able to try out a new acquisition tool before it is implemented?

This question assessed the executives' opinion of trialability by asking how important it was for them to actually use an innovation before they adopted it. All executives stated that the ability to try out the acquisition tool before it was implemented was important. Executive D said "this was consistent with going back to one of the first questions, would I be the first on the block or would I be one of the first few because I've checked it out to see if it works". Executive G said "you need to understand how it would work in your environment, so yeah I think that would be extremely important". Executive J

felt it was very important to see a demonstration. He went on to say “we always pilot things at a facility before we spread it across on a larger basis”.

How important would it be for CEOs to have an opportunity to see a demonstration of a new technology acquisition tool?

This question determines the level of importance that executives place on observability or the ability to observe a new innovation before adopting it. All executives felt that it was very important to see a demonstration before adapting a new innovation. Nine out of ten executives felt it was very important to see the benefits of a new innovation before adopting it. Executive G gave an example of exploring the acquisition of a da Vinci robot for the surgery department. “We had the vendor bring one in so the surgeons could play with it. Once they saw it, they started thinking well; maybe this isn’t such Star Trek type technology. It might be something I might be able to utilize. So we’ve seen it, but its always the see and touch you know”.

Does your organization utilize a formal process for the acquisition of capital equipment that costs more than $100,000?

All executives responded that they did indeed have a formal capital equipment acquisition process. When asked to describe the process they all described a finance driven process by which capital dollars were spent. This process was rich with control systems used plan for budget planning and to distribute capital dollars. All executives described the ability to bring vendors in for product demonstrations if needed. The smaller organizations tended to have spending limits that were smaller than those of the larger organization with

executive F reporting a formal process for anything over $500 while executive G described a formal process for purchases over $250,000.

If yes, does it include an official Request for Proposal?

Six executives reported that they did not use an official request for proposal. Executives I and J said they were not sure while executives B and C stated that they sometimes did.

Does your organization have a formal process for insuring vendors adhere to all corporate policies? What items do you think would be important to include in this process?

Six executives reported that they did not have a formal policy for vendor compliance to corporate policies. Executives I and J were not sure if they had such a policy or not while executive D said the policy was not always used. Executive G said the policy enforced HIPAA policies and vendor behavior while executive H said the policy related to HIPAA compliance and contract terms. All executives named HIPAA and compliance issues as items that would be important to include in vendor compliance to corporate policies. Executive B said “it would be important to disclose any significant ownership of stock in the vendor by any of the key decision makers” as well as “what are the apples to apples configuration and financial implications of this purchase”? Executives C and J felt that proof of the vendor being a good corporate citizen would be important to include while executives D, E, and G felt that vendor behavior would be important. Executive J felt that safety requirements should also be included in a compliance policy for vendors.

Would the presence of a technology acquisition tool help decision makers during the capital acquisition process? What items do you think would be important to include in this process?

All executives felt that an acquisition tool would be helpful during the capital acquisition process. Executive B said "Oh, absolutely. I think it would take things up another level". Executive H thought it would be helpful to have a tool since he believed having everything listed in one place would speed up the process. In response to the follow-up question asking what items would be important to include, executive A said "having a quantitative way to look at things is very important". Executive B thought warranty items and uptime guarantees would be helpful. Executive J listed health and safety standards, state and federal guidelines, warranty items along with some sort of lemon clause to get rid of the equipment when it doesn't work.

If an acquisition tool contained the items listed above, would it help you determine vendor choice?

All executives felt that an acquisition tool would help them determine vender choice. Executive B commented "Absolutely. I think it would make sure that we had as much objective information as possible for the physicians". Executives D and E felt they would create a matrix using the acquisition tool to help guide them. Executive F responded "I think it would exclude a number of vendors initially if they weren't cooperative to your own policies and internal procedures". Executive J stated 'It certainly would help exclude vendors if they couldn't meet critical criteria".

Does your organization track the effect of capital purchases to its bottom line?

Four executives confirmed that their organizations tracked the effect of capital acquisitions to its bottom line with one additional executive stating yes but only for purchases over $2 million. Three executives said their organizations did not track capital to the bottom line while two said sometimes but did not give further detail.

What items should an acquisition tool contain to help track ROI?

Executive A stated “if all the information could be integrated into the acquisition tool like this, it would be helpful to have it all in one place. This tool would help with that”. Executive B said “the most helpful thing would be to keep track of all of the criteria you used in the first place, and then follow up in several years to see if it came true”. Executive C said “the things I think are important here, what is the cost to operate, maintenance after it comes off warranty, service, up time, down time, and through put”. Executive F said “up time, uptime guarantees, overall service ability, overall training and implementation”. Executive I listed upgradeability and maintenance as most important. Executive J said “it’s faster through time, better capability, training time requirements, or cost of integration into existing systems”.

Do you track end user satisfaction for new purchases? What items do you think would be important to include in this process?

Nine executive stated they did not track end user satisfaction for new purchases with one executive revealing that he did not know for sure. Executive B listed reliability, ease of use, quality of service and how responsive is the vendor to problems as being important items to include in the process. Executive C said "ease of use of machine, ease of maintenance, up time, ease of how to install, how cumbersome was that on the system, and I think physician input on quality". Executive E said "you should use the tool in a matrix to hardwire success factors for the future. Executive I said "ask them did it meet your expectations, is it something you will continue to use, is it worthwhile, is it easy to use, does it make you work easier"?

Summary of Interview Data

The results of the interview data are presented in two groups. The first group of questions related to Rogers perceived attributes of adopters of innovations (1995). The second group of questions included the research questions along with questions involving the overall design of a technology acquisition tool.

The questions involving perceived attributes of adopters of innovation were: self ranking as adopters of innovations according to the diffusion of innovation, importance of relative advantage of an acquisition tool over current method, importance of compatibility of new innovation to current system, importance of

ease of use of new innovation, importance of trialability, and importance of observability.

Two interviewees rated themselves as the first to try a new innovation. Six interviewees rated themselves as one of the first to try a new innovation while two said they would try a new innovation once they had seen other CEOs use an innovation successfully.

This next question speaks to the relative advantage of a technology acquisition tool over the current method. When asked if a technology acquisition tool would be an improvement over the current method, all interviewees confirmed that an acquisition tool would be an improvement over their current system.

All executives stated that compatibility to the current system was important. Several also stated that it was always important to weigh the benefit of the new innovation against the effort of changing an existing process.

The executives were asked to rate their opinion on the importance of complexity of a new innovation by asking the importance of ease of use. All executives felt that ease of use was an important factor for the adoption of a new innovation.

The executives' opinion of trialability was assessed by asking how important it was for them to actually use an innovation before they adopted it. All executives stated that the ability to try out the acquisition tool before it was implemented was important.

Executives were asked the level of importance they place on observability or the ability to observe a new innovation before adopting it. All executives felt that it was very important to see a demonstration before adapting a new innovation. Nine out of ten executives felt it was very important to see the benefits of a new innovation before adopting it.

The questions involving the research questions along with questions involving the overall design of a technology acquisition tool were: presence of a formal process for capital acquisition, presence of an RFP, presence of a formal process for insuring vendors adhere to corporate policies, need for a technology acquisition tool, does your organization track ROI, and does your organization track end user satisfaction for new purchases? Follow up questions were then asked to determine what items would be important to include in each process.

All executives responded that they did indeed have a formal capital equipment acquisition process. When asked to describe the process they all described a finance driven process by which capital dollars were spent. This process was rich with control systems used plan for budget planning and to distribute capital dollars.

Six executives reported that they did not use an official request for proposal. Two executives said they were not sure if their organization used a RFP while two executives stated that they sometimes did.

Six executives reported that they did not have a formal policy for vendor compliance to corporate policies. Two executives were not sure if they had such

a policy or not while one executive said the policy was not always used. HIPAA compliance, vendor behavior, good corporate citizenship and contract terms were mentioned as items to include in this process.

All executives felt that an acquisition tool would be helpful during the capital acquisition process. In response to the follow-up question asking what items would be important to include, having a quantitative way to look at things was listed as very important. Also mentioned were warranty items, uptime guarantees, health and safety standards, state and federal guidelines, along with some sort of lemon clause to get rid of the equipment when it doesn't work. All executives felt that an acquisition tool would help them determine vender choice.

Four executives confirmed that their organizations tracked the effect of capital acquisitions to its bottom line with one additional executive stating yes but only for purchases over $2 million. Three executives said their organizations did not track capital to the bottom line while two said sometimes but did not give further detail. When asked what items needed to be included to track ROI, executives listed the cost to operate, maintenance after it comes off warranty, service, up time, down time, and overall training and implementation.

Nine executives stated they did not track end user satisfaction for new purchases with one executive revealing that he did not know for sure. Reliability, ease of use, quality of service and how responsive is the vendor to problems were listed as being important items to include in the process.

CHAPTER 5

DISCUSSION AND CONCLUSION

This chapter includes a discussion of the results of the current study and unique aspects of the study. Overall conclusions are presented followed by a discussion of each research question. The limitations of the study will then be presented. Finally, the implications for theory, practice, and research will be reviewed.

Major Themes Among Responses

While the limited nature of the response rate did not allow inferential analysis, there are some emerging themes:

1. The Chief Executives Officers that responded to the survey rated themselves as 14% Innovators, 53.5% Early Adopters, and 30.2% Early Majority on the Diffusion of Innovation theory's adopter categories. This positively skewed distribution means these respondents perceive themselves as more readily adopting new technology or innovations.
2. The perceived attributes of the innovations Compatibility, Complexity, Trialability, and Observability were all supported by responses. Relative advantage of an acquisition tool to the current system was not supported in the survey (41.9% = Yes, 48.8% = Unsure) but was supported by 100% on the executives in the

interview responses. This was perhaps due to the respondents to the survey not understanding completely what an acquisition tool was.

3. Chief Executive Officers felt that the presence of a technology acquisition tool would help key decision makers during the capital acquisition process with 93% of responding CEO's stating yes that it would. All ten executives who were interviewed also felt that a technology acquisition tool would be helpful.
4. The design of the technology acquisition tool was confirmed by the executives interviewed and further defined by the respondents to the survey itself. The overall design of proposed tool will be discussed in more detail later in this chapter.

Discussion of Research Questions

Discussion of Question 1

Do health care organizations utilize technology acquisition tools when purchasing capital equipment with values exceeding $100,000?

This question asked if organizations utilized acquisitions tools during the procurement process for capital equipment. To further evaluate the extent or formularization of the process two additional questions were asked regarding the presence of an RFP and a formal corporate policy on vendor compliance.

The majority of CEOs (88.4%) reported that their organization utilized a formal process for the acquisition of capital equipment that cost more than $100,000. All interviewed executives (100%) responded that they did indeed

have a formal capital equipment acquisition process. When asked to describe the process they all described a finance driven process by which capital dollars were spent. This process was rich with control systems used plan for budget planning and to distribute capital dollars. All executives described the ability to bring vendors in for product demonstrations if needed. The smaller organizations tended to have spending limits that were smaller than those of the larger organization.

Positive trends were seen in the relationship between the adopter categories of Innovators, Early Adopters, and Early Majority and those CEOs whose organizations currently utilize a formal capital acquisition process.

The survey revealed that 69.8% of respondents utilized an official RFP while 30.2% do not. Six of the interviewed executives said they did not use an official RFP, two said they sometimes did, while two were unsure. Positive trends are seen in the relationship between the adopter categories of Innovators, Early Adopters, and Early Majority and those CEOs whose organizations currently utilize a formal RFP.

In a follow-up question designed to ascertain the extent of the formalization of this process, CEOs were asked if they had a formal process for assuring vendors adhered to all corporate policies to which 79.1% responded that they did. Six of the interviewed executives reported they did not have a formal policy, one said they did, two were unsure, and one said the policy was not always used. One executive reported the policy enforced HIPAA policies and

vendor behavior while another executive said the policy related to HIPAA compliance and contract terms. All executives named HIPAA and compliance issues as items that would be important to include for vendor compliance to corporate policies. Executive J felt that safety requirements should also be included in a compliance policy for vendors.

Positive trends are seen in the relationship between the adopter categories of Innovators, Early Adopters, and Early Majority and those CEOs whose organizations currently utilize a formal RFP.

These results suggest that while many organizations have what the CEOs think of as a formal process, it does not include many of the tools needed to assure all vendors are treated equal and that vendors comply with basic organizational policies. There is a marked difference between the executive response when interviewed and the respondents to the surveys with interviewees stating that fewer organizations utilize an RFP or have any policies requiring vendor compliance to corporate polices. This might be a result of the less than optimal return rate of the surveys but there seems to room for improvement in the formalization of the purchasing process. It was suggested by the executives interviewed that an acquisition tool would improve this process.

Discussion of Question 2

Would the presence of a technology acquisition tool help key decision makers during the capital equipment resource allocation process?

Chief Executive Officers felt that the presence of a technology acquisition tool would help key decision makers during the capital acquisition process with 93% of responding CEO's stating yes that it would. All ten executives who were interviewed also felt that a technology acquisition tool would be helpful. Executive B said "Oh, absolutely. I think it would take things up another level". Executive H thought it would be helpful to have a tool since he believed having everything listed in one place would speed up the process. In response to the follow-up question asking what items would be important to include, executive A said "having a quantitative way to look at things is very important". Executive B thought warranty items and uptime guarantees would be helpful. Executive J listed health and safety standards, state and federal guidelines, warranty items along with some sort of lemon clause to get rid of the equipment when it doesn't work. Positive trends are seen in the relationship between the adopter categories of Innovators, Early Adopters, and Early Majority and those CEOs who felt that a technology acquisition tool would be helpful.

The positive response of the CEOs suggests there is indeed a need for an acquisition tool to be developed for use in the capital purchasing process. There appears to be agreement between survey results and executive interviews that an acquisition tool would be helpful to key decision makers.

Discussion of Question 3

What effect would a technology acquisition tool have on the organization's bottom line as measured by return on investment for the new technology?

The survey question asked respondents if their organization tracked the effect of capital purchases to its bottom line. A follow-up question was then asked to indicate the importance of certain items in relation to measuring return on investment.

Chief Executive Officers replied that 67.4% of them did track return on investment for capital purchases while 32.6% did not. The interview of the ten executives revealed that four organizations tracked the effect of capital acquisitions to its bottom line, one also responded yes but only if over $2 million, two said sometimes, while three said they did not.

During the interviews, the executives suggested that a tool that contained the proper items could have a positive effect on the bottom line. With 32.6% or responding organizations not tracking ROI for capital purchases it would seem that an acquisition tool could have a positive effect on the bottom line if it included those items. Executive A stated "if all the information could be integrated into the acquisition tool like this, it would be helpful to have it all in one place. This tool would help with that". Executive B said "the most helpful thing would be to keep track of all of the criteria you used in the first place, and then follow up in several years to see if it came true". Executive C said "the

things I think are important here, what is the cost to operate, maintenance after it comes off warranty, service, up time, down time, and through put". Executive F said "up time, uptime guarantees, overall service ability, overall training and implementation". Executive I listed upgradeability and maintenance as most important. Executive J said "it's faster through time, better capability, training time requirements, or cost of integration into existing systems".

The response rate was not as strong for ROI with 67.4% responding yes they did. Positive trends are seen in the relationship between the adopter categories of Innovators, Early Adopters, and Early Majority and those CEOs whose organizations tracked ROI for new purchases to their organizations bottom line. Survey results and exec interviews seem to agree that a technology acquisition tool could have a positive effect on their organizations bottom line.

Discussion of Question 4

How would the utilization of a technology acquisition tool effect end user satisfaction levels with capital equipment purchases in health care organizations?

When asked in the interviews if their organizations tracked end user satisfaction for the purchase of capital equipment that cost more than $100,000, nine executives said no while one was unsure. In response to the survey, 58.1% of CEOs said yes while 41.9% responded no.

During the interview process, executives related that an acquisition tool could have a positive effect on end user satisfaction levels if it contained the right items. Executive B listed reliability, ease of use, quality of service and how

responsive is the vendor to problems as being important items to include in the process. Executive C said “ease of use of machine, ease of maintenance, up time, ease of how to install, how cumbersome was that on the system, and I think physician input on quality”. Executive E said “you should use the tool in a matrix to hardwire success factors for the future.

Positive trends are seen in the relationship between the adopter categories of Innovators and Early Adopters and those CEOs whose organizations tracked end user for new purchases to their organizations. More Early Majority respondents said that they did not. There is a difference between survey results and exec interviews with nine of ten executive stating they did not while 41.9% of survey respondents stating they did not track end user satisfaction. Clearly there is the need for an instrument that aids in this process if it was designed properly.

Design of the Technology Acquisition Tool

As mentioned previously, CEOs were asked to rate items to be included in a technology acquisition tool. Specifically, they were asked to rate the importance of including 15 items (see Appendix F) in an acquisition tool and whether or not the items would be important for vendor compliance to organizational policies, return on investment, and end user satisfaction.

Hospital Chief Executive Officers rated all items as important to include in an acquisition tool. The items receiving the highest scores were software and

firmware revisions, technical support, warranty period, equipment safety and regulatory requirements, and training for operator respectively.

Chief Executive Officers rated the same 15 items for importance to include in the tool in relation to vendor compliance to their organizations policies. The items receiving the highest scores were equipment safety and regulatory requirements, technical support, warranty period, payment terms, and training for the operator.

Chief Executive Officers did not rate the 15 items as high in relation to measuring return on investment as they did for other categories. Items receiving the highest rating were uptime guarantee, payment terms, warranty period, software and firmware revisions, and technical support.

CEOs rated the same 15 items for inclusion on an acquisition tool in relation to end user satisfaction. Items considered important were training for operator, technical support, uptime guarantee, equipment safety and regulatory requirements, and equipment failure procedures.

Components of a Technology Acquisition Tool

The following section details the possible components of a technology acquisition tool as shown in Appendix A. These components were reviewed and approved by the executives during the interview process.

Equipment Safety and Regulatory Requirements

All equipment should meet current electrical standards for grounding. Equipment should be UL listed or tested by an authorized agency prior to use. The cost of this inspection should be covered by the vendor.

Software/Firmware Revisions

The vendor should be made responsible for maintaining all computer software and hardware. The software should be maintained at the most current version for the life of the equipment. Any hardware needed to maintain the software at the most current level should be provided by the vendor at no additional cost. These updates should be provided in a timely fashion.

Technical Support

One complete set of operator manuals should be provided. Service documentation should be provided in the manner needed by the hospitals Clinical Engineering Department. The Vendor should provide all diagnostic software available to maintain and troubleshoot the equipment. It is important that this diagnostic software should be identical to that used by the vendor's service personnel. This diagnostic software should be maintained at the most recent version. The vendor should provide telephone support for the life of the equipment for no additional charge.

Training

Onsite operator training should be provided by the vendor at no additional costs. Yearly update training should also be provided. Service training

should be provided for one clinical engineer during the warranty period. This training should be equivalent to that provided by the vendor to their technical staff.

Installation

The vendor is responsible for complete assembly and installation of all of the equipment purchased. Any low voltage cabling shall be installed by properly licensed personnel. Any equipment that requires mounting to physical structure shall be coordinated with facilities management.

Acceptance

A 60 day acceptance period shall be provided after the installation is complete and the vendor turns equipment over for use. If during this period the equipment fails to pass acceptance testing, the vendor shall be allowed to resolve the problem. If they are unable to resolve the problem in a timely manner, the equipment shall be removed and refund any money paid. Final payment shall be authorized after acceptance period is completed.

Warranty

A minimum of one year warranty shall be provided which shall start after the successful completion of the sixty day acceptance period. Vendor shall provide timely support during the warranty period and make repairs within a 24 hour period. If unable to complete repairs in a timely fashion, vendor shall immediately supply a loaner replacement. Preventative maintenance shall be provided after hours at no additional charge. Equipment uptime shall be

guaranteed at 99% according to an agreed upon calculation with penalties built in. If uptime falls below 90% in any two of three consecutive months, vendor shall remove equipment and provide full refund (lemon clause). Power capabilities shall be survey by vendor and any needed protection shall be provided by vendor.

Documentation of Warranty Maintenance

Vendor shall supply a copy of service reports to the facility. An annual summary report shall be provided to Clinical Engineering.

Purchase Terms And Conditions

Payment terms should consist of 20% down after delivery, 60% upon installation, and 20% after successful completion of the 60 day acceptance period. Delivery terms should call for the delivery of equipment within 60 days after receipt of order. Shipping terms call for F.O.B. destination with risk of loss remaining that of seller until delivery to facilities receiving dock.

Limitations of the Study

This study is limited to the states of Arizona, Oregon, and Washington. The overall response rate was 18% which limits any conclusions that can be derived from the data. There is also a greater than normal response rate of 69.8% from the less than 100 bed capacity category which further limits the ability to generalize to the population of hospitals even in the three state areas. Therefore no inferential analysis was possible on the data.

Construct Validity

Threats to internal validity include various aspects of the survey instrument itself. Although the scales used were deemed reliable in previous studies, statements were intentionally mixed with positive and negative stems which may have been confusing to the survey respondents. Unique statements were developed for each of the survey questions. Content validity was accomplished by using a ten member industry expert panel. No further testing was done on this construct.

Representative of the Population

It is difficult to determine what the characteristics of the non-respondents are. It is clear that the majority of respondents are from one subset of the population and therefore sampling bias is present in this study. One possible cause is that this subject is more pertinent to the smaller hospitals therefore more CEOs took interest in this study. It is also possible that CEOs at smaller facilities have more time to respond to surveys or they simply open their own mail and are therefore more likely to respond.

External Validity

External validity refers to the ability to generalize from the statements from the sample to the general population. Due to the small rate of return and the bias of those returned towards the smaller facilities, generalization to the population is not possible.

Implications for Practice

The results of this study have implications for the design and implementation of a technology acquisition tool for key decision makers at health care organizations. The information gathered can be used to design a final version of the tool which should be further tested. The Diffusion of Innovation Theory should be used in developing an implementation strategy. This strategy should include information on relative advantage, compatibility, ease of use, trialability, and observability. These five perceptions of an innovation predict between 49% and 87% of the variance in the rate of spread (Rogers, 1995).

Diffusion of innovation follows a curve with a tipping point (Rogers, 1995). Successful implementation of an acquisition tool depends on targeting innovators, early adopters, and the interaction between early adopters and the early majority than with any other groups. Implementation of an acquisition tool should target these groups first.

Implications for Future Research

There are several directions for future research. First, this study could be repeated with special emphasis on improving the return rate of those surveyed. There would appear to be a need for the development of a technology acquisition tool but those findings need to be further developed with data that can be generalized to the population.

Another direction is to survey smaller organizations such as physician practices and outpatient centers. These small groups are more like the

respondents to this current study and might likewise benefit from the development of such a tool.

Summary

This study used a multi-method approach to investigate the need for a technology acquisition tool for key decision makers in hospitals. Further, this study attempted to develop the design of such a tool by gathering data on CEOs opinions on the importance for inclusion of 15 items in such a tool. These opinions were accessed by means of a mail survey to all CEOs of hospitals in Arizona, Oregon, and Washington. The survey also asked CEOs to rank themselves on a scale that represented the five adopter categories from the Diffusion of Innovation theory. Additionally, ten executives were interviewed and their feedback on the acquisition tool and subject matter was incorporated into the final design of the survey instrument.

Research questions included:

1. Do health care organizations utilize technology acquisition tools when purchasing capital equipment with values exceeding $100,000?
2. Would the presence of a technology acquisition tool help key decision makers during the capital equipment resource allocation process?
3. What would the effect of a technology acquisition tool have on the organization's bottom line as measured by return on investment for the new technology?

4. How would the utilization of a technology acquisition tool effect end user satisfaction levels with capital equipment purchases in health care organizations?

The response rate to the survey was 18%. The survey data was analyzed by descriptive techniques. The results support the importance of perceived attributes of innovations within the Diffusion of Innovation theory. The use of the Diffusion of Innovation theory to design implementation strategies for a capital acquisition tool may increase its chances for success.

While CEOs differed on the types of processes they currently used, CEOs supported the development and use of a technology acquisition tool. All 15 items were considered important to include in the tool by those who responded to the survey.

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APPENDICES

Appendix A

New Equipment General Specifications

1. **EQUIPMENT SAFETY AND REGULATORY REQUIREMENTS**
   - **A.** All equipment must meet current ANS/NEPA 99 standards for grounding integrity and leakage current.
   - **B.** All equipment must be listed by an Oregon recognized Electrical Testing Laboratory, i.e. UL (Underwriters Laboratories), CSA (Canadian Standards Association), etc.
   - **C.** Per ORS 479.610, if the equipment is not listed by an Oregon Recognized Electrical Testing Laboratory, then it must be inspected and approved by an Oregon Approved Field Evaluation Firm prior to initial use. The vendor is responsible for paying the fees for this inspection. Clinical Engineering will assist the vendor in coordinating this inspection process.

2. **SOFTWARE/FIRMWARE REVISIONS**
   - **A.** Vendor must provide warranty responsibility for all computers and software supplied with patient care equipment.
   - **B.** The Vendor will keep the software/firmware at the most current revision level available as long as the equipment is owned and in use. Arrangements shall be made to install all new software releases within two (2) weeks after the release of new software. This service will be provided at no additional cost.
   - **C.** If additional hardware is required in order for software to perform properly, and software is required to be updated, then hardware will be provided at no additional cost.
3. **TECHNICAL SUPPORT**
   - **A.** OPERATOR MANUALS Provide complete documentation that identifies operator use and service of this equipment. The quantity provided will be equal to one more than the number of items purchased.
   - **B.** SERVICE DOCUMENTATION Provide one (1) complete maintenance/service manuals which conform to current ANSI/NEPA 99 standards, section 9: Manuals. This documentation will be kept up-to-date (including revisions, updates, and new service notes) as long as the equipment is in use. Clinical Engineering agrees to hold confidential vendor proprietary technical information provided for operating and maintenance purposes, and to use such information only for the

purposes of operating, repairing, maintaining, testing and calibrating the vendor supplied equipment.

C. MAINTENANCE DIAGNOSTIC SOFTWARE Provide all diagnostic software available to troubleshoot and maintain this equipment. The diagnostic software shall be identical to that used by the Vendor's service representatives. Provide documentation and training in the use of the diagnostic software. The diagnostic software shall be kept up to date as long as the equipment is in use. Diagnostic software upgrades, along with documentation and training, shall be provided and installed within two (2) weeks after the update release. These services will be provided at no additional cost.

D. TELEPHONE SUPPORT The vendor agrees to provide technical telephone support as long as the equipment is in use. This support includes access to appropriate vendor technical personnel to discuss equipment configurations, use of the diagnostic software, troubleshoot problems encountered, and identify possible solutions to these problems. This service will be provided at no additional cost.

4. **TRAINING**

A. OPERATOR TRAINING Initial, on –site operator training will be provided by the vendor for all personnel using this equipment and for Clinical Engineering staff. This initial operator training will be provided by the vendor at no additional cost. Additional, on-site refresher training courses will be provided annually, if necessary, as long as the equipment is in use. The course agenda and training times will be coordinated with the using department. This refresher training will be provided by the vendor at no additional cost.

B. SERVICE TRAINING Complete maintenance training will be provided on all equipment for one (1) Clinical Engineering staff member during the warranty period. This training will be equivalent to that which is provided by the vendor for their technical staff. The tuition for this service training will be provided by the vendor at no additional cost. Training for the use of the diagnostic software shall be included in the service training provided by the vendor.

5. **INSTALLATION**

A. The vendor is responsible for complete assembly and installation of all of the equipment purchased. This will be performed in a professional manner to meet applicable codes.

B. Any cable being installed within the building will be installed by personnel with a low voltage license.

C. If the equipment is to be mounted to the wall or ceiling, the process and mounting materials must be approved by the Facilities Management.

D. The vendor will remove all packing materials and trash from facility at the end of each workday.

6. **ACCEPTANCE**

A. At least one (1) copy of the operators and service documentation will be forwarded to Clinical Engineering no less than two (2) weeks in advance of the intended date when the equipment will be delivered.

B. A 60 day clinical acceptance period will begin after the installation is complete and the vendor turns the equipment over to facility for use. During this acceptance period, facility will verify that

(1) All equipment has been delivered.

(2) The equipment has been properly installed in a professional manner.

(3) The equipment meets the manufacturer's written specifications.

(4) The equipment is safe for use.

(5) The equipment passes clinical acceptance testing.

C. If, during the acceptance period the unit fails to pass acceptance testing, the vendor will be allowed to resolve the problem. If they are unable to resolve the problem in a timely manner, the vendor will remove their equipment and refund (insert institution name) for any money paid. Upon successful completion of acceptance period, final payment will be authorized.

7. **WARRANTY**

A. A minimum one (1) year warranty period will be provided for all equipment identified in the purchase order.

B. The warranty period will begin upon successful completion of the 60 day acceptance period.

C. WARRANTY MAINTENANCE SUPPORT

(1) During the warranty period, the vendor will coordinate all service support through Clinical Engineering.

(2) The vendor shall respond within 2 hours of notification of a problem.

(3) The vendor shall provide on –site technical service within 24 hours of notification of a problem.

(4) The vendor will provide semiannual inspections and periodic maintenance for their equipment. The vendor will provide documentation of the procedures they will follow to provide this service which will

include cleaning, calibrating, periodic replacement of parts, and performance verification. This service will be coordinated in advance with Clinical Engineering. Clinical Engineering technical staff can provide periodic maintenance support during this period, under the direction of the vendor, without voiding the warranty and once trained.

(5) In the event that the equipment cannot be repaired within 24 hours a loaner will be sent to the hospital. This loaner and necessary freight will be provided free of charge.

(6) Preventive Maintenance on equipment will be performed after/around the department's patient schedule at no additional charge (typically after 5:00p.m. on weekdays).

(7) Equipment uptime is guaranteed at 99% for as long as the equipment is maintained by the manufacturer – this includes warranty, extended warranty, and while any service agreement is in effect. Downtime will be calculated monthly and on normal customer day basis – this is agreed to be a 24 hour day, seven days per week. Downtime is defined as the time between notification that the system is inoperative for clinical use and the time the system is returned to clinical use. The manufacturer will extend system warranty one (1) week for each 0.5% of downtime below 99% during the warranty and extended warranty period. After the warranty period (and extended warranty period) and while a service contract is in effect, the manufacturer will provide a 1% discount for each .5% of downtime below 99%, calculated monthly and applied quarterly.

(8) If in any two out of three consecutive months the uptime fall below 90%, (insert facility name here) reserves the right to order the equipment removed at the manufacturers expense, with reimbursement to (facility name) for all reasonable expenditures including full purchase price of equipment.

(9) **COMPANY** will survey the power capabilities of the site. If **COMPANY** determines that additional power protection is required, **COMPANY** will provide and install such protective devices at no cost to (facility name).

D. DOCUMENTATION OF WARRANTY MAINTENANCE

(1) When any warranty maintenance support is provided, the vendor will provide a copy of their service report with Clinical Engineering.

(2) This service report will include the equipment identification, a description of the problem, a description of the solution, identification of any spare parts provided, the cost for these spare parts, travel time, travel cost, labor time, and labor cost.

(3) The vendor will provide an annual summary of all service provided on this equipment, one (1) month before the expiration of the warranty period. This summary will be reviewed with Clinical Engineering and any trends or patters of equipment problems, failures, or user errors will be identified, addressed and resolved.

8. **PURCHASE TERMS AND CONDITIONS**

A. PAYMENT TERMS

(1) 20% of the purchase price will be paid after all of the equipment is delivered.

(2) 60% upon completion of installation

(3) 20% of the purchase price will be paid after all of the equipment has been delivered and installed, the performance is verified by the vendor, the equipment is turned over to facility for use, and all equipment has successfully completed the 60 day acceptance period.

B. DELIVERY TERMS The vendor will deliver all items identified on the purchase order (facility name) within 60 days after receipt of order.

A. SHIPPING TERMS F.O.B. Destination. Risk of loss remains that of the seller until delivered to (facility name) receiving dock.

_____ _____

Authorized Representative (facility name)
Representative

Appendix B

Interview Cover Letter

August 5, 2007

Dear CEO:

Thank you again for your interest in my research on technology acquisition tools. You had indicated that you would be willing to participate in this research with a personal interview. Stephen Self will be contacting your office in the near future to schedule a one hour appointment. Attached are a copy of the interview questions and a copy of an Informed Consent form.

If you have questions about the project, please contact Dr. Leonard Friedman at Leonard.Friedman@oregonstate.edu or call (541) 737-2323 or Stephen Self at Stephen.Self@cox.net or call (602) 509-1059. If you have questions about your rights as a participant in this research project, please contact the Oregon State University Institutional Review Board (IRB) Human Protections Administrator at IRB@oregonstate.edu or call (541) 737-4933.

Thank you again for participating in this important research to discover how hospitals Chief Executive Officers view the importance and composition of technology acquisition tools.

Sincerely,

Leonard Friedman, PhD. Stephen Self, MBA BSRT

Appendix C

INFORMED CONSENT DOCUMENT

Project Title: **A Technology Acquisition Tool For Key Decision Makers**
Principal Investigator: **Leonard Friedman PhD, Public Health**
Co-Investigator(s): **Stephen Self, Public Health**

WHAT IS THE PURPOSE OF THIS STUDY?

You are being invited to take part in a research study designed to assess the current processes that facilities have for the acquisition of new capital equipment and the necessary forms that would accompany such a process. This research investigates the need for the development of a new acquisition tool that would aid in these endeavors. This project attempts to better define the effect of such a tool on capital equipment resource allocation and the subsequent measures of return on investment and end user satisfaction.

WHAT IS THE PURPOSE OF THIS FORM?

This consent form gives you the information you will need to help you decide whether to be in the study or not. Please read the form carefully. You may ask any questions about the research, the possible risks and benefits, your rights as a volunteer, and anything else that is not clear. When all of your questions have been answered, you can decide if you want to be in this study or not.

WHY AM I BEING INVITED TO TAKE PART IN THIS STUDY?

You are being invited to take part in this study because you are a CEO of a healthcare organization. CEOs are being interviewed to assess the current status of the capital equipment acquisition process and determine if a capital acquisition tool might aid in this process.

WHAT WILL HAPPEN DURING THIS STUDY AND HOW LONG WILL IT TAKE?

The survey will be administered in the participant's office. The interviewer will take hand written notes. A recording device will capture the participant's comment which will be transcribed by a professional transcriptionist. All personal identifying information and media will be erased after transcription.

If you agree to take part in this study, your involvement will last for approximately one hour.

WHAT ARE THE RISKS OF THIS STUDY?

There are no foreseeable risks to participating.

WHAT ARE THE BENEFITS OF THIS STUDY?

You will not benefit from being in this study. However, we hope that, in the future, other people might benefit from this study by developing better forms for use during the capital acquisition process.

WILL I BE PAID FOR PARTICIPATING?

You will not be paid for being in this research study

WHO WILL SEE THE INFORMATION I GIVE?

The information you provide during this research study will be kept confidential to the extent permitted by law. To help protect your confidentiality, we will remove any personal identifying information from the transcribed data. All electronic recordings will be erased upon completion of transcription.

If the results of this project are published your identity will not be made public.

DO I HAVE A CHOICE TO BE IN THE STUDY?

If you decide to take part in the study, it should be because you really want to volunteer. You will not lose any benefits or rights you would normally have if you choose not to volunteer. You can stop at any time during the study and still keep the benefits and rights you had before volunteering

You will not be treated differently if you decide to stop taking part in the study. If you choose to withdraw from this project before it ends, the researchers may keep information collected about you and this information may be included in study reports.

WHAT IF I HAVE QUESTIONS?

If you have any questions about this research project, please contact: Leonard Friedman, 503-737-2323, Leonard.Friedman@oregonstate.edu or Stephen Self, 602-509-1059, Stephen.Self@cox.net .

If you have questions about your rights as a participant, please contact the Oregon State University Institutional Review Board (IRB) Human Protections Administrator, at (541) 737-4933 or by email at IRB@oregonstate.edu.

Your signature indicates that this research study has been explained to you, that your questions have been answered, and that you agree to take part in this study. You will receive a copy of this form.

Participant's Name (printed): _____

_____ _____

(Signature of Participant) (Date)

Appendix D

A Technology Acquisition Tool For Key Decision Makers

Interview Questions

1. How many years have you worked at your current position level? _____

2. What is your age? _____

3. What is your gender? M/F

4. Is your organization part of a multi-hospital system? Yes/No

5. Is your hospital: less than 100 beds, 100-250 beds, or greater than 250 beds?

6. Please tell me which of the following statements best describe your usual reaction to a new innovation:
    1. I am usually the first CEO in my area to try a new innovation.
    2. I am usually one of the first few CEOs in my area to try a new innovation.
    3. I usually try a new innovation once I have seen other CEOs in my area use it successfully.
    4. I will only use a new innovation once I have seen many other CEOs in my area use it successfully.
    5. I am usually one of the last CEOs in my area to use new innovations.

7. Everyone is used to the current method of capital acquisition. Do you think a technology acquisition tool will be an improvement from the current system?

8. Most people feel that there needs to be a balance between adapting the innovation to your workflow and adapting your workflow to the innovation. How important do you think that compatibility of the innovation to your current system is?

9. How important do you think it is that capital acquisition tool is easy to use at your facility?

10. How important is it that you are able to try out a new acquisition tool before it is implemented?

11. How important would it be for CEOs to have an opportunity to see a demonstration of a new technology acquisition tool?

12. Does your organization utilize a formal process for the acquisition of capital equipment that costs more than $100,000?

13. If yes, does it include an official Request for Proposal?

14. Does your organization have a formal process for insuring vendors adhere to all corporate policies? What items do you think would be important to include in this process?

15. Would the presence of a technology acquisition tool help decision makers during the capital acquisition process? What items do you think would be important to include in this process?

16. If an acquisition tool contained the items listed above, would it help you determine vendor choice?

17. Does your organization track the effect of capital purchases to its bottom line?

18. What items should an acquisition tool contain to help track ROI?

19. Do you track end user satisfaction for new purchases? What items do you think would be important to include in this process?

Appendix E

Survey Cover Letter

June 12, 2008

Dear CEO:

Research has shown that few facilities have a well defined process for new equipment acquisition or the necessary forms that would accompany such a process. This research is on the development of a new equipment acquisition tool that would aid in these endeavors. This project attempts to better define the effect of such a tool on capital equipment resource allocation and the subsequent measures of return on investment and end user satisfaction.

Technology acquisition tools are the formalized processes and procedures used during the procurement process. Few facilities have a formal process for new equipment acquisition or the necessary forms that are a vital part of these endeavors. Today's healthcare environment is one of increasing pressure to improve quality, control costs, maintain safety and enhance customer satisfaction. What would be the effect of a well developed technology acquisition tool on capital equipment resource allocation, return on investment, and end user satisfaction?

In order that the results of this survey truly represent the thinking of CEOs at all healthcare organizations, it is important that each questionnaire be completed and returned in the enclosed self-addressed stamped envelope.

You may be assured of complete confidentiality. The questionnaire has an identification number for mailing purposes only. This is so that we may check your name off the mailing list when your questionnaire is returned. Your name will never be placed on the questionnaire.

The results of this research will be used to satisfy doctoral dissertation requirements at Oregon State University. Therefore, the results will be in the write-up of this study and possible future documents. Additionally, it may be used to adapt an implementation process for another organization. You may receive a copy of the results by writing "copy of results requested" on the back of the return envelope, and printing your name and address below it. Please do not put this information on the questionnaire itself.

If you have any questions about the project, please contact Dr. Leonard Friedman at Leonard.Friedman@oregonstate.edu or call (541) 737-2323 or Stephen Self at Stephen.Self@cox.net or call (602) 509-1059. If you have any questions about your rights as a participant in this research project, please contact the Oregon State University Institutional Review Board (IRB) Human Protections Administrator at IRB@oregonstate.edu or call (541) 737-4933.

Sincerely,

Leonard Friedman, PhD. Stephen Self, MBA, BSRT

Appendix F

Assessing The Need For A Technology Acquisition Tool For Key Decision Makers

Q1. **For** how many years have you worked at your current position level as a whole for any organization you may have been employed at?

1. 0 to 5 years
2. 6 to 10 years
3. 11 to 15 years
4. more than 15 years

Q2. Is your organization part of a multi-hospital system?

1. Yes
2. No

Q3. What is the bed capacity of your hospital?

1. less than 100 beds
2. 100 to 249 beds
3. 250 to 399 beds
4. 400 0r more beds

Q4. Please circle the number of the statement that best describes your usual reaction to a new innovation:

1. I am usually the first CEO in my area to try a new innovation.
2. I am usually one of the first few CEOs in my area to try a new innovation.
3. I usually try a new innovation once I have seen other CEOs in my area use it successfully.
4. I will only use a new innovation once I have seen many other CEOs in my area use it successfully.
5. I am usually one of the last CEOs in my area to use new innovations.

Q5. Everyone is used to the current method of capital acquisition. Do you think a technology acquisition tool will be an improvement from the current system?

1. Yes
2. No
3. Not Sure

Q6. Most people feel that there needs to be a balance between adapting the innovation to your workflow and adapting your workflow to the innovation. How important if at all, do you think that compatibility of the innovation to your current system is?

1. Not at all Important
2. Somewhat Unimportant
3. Neither Important nor Unimportant
4. Somewhat Important
5. Very Important

Q7. How important if at all, do you think it is that capital acquisition tool is easy to use at your facility?

1. Not at all Important
2. Somewhat Unimportant
3. Neither Important nor Unimportant
4. Somewhat Important
5. Very Important

Q8. How important if at all, is it that you are able to try out a new acquisition tool before it is implemented?

1. Not at all Important
2. Somewhat Unimportant
3. Neither Important nor Unimportant
4. Somewhat Important
5. Very Important

Q9. How important if at all, would it be for CEOs to have an opportunity to see a demonstration of a new technology acquisition tool?

1. Not at all Important
2. Somewhat Unimportant
3. Neither Important nor Unimportant
4. Somewhat Important
5. Very Important

Q10. Does your organization utilize a formal process for the acquisition of capital equipment that costs more than $100,000?

1. Yes
2. No

Q10A. If yes, does it include an official Request for Proposal?

1. Yes
2. No

Q11. Does your organization have a formal process for insuring vendors adhere to all corporate policies?

1. Yes
2. No

Q12. Please indicate whether or not the presence of each of the following items would be important for vendor compliance to your organization policies. (Circle one number for each item)

		Yes	No	NOT SURE
a.	Equipment Safety and Regulatory Requirements	1	2	3
b.	Software/firmware revisions	1	2	3
c.	Technical support	1	2	3
d.	Training for Operator	1	2	3
e.	Training for Biomed	1	2	3
f.	Installation procedures	1	2	3
g.	Acceptance timeframe	1	2	3
h.	Acceptance testing procedures	1	2	3
i.	Warranty period	1	2	3
j.	Uptime guarantee	1	2	3
k.	Equipment failure procedure	1	2	3
l.	Power requirements	1	2	3
m.	Documentation of maintenance	1	2	3
n.	Payment terms	1	2	3
o.	Shipping terms	1	2	3

Q13. In your opinion, would the presence of a technology acquisition tool help decision makers during the capital acquisition process?

1. Yes
2. No

Q14 Please indicate level of importance for the following items to be included in an acquisition tool. (Circle one number for each item)

		Not at all Important	Somewhat Unimportant	Neither Important nor Unimportant	Somewhat Important	Very Important
a.	Equipment Safety and Regulatory Requirements	1	2	3	4	5
b.	Software/firmware revisions	1	2	3	4	5
c.	Technical support	1	2	3	4	5
d.	Training for Operator	1	2	3	4	5
e.	Training for Biomed	1	2	3	4	5
f.	Installation procedures	1	2	3	4	5
g.	Acceptance timeframe	1	2	3	4	5
h.	Acceptance testing procedures	1	2	3	4	5
i.	Warranty period	1	2	3	4	5
j.	Uptime guarantee	1	2	3	4	5
k.	Equipment failure procedure	1	2	3	4	5
l.	Power requirements	1	2	3	4	5
m.	Documentation of maintenance	1	2	3	4	5
n.	Payment terms	1	2	3	4	5
o.	Shipping terms	1	2	3	4	5

Q15. If an acquisition tool contained the items in Q14 you marked as somewhat or very important, would it help you determine vendor choice?

1. Yes
2. No

Q16. Does your organization track the effect of capital purchases to its bottom line?

1. Yes
2. No

Q17. Please indicate the level of importance by rating the following items in relation to measuring return on investment. (Circle one number for each item)

		Not at all Important	Somewhat Unimportant	Neither Important nor Unimportant	Somewhat Important	Very Important
a.	Equipment Safety and Regulatory Requirements	1	2	3	4	5
b.	Software/firmware revisions	1	2	3	4	5
c.	Technical support	1	2	3	4	5
d.	Training for Operator	1	2	3	4	5
e.	Training for Biomed	1	2	3	4	5
f.	Installation procedures	1	2	3	4	5
g.	Acceptance timeframe	1	2	3	4	5
h.	Acceptance testing procedures	1	2	3	4	5
i.	Warranty period	1	2	3	4	5
j.	Uptime guarantee	1	2	3	4	5
k.	Equipment failure procedure	1	2	3	4	5
l.	Power requirements	1	2	3	4	5
m.	Documentation of maintenance	1	2	3	4	5
n.	Payment terms	1	2	3	4	5
o.	Shipping terms	1	2	3	4	5

Q18. If an acquisition tool contained the items in Q17 you marked as somewhat or very important, would it help you determine vendor choice?

1. Yes
2. No

Q19. Do you track end user satisfaction for purchases of capital equipment that costs more than $100,000?

1. Yes
2. No

Q20. Please rate the level of importance for the following items in relation to end user satisfaction. (Circle one number for each item)

		Not at all Important	Somewhat Unimportant	Neither Important nor Unimportant	Somewhat Important	Very Important
a.	Equipment Safety and Regulatory Requirements	1	2	3	4	5
b.	Software/firmware revisions	1	2	3	4	5
c.	Technical support	1	2	3	4	5
d.	Training for Operator	1	2	3	4	5
e.	Training for Biomed	1	2	3	4	5
f.	Installation procedures	1	2	3	4	5
g.	Acceptance timeframe	1	2	3	4	5
h.	Acceptance testing procedures	1	2	3	4	5
i.	Warranty period	1	2	3	4	5
j.	Uptime guarantee	1	2	3	4	5
k.	Equipment failure procedure	1	2	3	4	5
l.	Power requirements	1	2	3	4	5
m.	Documentation of maintenance	1	2	3	4	5
n.	Payment terms	1	2	3	4	5
o.	Shipping terms	1	2	3	4	5

Q21. What is your age?

1. Less than 30
2. 31 to 40
3. 41 to 50
4. 51 to 60
5. Greater than 60

Q22. What is your gender?

1. M
2. F

Q23. What else would you like to say about equipment acquisition at your facility and the use of an acquisition tool?

Thank you for your participation!
Please return your completed questionnaire in the postage-paid envelope provided

Appendix G

Follow-up Survey Cover Letter

June 30, 2008

Dear CEO:

About three weeks ago, we wrote you seeking your opinions about issues related to technology acquisition tools being used in healthcare facilities. As of today we have not received your completed questionnaire. We realize that you may not have had time to complete it. However, we would greatly appreciate hearing from you.

This study is being conducted to help understand the current usage of technology acquisition tools and identify areas of improvement for the future. We are writing you again because the studies usefulness depends on our receiving a questionnaire from each respondent. In order that the results of this survey truly represent the thinking of CEOs at all healthcare organizations, it is important that each questionnaire be completed and returned in the enclosed self-addressed stamped envelope.

In the event that your questionnaire has been misplaced, a replacement is enclosed. If you have any questions about the project, please contact Dr. Leonard Friedman at Leonard.Friedman@oregonstate.edu or call (541) 737-2323 or Stephen Self at Stephen.Self@cox.net or call (602) 509-1059. If you have any questions about your rights as a participant in this research project, please contact the Oregon State University Institutional Review Board (IRB) Human Protections Administrator at IRB@oregonstate.edu or call (541) 737-4933.

Sincerely,

Leonard Friedman, PhD. Stephen Self, MBA, BSRT

Appendix H

Interview Transcripts

Executive Interview A

I: The tape recorder is turned on, and I just want to ask you that you have signed an informed consent I believe.
R: Yes, I have.
I: And as a part of that I did ask permission to record this today.
R: Yes, you did.
I: Keeping in mind that I will destroy both documents once we have the transcriptionist transcribe it and take all names and things out.
R: Ok.
I: Um, I also mentioned to you that Dr. _____ is the primary investigator and if you have any questions about that or you contact the IRB office at Oregon State University.
R: Ok. I understand.
I: So my research is on a technology acquisition tool, and really the tool that we briefly discussed can be used for new innovation such as a 64 slice CT or it can be used for negotiating for a Six Sigma project. The idea is that it could be scalable. It could be used and doesn't have to have that standard format. But we're going to talk about the usefulness of that.
R: Ok.
I: This is the qualitative process for which I'm trying to gather some information to get just really free flowing ideas from you.
R: Ok.
I: The first few questions are going to start any moment now are really kind of demographic questions, and then we'll get into some of the research questions. How many years have you worked at your current position level?
R: Ten.
I: Ok.
R: Ten this summer so 9 ½.
I: Oh, ok. And what is your age?
R: 45.
I: And your gender.
R: I am female.
I: Ok. Our original design of this process was we were going to do primarily investigations of CEOs and as a part of that, the last time I met with my committee, we branched that out and decided corporate officers would be a better title for the people I will be interviewing
R: Ok.

I: Is your organization part of a multi hospital system? I think I'd rather change that question to say, can you describe your organization somewhat?
R: Well, _____ _____, it's a pretty complex organization. I am employed by a company called _____ _____ _____ _____, and it's a management and business services arm of a greater company of _____ _____. Our primary function is medical imaging. I happen to be the COO of _____ _____, ___, which focuses on outpatient imaging services. Our company is owned 50% by a radiologist investment company and 50% by a couple of hospitals here in Spokane, which are part of the _____ Health Network. So we're not part of a multi hospital system, but we do have ownership by a large hospital entity, which is _____.
I: Ok.
R: Did I answer that question?
I: It does.
R: _____, It's kind of complex.
I: You did well actually. So the organization that you're partnered with, does it fit into the category of less than 100 beds, does it have organizations that are probably 100 to 250 or greater than 250, or is it . . .
R: Well, the hospital that we're associated with has hospitals, independent hospitals, which would fit into every single one of those categories. _____ _____, ___ that I operate, we don't have any hospital beds. We do primarily imaging centers, and we purchase equipment for those imaging centers. One of our centers is primarily an outpatient facility but in that same building, we are also the Radiology Department for _____ _____ Hospital, which I believe has 185 beds.
I: Ok.
R: So we are the Radiology Department for that individual hospital.
I: Alright. And do you operate primarily in one state or do you have part of your organization in other states?
R: _____ _____, various parts of _____ _____, are in a couple of states. _____ _____, ___, again the company that I oversee, is right now only in Washington. Primarily a medical imaging company.
I: Ok. Do you purchase various sizes of equipment?
R: Right.
I: If I'm understanding correctly and so you would purchase things like MRI's, CT's . . .
R: Yes.
I: Or at least be involved in the process.
R: Right.
I: Or do you purchase those directly or does, you mentioned a purchase at health care organizations . . .
R: Yep.
I: You serve as a consultant to them for purchases or . . .
R: We do both.
I: Ok.

R: If we're purchasing a 64 slice CT scanner, well, it was a major purchase last year. We go directly to the vendors and work directly with them.
I: Umhmm.
R: _____ _____Hospital, which is one of the hospitals that is, that owns part of _____ _____, ___. For the hospital, they were purchasing their own 64 slice CT scanner. They came to us for our opinions. They came to us for research that we had done. We share our information with them because of our affiliation with them. But the hospital has a separate purchasing arm where they are making these decisions independent of _____ _____. We do act in a consulting role. Our doctors, because they do the reading in that hospital, work directly with them on the purchase from a clinical side, but the decisions on the money and the terms of the contract, those are made in that hospital independently.
I: Ok. The next question, Question number six deals with a description of yourself as you usually react to some new innovation or new . . .
R: Ok.
I: Process or some new . . .
R: Umhmm
I: New gizmo and I'd like you to rate yourself. I'm usually the first COO in my area to try new innovations. I'm one of the first few in my area. Number three is that I try it once I have seen other COO's use it successfully. I will try one once I've seen many other CEO's in my area use it. Or I am probably one of the last CEO's, COO's in my area using new innovation. Where do you think you personally fall in the 1-5 scale there?
R: Well, personally the CEO of _____ _____, _____, he is our R&D for new technology.
[Laughter]
R: Independent of everybody else, he just kind of goes and does it himself. So I could not be number one because _____ is always number one. But I was trained by him so I would say I'm probably a two.
I: Ok.
R: I think I'm very open, and the company is very open to new technology. I think you'll find that's pretty typically true of people in medical imaging today because our company is all about technology. So I think we are constantly, as a company and individually, looking for new technology. I really believe in technology as an aid to doing a job so am open to innovative technology not afraid of it, you know, just really embrace it.
I: Ok. Allright. You almost describe yourself as a one.
R: Almost, but I think _____ is going to be, he's going to get up there, and he's going to show me that stuff first.
[Laughter]
R: Always. And, although some of them, you can have my blackberry back. This is one little thing that I would be happy to give back. Anyway, some of that technology does not make our life easier.

I: No. Now question number seven really relates to everyone in your organization might be used to a current method of capital acquisition. Do you think a technology acquisition tool would be an improvement for the current system?
R: Yes.
I: Could you kind of describe maybe your current system and why you think that might be true.
R: Well, we try to have a quantitative approach to capital purchases and to evaluating different vendors and different products. So how we usually acquire something, whether that's equipment or whether that's a service from somebody else. We usually like to look at, well, it usually happens with a radiologist or a technologist or an IT person coming and saying I think we could do better in this area if we had a different product. So we could get better CT images if we had a 64 slice or we could do better MRI if we had an open scanner instead of a closed scanner, or something. Usually somebody's bringing forward that idea. So currently we kind of have an idea or we'll get an idea just from web sites or just from simple research on what is that going to cost us. And typically, we're going to go forward with that to our operating committee and say is this something you want me to research. Is this something that we want to spend the time and money to put in the budget, to move that forward. And so, usually we kind of have an idea what that's going to cost. Then we're going to go out and contact vendors directly whether it's GE, Siemens, we're going to go to more than one. We have purchased a lot of GE equipment in the past, but we don't just assume because we have a relationship with one vendor that that's who we're going buy. We really look at a couple of different vendors.
I: Ok.
R: We may or may not, depending on the purchase, do an RFP and state what are we really looking for. We want a work station, we want this software package, we want to be able to do this type of scanning. We'll sometimes formally put together an RFP but not always. Sometimes it's just a make a list with the sales rep. So we'll sit down and we'll say this is what we're trying to accomplish. Typically we'll have, if it's a purchase of probably over a half a million dollars, we will have the vendors come out and give us presentations, and at that point usually we like to, after our presentation, cull it down to two vendors. And then we will send a team to a site visit.
I: Umhmm
R: And we will go, we'll get a reference, and we will try and go see this equipment in action. And that's typical of equipment or software. We will typically go see it. Usually we send a doctor or two who will be using it, an IT person even for just clinical systems and technologists. We usually send probably 3, 4, 5 people to each site visit. After that, we will sit and ask the team, the people who have gone, to take the features that we had asked for and put them in a matrix. We ask them to say, ok, of these features, give us a scale of importance. So for a CT scanner, um, we want to say radiation dose . . .

I: Umhmm
R: And monitoring table weight, that it'll hold, image quality, what is most important, and they'll say image quality is a 5, on a scale of 1 to 5, that's the most important thing.
I: Umhmm
R: How much weight the table might hold is like a 2. Then we will ask them to compare the vendors. Ok, GE doesn't score as high. They only get a 3 on image quality but boy they can hold 650 pounds on their table; they're going to get a 5 on that. Then we're going to multiply it out and truly get a quantitative value for what we saw on that site visit. So we're going to take that, and that gives all the factors, quality as well as service.
I: Umhmm
R: We do talk when we're purchasing something about the service contract that we're going to get. So we put all of that in, and that gives us a score. This one's really good or this one is not really good. Then we sit down, we look at the price and what is included in the price, all of the add ons that they're going to have, all of the options that we're going to want plus what is the 5 year cost of service.
I: Umhmm
R: And whatever warranty we're getting, and that's what we're going to make the decision on.
I: Ok. And the acquisition tool, you said that you thought it would be an improvement from the current system. How do you think an acquisition tool would help?
R: Well, if we could . . .
I: Because you have a pretty nice system.
R: We do but ours is, if something that went through all of the questions and really formalized and made sure that you asked everything that was important. Ours is, yeah, we purchased this CT scanner and we have this matrix out here somewhere. I think it's not as formal as I'd like it to be, and it's not always followed as well as I'd like it to be.
I: Ok.
R: I think if you said as part of our purchasing we're going to follow this, you don't get the PO until you've gone through all of these steps. I think yeah, we've kind of put together our own little tool but I think there's probably a lot of information that we have missed. I would love to look at what are other people thinking about, what else is working, what else has helped make this decision. We just did it as, just from experience.
I: Umhmm
R: So . . .
I: Ok. Going to question number eight, most people . . .
R: Umhmm
I: Most people feel there needs to be a balance between adapting innovation to your work flow and adapting your work flow to the innovation. How important

do you think that the compatibility of innovation to your current system would be . . . So if you had something like . . .
R: Umhmm
I: So the tool itself if it or to any innovation, for that matter if it fits the current system, is it more important that you have a truly new innovation and you're going to take your whole organization and make it conform, which is balance, which one's more important to you?
R: I think looking at a tool, if it truly is innovative and it can, just looking at the end product that the tool brings . ..
I: Umhmm
R: And evaluate is that important to get if I can look at a tool and I can say, you know what, if you fill this out and you really do this comparison and you can show vendor to vendor that you've done these, and it's going to save you 20% on each purchase that you do . . .I'll change my workflow to achieve that.
R: So I think in our culture here we're so used to adapting to new technology that we are willing to change if the innovation can be shown to be valuable.
I: Ok.
R: There are certain times where we say, let me give you an example. When we were a designing and imaging center, we had an architect come in and say we've been seeing space designed this way across the country, and we think you need to do it this way. We got our techs involved, we got our doctors involved, we got everybody talking, and we didn't like it. We said you know what our work flow, how we have our setup, it's just not going to work that way.
I: Uhhuh.
R: And we're not seeing the value that you're bringing. It's not giving us more patients. We're not understanding why everybody has changed to this, and we don't like that. Thank you very much, but we don't want to change our work flow for that innovation.
I: Right.
R: We didn't see the value in that innovation. But we loved to hear the new ideas, but we really do evaluate is in the innovation bringing us more than the work flow or is the work flow better than what we're seeing as a result of that innovation.
I: Ok.
R: A fair answer.
I: That's very good. Question number nine. How important do you think it is that a capital acquisition tool is easy to use at your facility? So ease of use question.
R: I always like easy, easy is good. I don't want the tool to be harder than the equipment is worth. But again, if I can say that by using this tool I can really see a true comparison of every single factor and I can tell the vendor I'm using something that's comparing apples to apples and it helps me in my negotiation, it's worth a little bit of work. Ease of use is not the most important factor to me.
I: Ok.

R: The value of the tool is more important than the ease.
I: Ok. On to question number 10. How important is it that you're able to try out a new acquisition tool before it is actually implemented?
R: So like a 30 day trial or something like that. It's nice, but it's not the most important thing. I have to be able to see a demo of it.
I: Ok.
R: I have to be able to think about how I'm going to use it, but I don't always expect a 30 day trial.
I: Ok. So trial use is not quite as important but as you mentioned, question number 11: How important would it be to have an opportunity to see a demonstration of their new technology acquisition tools?
R: That's expected.
I: That's expected. So that's very important.
R: Yeah.
I: You would consider that very important.
R: Yeah. I got to be able to see that first.
I: Ok. Question number 12. Does your organization utilize a formal process for the acquisition of capital equipment?
R: Pretty formal, and I think I already explained that again.
I: You did a very good job of that. You jumped ahead on a couple of questions.
R: Well . . .
[Laughter]
R: Oh, [inaudible laughter/talking]
I: Do you usually use a RFP?
R: No, not usually. Certainly not formal. We've done more RFP for consultants or for software design or for something like that but for capital, no. I mean for medical equipment we might go, as formal as we get, it's we're looking for a CT scanner that does this. We might write down what we're trying to do . . .
I: Ok.
R: But usually we'll call a vendor and say we want a 64 slice CT scanner, you tell us what features it has. Because if we're buying that, we might not know to ask specific features because it's new so we don't usually do it that formally.
I: Does your organization have a formal process for ensuring vendors adhere to any and all corporate policies?
R: No. I'm trying to think of what corporate policies would that include.
I: Well, the kind of follow up question would be which do you think would be important to include in a process? An example that's probably pretty common would be HIPAA compliance . . .
R: Ok.
I: Safety measures. I don't want to give you too many because . . .
R: So they do we do have agreements with our vendors regarding HIPAA that if they're in our facilities, we have service engineers with sales people, that they have to comply with HIPAA regulations and they have to read a statement and they do have to comply with that. So they do for safety policies. I'm trying to

think if we've ever had them sign anything or you know when we have vendors here, if we're doing applications, training or part of that, it's understood and I guess I've never had an issue where they didn't understand, ok, we've got a real patient on the table, there's a HIPAA concern. We've just have never had an issue, but I'm not sure if we've ever asked them to sign anything.
I: Ok.
R: I'm not sure.
I: No is an answer.
R: Ok. [laughing] No is an answer I think.
[laughing]
R: And it's really interesting with builders, with contractors. We have gotten through RFP's with contractors and building, and we have selected a contractor, who at the very beginning of a project, will sit and review with his workers customer service and patient safety and patient privacy and you know how sick are people, keep the noise down. I mean, they go through a patient education that he always ensures us that that's going to happen at the beginning of every project and, that would be great to put in a policy . .
I: Right.
R: But we've never had to.
I: Ok. Let's see, we're on to question number 15.
R: Umhmm.
I: Would the presence of a technology acquisition tool help decision makers during the capital acquisition process?
R: Yes.
I: Yes, and what items do you think would be important to include in the process to help decision makers?
R: Well, I think we kind of talked about that in our matrix. The decision makers in our company, most of them are physicians, and they are very data driven. They are scientists.
I: Uhhuh.
R: So giving a value to something and you know, getting to the end and having a quantitative way to look at things is very important for them. Making it very cut and dried and very quantitative makes it much easier for me to sell this to a physician owner than anything. So that's what's important to me. Being able to get those factors converted to a value.
I: Alright. And if the acquisition tool actually contained those items that you were talking about, would it determine vendor choice? Do you think it would help you get down to vendor choice?
R: Yes, I think so.
I: It sounds like you guys . . .
R: Yes.
I: Actually have a system kind of like that already. And question 17, does your organization track the effect of capital purchases to its bottom line?

R: Well, yes to a point, but we really do very detailed cost accounting. So I can tell if we have upgraded an MRI and it has allowed us to do 2 more patients a day, then I can track that by modality and by location.
I: Ok.
R: So yes, we do have a . . .
I: And do you have a technology by now, you're getting used to the follow up question.
R: Umhmm.
I: What items would you put on an acquisition tool that might help you attract a return on that investment?
R: Oh, it would be additional volume that we can do or how does it effect staffing levels, the expenses that go, does it cut down on the use of a supply, where can I save on my expenses or where can I increase the revenue, and the revenue here would be driven by the patient volume or the type of study and what the reimbursement that we would get for that, but . . .
I: Ok.
R: Absolutely.
I: And question, go ahead.
R: That's a piece that we don't proactively do very well. That would be very helpful for something like this.
I: Ok.
R: We put together proformas but if it's all integrated into the acquisition of this, it would be helpful to have it all in one place, a real tool that could help with that.
I: Ok. Question number 19. Do you track end user satisfaction for near purchases?
R: When we sign a contract, typically the payment terms would be 10% down, 80% upon installation, and then there's another 10 or whatever percent left to pay. Before we make that final payment, I do have a formal check off where I go to the team leader or the technologists who are using the medical equipment . . .
I: Umhmm
R: The doctor in charge of that modality of that location, and I get them to sign off that everything is working to their satisfaction, and we don't release that final check until I've got that signed off.
I: Ok.
R: All of the pieces that they said were going to be here are here and so we do have, we just don't pay for it until everybody's satisfied . . .
I: Ok.
R: At least initially.
I: Ok. Alright. Do you track, the word initial kind of caught my attention. . .
R: Umhmm.
I: Do you go back through 3-4 years later and do any kind of a process to kind of check and make sure that maybe they're satisfied whether they do everything that the vendor promised it would do? Was it a useful tool like the vendor said it was going to be? Is there a formal process for collecting that kind of data?

R: There isn't, but that would be a good idea. We informally do that because I meet with a lot of these sales people regularly. I'll call them and say ok, Bob, you said it was going to do this. I'm not real impressed with this latest Toshiba purchase. Ok, you said it was the easiest machine in the world; we had our site visit. Our techs aren't feeling that exact same way so come out, we might need more training, but we don't do it probably after the first year. We don't go back because we typically are not going to rip it out. It's just too hard to do so we don't do it formally, and that would be a good thing to do.
I: That was the end of the questions, and for the next part I'd like to get your opinion about some of the actual forms that will go out . . .
R: Umhmm, ok.
I: I have a cover letter designed to go out on the front end of the research and explain what it is that I'm doing research for and also to tell people how to get in touch with me for more questions . . .
R: Ok.
I: And we're to do that. I'd like you to just take a look at it. It's fairly close to some of the other documents that you signed but take a look and see if you have some suggestions for how to make this better.
(Pause while reading)
R: I would fill this out if I got this letter.
I: You think it gives you enough . . .
R: Yeah.
I: Explanation that . . .
R: Yeah.
I: You know, ok.
R: I would. Oh, here we go.
I: We're going to turn to Appendix F and this is really the . . . Don't look at the format on . . .
R: Umhmm.
I: I think I explained. We'll be putting it into a better format for lack of a better word . . .
R: Umhmm.
I: I just want to look at each question and kind of say the first four or five are kind of demographic questions. Do they ask the question in the right way? Is there a way you might change the wording on those questions, and then we're going to go down through the rest of the questions. Questions that I asked you . . .
R: Umhmm.
I: Put in a . . .
R: Format . . .
I: Formatting . . .
R: Ok.
I: So question 1. How many years have you worked at your current position level?

R: I could answer that one. That's easy.
I: That's a good way to ask that question. And what is your age? Although you didn't like to give the answer, is that . . .
R: I can answer that one.
[laughter]
I: And your gender, is it male or female?
R: Why do you ask that one?
I: Demographic research, you try to pull the information apart and try to compare age groups, possibly also male to female . . .
R: Ok.
I: And the organizations is another one of those type of questions that you can pull the information out. Is it part of a multi-hospital system, yes or no. Does it pertain . . .
R: Yeah.
I: Particularly to your organization. Is this a good way to ask that question?
R: Are you only sending it to hospitals?
I: Yes.
R: Ok. Because we're different, but I would struggle with how do I answer this question . . .
I: Right, correct.
R: But if you're only sending it to hospitals, then I think that's easy.
I: Is your hospital less . . .
R: And that's . . .
I: Circle the one that's correct kind of thing or check a box . . .
R: Or however you have it, yeah.
I: Then move into question 6. . .
R: Yeah.
I: Describe yourself, your usual reactions to new innovation, you read through that . . .
R: Uhhuh, yeah.
I: Would what be a good way to . . .
R: Yeah, I think those are interesting. It would be interesting to see how this comes back.
I: Yeah, and . . .
R: Especially compared to the size of the hospital.
I: Question 7, is a yes or no question, but is there verbiage used to the current method of capital acquisition, or do you think the current acquisition tool would be an improvement over the current system? Is there a different way to bring any verbiage in there or do you think that's a good way to ask that?
R: Or would it be everyone has a current method or do you think a technology acquisition tool would be an improvement from your current system?
I: Yeah, it's ok. Any ideas to get feedback from you, and I'll take that . . .
R: Yeah, ask . . .
I: And looking at it . . .

R: Ok.
I: And possibly change the questions because we would incorporate any changes that are . . .
R: Ok.
I: Suggestions. So question eight really kind of gets into a Likert scale of. . .
R: Umhmm.
I: 5 point Likert scale, how important do you think it is for compatibility is the innovation to your current system. There you go from least to most.
R: Right.
I: Does that seem like a good way to get somebody's measure of importance?
R: Yeah, I think that's good way to do it.
I: Questions 9 through 11, do you . . .
R: Right.
I: Again, we are using a Likert scale. How important do you think a capital acquisition tool is used is . . .
R: Easy to use.
[Laughter]
R: Ok.
I: Number nine. Is that a good way, do you think, to ask that?
R: Umhmm. I'm trying to think, ok, how would I answer that. I would probably have said, ok, that's not that important.
I: Right. So the measure of . . .
R: Right.
I: You give people a chance to say, well, this one's important, this one isn't.
R: Yeah, I think that one is ok.
I: And 10 . . .
R: To try it out.
I: Does that look ok?
R: Umhmm.
I: Number 11, how important the need for CEO's to have that opportunity . . .
R: Right
I: To see a demonstration . . .
R: Ok.
I: And you can rate. Does that look ok?
R: Yep.
I: Alright. Question 12 . . .
R: Ok.
I: Does your organization utilize a formal process . . .
R: Ok.
I: That's another . . .
R: That's easy. Ok.
I: And if yes, we're to question 13, does that include an official request for approval, another yes or no. Does that seem reasonable . . .
R: Umhmm.

I: Like that.
R: Is there a way to add . . .
I: And that's . . .
R: Maybe qualify it a little bit more.
I: Ok.
R: And we don't typically, I request once in a while, but I don't know if I'd answer that yes or no.
I: Ok.
R: We don't do it very often.
I: If you tied $100,000 to question number 13, would that help to say yes or no or is it still a sometimes?
R: It's still a . . .
I: Ok.
R: Once in a while. You know more of a qualified . . .
I: So you might put another yes, no, or sometimes.
R: Some, I don't know, maybe a qualified way to . . .
I: Or maybe another Likert scale of . . .
R: Always, never, in the middle . . .
I: Ok. . . . Likert scale.
R: Yeah, maybe that would be better.
I: Ok.
R: Maybe it would, yeah.
I: With a never and an always and a. . .
R: Yeah.
I: Scale.
R: Yeah.
I: Ok. So question 14. Does your organization have a formal process for ensuring vendors adhere to corporate policy?
R: Ok, that's a yes or no. Ok.
I: And then we start, the sections that you see down below are really the sections of the tool.
R: Ok.
I: You have equipment safety. You can see the different sections. Go down to shipping terms at the bottom, and this is asking . . .
R: Oh, wow.
I: Please indicate below. . .
R: This is cool.
I: If the following items would be important for vendor compliance with organization policies. So it's a yes or no, is . . .
R: Ok.
I: Equipment safety, would it be important for the vendor to be in compliance with that?
R: Yes, ok.
I: So you would go down through it, do a yes or no on those . . .

R: Ok.
I: Does that seem like a reasonable . . .
R: Yeah.
I: To ask that? Ok.
R: You're giving me ideas that we don't typically ask, that would be good. [Laughter]
I: 15, would the presence of a technology acquisition tool, yes or no question. Does that seem reasonable to ask that yes or no question in that way?
R: Yes
I: And then we jump down and say, please indicate the level of importance for the following items to be included, and then the same exact list of equipment safety regulatory requirements down to shipping terms, but this time we say least to most, and you can then choose how they relate to each other . . .
R: Ok.
I: And the level of importance is this.
R: I can figure that out, yep.
I: Ok. Question 16, another yes/no. If it contains the items listed above, would it help to determine better choices, yes or no.
R: Umhmm.
I: Ok. Couple more questions to go through here. Does your organization track the effect of capital purchases to the bottom line? Yes or no. Then 18's a follow-up. Would an acquisition tool containing the items listed below help with this effort, yes or no.
R: Umhmm.
I: And then we have a follow-up: please indicate the level of importance by rating the following items in relationship . . .
R: So ROI . . .
I: So you would say well, is equipment safety and regulatory requirements important to a return on investment or is software/firmware revisions, supplied forever . . .
R: Right.
I: Does that help the bottom line?
R: Right, that's . . .
I: You go back through and pick up in . . .
R: Ok. Ok.
I: Does that seem like a reasonable . . .
R: Yeah, that works.
I: Ok. And the last question to look at, do you track user satisfaction, yes or no. And then the follow-up to that is please rate the level of importance for the following items in relation to user satisfaction. So, again, you're looking at, is equipment safety and regulatory requirements, does that help me? I think you better in user satisfaction or does that guarantee, is that more important? Does that seem like a way to go?
R: Yeah, that's a good way to go through it.

I: Ok.
R: Cool.
I: That's kind of the review.
R: Alright.
I: I wanted to talk just and about 5 minutes that we have left that I always promise to be done on time . . .
R: Ok.
I: Looking at the survey itself, how do I get to you to fill out a survey? What's the best method? Is it paper method that's mailed in; would that get to your desk to fill out you think? Or would a survey that came online? Is there a length or goal? My original goal that I stated was that had to have something that would take 30 minutes or less. I really kind of think this . . .
R: I don't think this would take 30 minutes.
I: Might be more like a 10 to 15 . . .
R: 10 minutes, yeah.
I: Is that reasonable? So I'm asking three questions. Let's go back and get the first one. Is paper or electronic, do you think there's an advantage to one or the other?
R: I think, for me, I get so many e-mails that I just throw away. I just delete, delete, delete, delete. I think surveys, if they come on paper, I am more likely to fill them out.
I: Ok.
R: And it sounds stupid, but if they come in a Federal Express or something that's not just an envelope, it's more likely to make it to my desk. If it comes just in a simple envelope, it might not make it past _____.
I: Ok.
R: But if it is in a Federal Express, she's always going to bring it to me . . .
I: Ok.
R: Even if it might appear to be junk mail or something like that. If it's Federal Express or DHL or something, it's going to get it to me.
I: Ok.
R: Not Cosmo, but . . .
I: If it had a letter with a letterhead, Oregon State University Research, would that help?
R: Yes, it would.
I: And, ok. Any other suggestions for how to get somebody to actually fill out a survey because one of the problems that we all face is all of the e-mail, . . .
R: Yeah.
I: All of the junk mail that comes through and sometimes they say research on them . . .
R: Yeah.
I: And I'm trying to figure out, would the electronic be better, would paper be better, is it a combination of both? If it's Oregon State University Research and subject line on e-mail or it had the logo as it came through, would that help you?

R: I think . . .
I: Is there anything else that I could do?
R: I get these things that say we're going to send you fifty bucks if you do it. Well, you know, I don't take that money. It goes to the company. That doesn't appeal to me. That doesn't buy my time. If it seems like something that I would be interested in getting the results and you've offered that in here. That's what usually gets me to fill these out because I'm interested in seeing what other people are thinking or what other people are doing or what innovations there are. That, to me, is the reason I fill out surveys is that I want the answers. I found that if there's something to grab at. A $5 Starbucks card would probably get my attention more than the promise of $50 if you fill it out. Something that catches me.
I: Would a $5 Starbucks card actually guilt you into filling . . .
R: Absolutely.
I: [laughter]
R: Absolutely. If you gave me a $5 Starbucks card, I would take that card, I would absolutely feel like that I had to fill that out now.
I: Alright, alright.
R: And I don't know if that will happen everywhere, but it would work for me.
I: Ok.
R: So.
I: Any other suggestions for improvement or . . .
R: No, this is exciting.
I: Good.
R: It's kind of cool.
I: It's been fun to go through it. I'm going to go ahead and shut the recorder off.
R: Ok. No, I think this is great.

Executive Interview B

I: We're here today to talk about new technology acquisition processes and procedures, and I just wanted to make note that we have signed an informed consent prior to turning on the microphone to get consent to turn on the microphone. Is it ok with you that we record this session?
R: Yes, it is.
[laughter]
I: We will certainly erase the electronic portion of this once it's transcribed. We do use a professional transcriptionist to do so, and she'll go through and remove any names and dates or anything specifically that might inadvertently get put in here. It is confidential, will not be shared with anyone else although, as it says in the consent form, we will be publishing the notes themselves short of any names. Any questions about that process?
R: No questions.
I: So, it (the microphone) does actually pick up really well. I went through a little bit, but I also gave you a copy of the new equipment general specifications as the tool because I came back from other interviews that I've done, and I got the idea that people didn't know exactly what that tool might look like so you and I have actually reviewed that quickly, um, before we started the tape recording just to give you a better idea of what that piece of innovation might be. And we're going also to talk about innovation in and those kind of processes a little bit as we go forward and to me, what I mean when I say new innovation might mean a 64 slice CT. It also might mean something like a new Six Sigma innovation like GE brought out a few years ago so it could be formalized as a 64 slice CT. It could be an IT PACS project, but it also could be software or some kind of an idea that comes forward that you might want to try. So it could be all of those things. That's it for my explanation. We're going to run through questions that you were supplied before, and I'll run through those, and I will try to probe when I think that there might be additional information behind those. The idea behind an assessment tool like this to put into people's hands is that trying to level the playing field and get the GE's and the Siemens and those folks on a level playing field so that if there was a multitude of vendors that were to be bidding on a project for you, that you could weed out as a high level executive. You would hand them this sheet that would contain all the information that you might not remember to mention during a meeting with a sales rep and say, can you meet with all these terms and conditions and sign here if you can. If you can't, then that would remove those players and not waste your time as you go through. So as I would like to mention also that this is a qualitative process so yes and no responses are ok, but honestly we're looking for more of a verbose answer of my answer is yes, and this is the reason why behind that, and I'll try to get you to answer in that manner. And then at the end of our session today, we're also going to look at the questionnaire itself and kind of go over that and

look for any ideas that you might have for making that a better model and including how it would go out and how people would respond. Ok?
R: That's ok, yes.
I: So, how many years have you worked at your current position level?
R: 22 years.
I: 22 years. What is your current age?
R: 52.
I: And are you a male, sir? [phone ringing]
R: Yes.
[laughter]
I: And you know this questionnaire was originally designed for working with CEO's in hospital organizations and my committee thought it best that we look at folks in health care organizations and making that a bigger, a bigger boundary and because the tool might be useful so the committee asked me to actually branch out and look at other organizations, health care organizations, but not just maintain specifically within hospitals themselves because organizations are branching out, the environment is changing. This might be possibly a useful tool for other similar organizations and then in my paper I talked a little bit about it might be transferable to other entities as well. So, is your organization a part of a hospital, multi-hospital system?
R: No. However, we do have joint ventures with hospital systems, specifically the _____ _____ & _____ _____ and the _____ _____ _____.
I: Ok. Could you describe the joint ventures a little bit?
R: Sure, the first joint venture with _____ _____ & _____ we've had for about 10 years. It is with two other hospitals in Spokane, Washington, _____ _____ _____ _____ and _____ _____ _____. As I mentioned, we've had those in place for over 10 years now. They're a 50-50 joint venture on all outpatient imaging done in the four states, which means our group and those two hospitals have to run all of that kind of work for the joint venture.
I: So, could you describe the purchasing process of how a 64 slice CT would be bought? Is that bought like a system or by new . . .
R: Normally, that would be bought by the joint venture, _____ _____, ___, and we have a process that we go through to make that purchase, would you like me to describe?
[talking at same time]
I: Please do.
R: Well, first of all, we try to do an assessment amongst the physicians to determine whether the technology is something that we actually want to invest in. For instance, a 64 slice CT, we will ask a number of representative radiologists within the group, do they feel that this is technology that we need to invest in at this time. Due to the pressures on reimbursement and just generally good business practices, we don't normally purchase equipment until we really need to, whether that's a strategic need, a marketing need, but we usually wait as long as we can before we make that purchase, and we do that based on the

recommendation of the number of the radiologists representing different sections of our group. So, first we need to decide do we want to buy a 64 slice system and so no matter who makes it, and so once we've decided that it is time to purchase the 64 slice CT, then we go through and actually lay out the configuration that we want from the vendor and provide that to, normally we try to limit it to 3-4 vendors. We certainly don't use as comprehensive a tool as we're talking about today and so we really pretty much allow them to come. Any vendor that wants to come in and make a presentation, they come and do that. And so we will give them the configuration, they'll come in, make a presentation to our physicians primarily and then our technical staff related to CT and then we will ask them to make a proposal after making the presentation to us. We do sometimes weed out people after the presentations if our radiologists say, for instance, we have four vendors, they see two of them that are obviously better technologically, they will at that point reduce the field down to two and ask those two to make that proposal. We rarely get it down to one and ask them to make the proposal, the financial proposal because there's no leverage in us getting us a good price for that piece of equipment. So with that configuration, we've had the clinical presentation done. We've got the 2-4 vendors in the field making proposals. Those come back. We put it into a matrix that looks at the different elements of the decision, which would be how good is our technology in our opinion, are they following the specifications that we asked for in the configuration, and what's their service like. Is it good service in the area that we're purchasing the equipment, and then we go through it and we'll wait weight those, and we'll score them, and that's sometimes where things get a little political within the group. Some people may want one vendor versus another, and so there will be some back and forth there, and we get done with the waiting, a number comes up, we look at that. Sometimes it's very close, and then there's really just sort of a discussion and decision that occurs within the group, or there's a big enough difference that we go with the quantitative winner of that process.

I: Ok.

R: Is that . . .

I: Yeah, so when you say physicians, what type of physicians are these?

R: These would be the radiologists. We do have vascular surgeons in our group, and they'll be involved in mainly equipment like ultrasound units. Otherwise, they really don't get involved in the other radiology type equipment. So these would be neuroradiologists, body imaging radiologists. There will be musculoskeletal radiologists, ultrasound, they're not sonographers, ultra . . .

I: What is . . .

R: Sinologists. I don't know what they call them. Or if it's mammography, it will be mammography radiologists. Nuclear medicine, we've bought a PET CT based on a pretty extensive process. And the nuclear medicine people end up making recommendation to the group, we usually follow the section that's buying the piece of equipment, for instance if that equipment has mostly

musculoskeletal needs, the musculoskeletal recommendation is probably going to bear a lot of weight. Then I think in any process including the one that we're talking today, one of the reasons that we have a process is to try to inject as much objectivity into the process and squeeze out all the I know so and so, I took so and so to dinner at RSNA, all that wonderful marketing stuff that we try to do with our referring physicians, and we certainly want them to like us best. But when we're buying a 1 or 2 million dollar piece of equipment, who has the best relationship, personally I don't think is as critical as what's the best piece of equipment that we should purchase, and I assume it fulfills our financial, strategic, clinical and service maintenance needs.
I: Ok. Do you ever use. . .
R: Was that verbose enough?
I: Yeah, it was.
R: Ok.
I: That was perfect. Do you ever use an outside company to help you assess technology?
R: Very rarely. I can't remember if in our past decision we did that. I don't believe we did. You know, we've bought a PACS system basically on a radiologist and CIO visiting RSNA and running across a PACS system that they really liked, and we really didn't look at many others very seriously. That process was fairly lopsided but we think so far has worked out fairly well.
I: Umhmm. You're not a hospital, but it sounds like you're doing business with folks that are in groups of less than 100 beds, 100-250 beds and greater than 250 . . .
R: We do. The group here in Spokane, actually, we service about ten rural hospitals in the area which are 50 beds and less, to 25 beds. And then here in Spokane, we service _____ _____, which is 600 beds _____ _____ which is about 280-250 beds and then we cover the _____ _____ and the _____ _____ _____ clinic in Seattle, and then we'll be covering _____ _____ _____ down in Gilbert, Arizona starting in September.
I: Do the hospitals that are affiliated or are part of the joint ventures, do they normally want to be a part of this purchasing process or do they normally stay out of it?
R: They normally, as a practice, stay out of it. They have a tremendous amount of respect for our knowledge and experience in choosing medical imaging equipment. Both of us, however, feel that there's a lot to be gained by getting together if, let's say, we're all buying the 64 slice CT or we're all buying an MRI or if there's a way to pool our buying leverage or buying power, we will get together for that, but it's more a mutual agreement that there's a benefit to both parties they never really tried to impose their buying process onto us.
I: Ok. Moving on to new question number six. I'm going to read a couple of statements off to you, and then I want you to respond with which one of the statements do you think best describes you. I am usually the first CEO in my area to try a new innovation. I'm usually one of the first few CEO's in my area

to try a new innovation. I usually try a new innovation once I've seen other CEO's in my area use it successfully. I'll only use a new innovation once I have seen many other CEO's use it successfully. I'm usually one of the last CEO's in my area to use a new innovation.
R: Uh, fortunately or unfortunately, I'd have to say number one. I'm usually the first CEO to get into something. I try not to get into things recklessly, but I think our company has benefited from our ability to innovate and get into things ahead of a lot other people, and I'm not saying that we do that 100% of the time. I think if you ask other radiology groups in the country about _____ _____, I think innovation or cutting edge isn't the right term, but maybe the comfort with taking appropriate risks and getting out there and trying new things we think is critical to positioning ourselves for the future.
I: Interesting. So, how do you learn about these new innovations and the new things that are coming down?
R: Personally, I tend to read a lot of I read some radiology related material, but I tend to read a lot of general business material and then when I see innovation in other industries where people are pouring billions of dollars into, I will look at that innovation and see how it might apply to _____ _____.
I: Umhmm.
R: One example was 10-11 years ago one of the radiologists and myself kind of looked at and decided that data management information systems were going to be critical in the future to radiology and so we needed someone that would wake up in the morning and think about radiology. That's all that he would do and so we started recruiting one of the first chief information officers in probably the northwest for either a radiology group or even a multispecialty practice. So we recruited somebody up from Sacramento who's still working with us and that down there I'm not sure he was called the CIO, but he was working in radiology technology down there. But we've grown from one such IT person to about 55 in ten years so that's one example of how . . .
I: So reading articles and journals, how about traveling? Dou you go and look at . . .
R: I'd probably get, I don't do a lot of continuing education. I probably 6-8 years ago stopped doing a lot of the RBMA type of involvement. I've since tried to get a little bit back into it. What I found was that those people were pretty much repeating a lot of the things that they already taught me and so I didn't need to spend as much time with that. Where I really get my information in additional to the general business information is just going out and visiting other practices and picking up parts and pieces from what they're doing and trying to put them together to position ourselves.
I: Do you have a lot of visitors that come to your organization?
R: Yeah, we get a fair amount, probably at least more than two site visits a month from people wanting to come to _____ _____ to see what we're doing.

I: Ok. Well, so moving on down to question seven. I added a few extra questions in here . . .
R: Ok.
I: Everyone is used to the current method of capital acquisition here at this company. Do you think a technology acquisition tool like we've discussed earlier would be an improvement from the current system?
R: Absolutely. I think if you could make it pretty easy to use and apply, I think it would be very useful in making again those objective purchase decisions and streamlining the process and saving everybody time. I think any process can be improved on. I think we've got a pretty good one but from what I've seen of the technology acquisition tool that we're talking about today, I think that applying something like that to our business would be very beneficial.
I: Ok. Most people feel there needs to be a balance between adapting an innovation to your work flow and adapting your work flow to that innovation. How important do you think that compatibility of an innovation to your current system would be?
R: I think it's critical. I think too often it's the other way around. I think a lot of times we're having to change what we do to fit our technology when there's probably a balance there, but sometimes it may be important to have the technology fit how we do things, assuming how we do things is the most efficient, effective way.
I: Ok. How important do you think it is that a capital acquisition tool is easy to use?
R: I think that's probably one of the critical elements because if it's too difficult and cumbersome to use, people are going to avoid using it and work around it, and so I think the easier it is to implement and to use and making it as intuitive as possible would be really important for such a tool.
I: Ok. For you as an individual, how important do you think it is that you would be able to try something like this out before it's actually implemented in your company?
R: Oh, again, I think it would be good to go through not just a demonstration but even taking a recent purchase and putting it through this type of tool before it's actually implemented.
I: What kind of benefits do you think you would get out of that? Just being able to see that it works well or . . .
R: I think that the ease of use and the acceptance or the ability for the people that are going to actually use the tool to see how it works.
I: And in your view of other CEO's, do you think it would be important for them to be able to have an opportunity to see a demonstration of any new tool?
R: I think depending on the level of the CEO's, some CEO's are so high level that that's just the pertinent thing to sort of say, well, it's just up to the purchasing department. I tend to probably be a little more hands so I'd . . .
I: Ok.

R: At least curious to see it put through, put through a demonstration or a sample.
I: But just as a side question, do you think most CEO's, you made that kind of a statement, leave all of their purchases, especially new innovations like CTs or a new innovation like a Six Sigma or something coming out in that fashion . . .
R: I think most CEO's may leave that to purchasing. I hate to make this an age thing, but my guess is the older the CEO, the more likely that they're just going to just assume that whatever the answer is that gets spit out, that they're supposed to bring forward to their board is the right answer. I think the younger the CEO is, the more likely that person's going to be technology literate and comfortable with new ways of looking at things.
I: Ok.
R: Probably still astounded at how there are still CEO's of companies that don't have their own computer.
I: Uhhuh, ok. So does your organization utilize the following process for the acquisition of capital equipment that cost more than $100,000?
R: Yes, we do.
I: And do you have a formalized paper trail that follows along with that, I mean, you did some description earlier of . . .
R: I'd say on a scale of 1 to 10 with 10 being a really good job, we probably do a 7-8 depending on the acquisition. I could see a more formal tool like this technology acquisition tool as an improvement on that from an approach but also from a documentation standpoint. For instance, certainly anything over $100,000, we can't make those decisions without bringing it through committees and our operating committee. There is a finance committee, an operating committee or a formal board for approval so at some point, someone will have had to make a case for purchasing that item.
I: Ok.
R: But how much is spent, and how much is approved is really an item by item . . .
I: Ok.
R: Decision.
I: Ok. Do you use an official request for proposal, an RFP?
R: Very rarely. Again, we probably feel it takes a lot of effort on our part to set it up. We don't necessarily care too much about how much time it takes for the respondent but then we need to process it when it comes back and so it just depends on what it is.
I: Ok.
R: I'd say we rarely use an RFP.
I: Ok. Do you have a formalized process at your organization for ensuring the vendors adhere to all corporate policies?
R: I guess on that one, I would have to say that we don't have a formal process. I didn't know if you were talking about things like the bidding process, conflict of interest.

I: All of those things but also that you're just trying to make sure that when you get down to the bottom line, is everybody bidding in a certain fashion, is everybody including freight, is everybody not including freight?
R: I think again we probably on a scale of 1 to 10 do about a 7.
I: Ok.
R: We do have some processes around that.
I: Ok.
R: But it isn't as tight as it probably could be.
I: If you were going to implement something along those lines given what you had said that you didn't have it but if you would come along and implement that as a new process, what items do you think it would be important to include?
R: Well, what's the clinical need, what are the financial ramifications of the purchase? Again, a lot of what we do that are big ticket items are medical imaging equipment so we get down to, ok, what's the configuration, what are the apples and apples configuration and sometimes it's possible to get an apples and apples and others, because some vendors have different configurations than other vendors. Sometimes you have just have to put it on a spreadsheet and point out these below, what may have a bigger generator than another because they don't make anything smaller . . .
I: Uhhuh.
R: Well, then they're probably forcing you to pay a higher price, and you just have to weigh that in your overall decision making. I think one of the things that I thought of when I read this question was the concept of conflict of interest in should there be something in either the tool, which there may be, or in what we're doing that calls out for the vendor to identify, for instance, if one of our radiologists has got 100,000 shares of GE stock. Chances are that's probably we should know about if that person is on the selection committee.
I: Right. That's very good. Would the presence of a technology acquisition tool help decision makers during a capital acquisition process do you think?
R: Oh, absolutely. I think it would take things up another level. I think it would again improve the chances that we're going to make an objective, well-informed decision, and that's really most of what you can hope for.
I: If we didn't delve into the tool itself very much but if you were developing a tool like this or there are certain items that you think would be important to use during this process or a service contracts or reliability or conformance that, I'm naming some off and possibly putting ideas in your head, but are there certain things along those lines that you had to deal with in your past that would have been great if you had the tool there and you would have called it out with maybe things that didn't come up until after the sale.
R: I think for us, we've continued to improve our own process so that we've included a number of those things as we've had over the years. It certainly, ten years ago, would have been great to have a more comprehensive . . .
I: Uhhuh.
R: Process like the technology acquisition tool.

I: Can you remember back on any of the problems that you encountered that you have dealt with? You've got a tool of your own to some degree.
R: How long is it going to take to install the equipment? The warrantee type items. What happens if things break? Is it just they're going to fix it? What if you're down five days and you lose revenue? What's in place for that? Well, I think those are the main ones that come to mind.
I: Ok. If you had an acquisition tool and it contained the items that you're talking about and the items that actually we looked at as part of this acquisition tool, do you think it would help you to determine vendor choice?
R: Absolutely. I think it would make sure that we have as much objective information as possible for the physicians and the joint venture partners just to be able to sit down and make a decision without the influence of sales people which again, that's what they're paid to do is to create that relationship, that feeling that you need to buy this very expensive equipment from them, not because it's good equipment but because you're good friends or they bought you dinner or . . .
I: Ok. Does currently your organization track the effect of a capital purchase to its bottom line?
R: No, we don't, but I think that's an excellent concept, and I wanted to talk to people about doing that. I think that's very helpful once you go through this process, whether it's the technology acquisition tool or the process we use, I think it's nice to then be able to follow up and see what the outcome really was. Did you hit the proforma after a year? Is it doing the clinical things you thought it would? Is it running reliably?
I: Ok. And what items would you include in an acquisition tool do you think that might help you track return on investment?
R: Well, I think just going back to the elements that you used to make the decision in the first place. What were the key things that you looked at to make your acquisition decision? Turn it around and say ok, now I'm going to measure that, pick a time interval, six months, twelve months, eighteen months, down the road, and you just list out, ok, here's why we bought this. Here were the important elements or decision. Now fast forward 1 ½ years, and how did it really turn out.
I: Ok.
R: Because this is just helping you make a good decision with the information you had at the time. Performance is hopefully going to follow but maybe not.
I: And our last question, number 19, do you track end user satisfaction for new purchases?
R: No, I think that's another excellent area. We probably track it from the standpoint of asking people how's it going, but I don't think we have anything formal in place, and I think that would be again in that same time interval in a year or two down the road. To go back and talk to the people that are actually using the equipment to see how . . .
I: Well, you're kind of getting used to my follow up. What questions then do you think would be important to include in that?

R: And I'll get you used to my standard answer. I would look at those parts of the acquisition decision that relate to the end users because that it's going to be reliability, it's going to be ease of use, it's going to be if it needs service, how's its service, how responsive is the company to problems. Those are most likely going to be your end user concerns going into it. End users don't normally get involved in the financial worries. They're more concerned about how's it work for me, is it going to keep working, it is going to break down, what happens when it breaks down. So I would just turn around and make those questions and check with them . . .
I: Ok.
R: A year or two down the road.
I: Alright. I just, as I mentioned before, I wanted to go through a couple . . .
R: I apologize for my brevity . . .
[laughter]
R: And lack of verbosity.
I: I'm sure your staff is probably wondering what we're doing. Looking at Appendix E, this is a survey cover letter. I'd like to have you kind of review that survey cover letter and ask if that's going to be appropriate for and does it give enough explanation of what a survey tool or what the new acquisition tool is, what you're participating in from that standpoint.
R: This would go out to CEO's?
I: It will be a cover letter to the survey itself.
R: I'd probably take the first sentence and tweak it a little bit because you're telling the CEO that he doesn't have a very good process for selecting new equipment, and CEO's sometimes have egos, and so they're going to think why, I don't care about this person, there may be a different way to say it. Most facilities, except yours, I don't know how you do it but just beginning with that, most of the rest is pretty fine.
I: And now you got a good look at the new acquisition tool itself. If you didn't have that, would that letter give you an enough information to know in general what I was talking about? Was there any additional information do you think that needed to be added into that?
R: Put something in there. I understand what a formal process for new equipment acquisition is, but this is going to a CEO. You may want to actually say that this may be something that's useful for the CEO or the boards in making their decision as opposed to letting them assume that this may be just relegated to the . . . I don't think the person to read this then go, oh, I think you want to talk to my purchasing agent. So maybe something in here that talks about how this tool could be used by fill in the blank, a board, an operating committee, whoever has to make that final decision.
I: Ok.
R: So those are probably good for me.
I: Moving to the questionnaire, this is like the questionnaire that we just ran through only that is a Likert scale and some yes/no questions and again, will be

designed and reformatted. Basically, just kind of look at the questions themselves and talk about do you think question one, for instance, is that fine enough or question two. Those are demographic questions . . .
R: Yeah.
I: Down through but . . .
R: If you're not a multi-hospital system, you may want to get a feel for how big your, if it's an imaging center, if . . .
I: Yes.
R: I don't . . .
I: If how about we changed to going out to imaging centers instead of just hospitals. . .
R: Yeah. Have some metric for that . . .
I: Ok.
R: You know, is it how many patients a day do you see in the imaging company that you are responsible for.
I: Ok, ok.
R: You say 150, 300, 5000 but the rest of the questions to me seemed good.
I: And so six, I'm just asking for someone to circle the question. Seven is a yes/no. Eight is a five point Likert scale. Do you think that would . . .
R: Seven, back up a second. Do you think, never mind, ok, proven from that current system, ok. So most people feel.
I: The purpose of this survey, there's a couple of things. One, I wanted to make sure it be under 30 minutes and the length of time that it takes somebody to fill this out and to put it into a format in use for our Likert scale and circle a numeric number. This was done for me to plug into the statistical program, then this would be quantitative for . . .
R: Yeah.
I: This survey. So this would be filled out and hopefully get some statistics back. Every CEO in Oregon, Washington and Arizona would actually get this. Do you have feedback for how long of a survey minute-wise that you typically would actually fill out. Do you fill out surveys that come across your desk?
R: Not really. I think a lot of it has to with personal relationship per knowledge of the person. I think if you happen to get some CEO's that, it's one of those things, do you send it out to a bunch of people and hope you get a few responses. Do you target and go forward and . . .
I: Ok.
R: Use whatever relationships you have.
I: I'll come back to that in just a second. Number 14, looking at that, I wanted to go over all of the things for ensuring vendors adhere to corporate policies. If you had policies, not knowing if you do or not, would these be, again, a yes/no equipment, safety and regulatory requirements. Would those be good things that would need to be included in this type of an acquisition tool and so . . .
R: Depending on the size of the organization, I don't know how much detail you're going to get out of a CEO.

I: Uhhuh.
R: If this going to be purely a CEO type of questionnaire because I feel like I'm pretty hands on, and I can guess at most. I know a majority of these, whether we have them or not, but . . .
I: I think actually this survey is, this question is just asking do you think these are important and . . .
[talking at same time]
I: Are there any you would throw off of that list. For instance, do I have enough items on here or is there anything you want to throw off?
R: I wouldn't throw anything off. Well, if it's comprehensive enough, I . . .
I: Ok. Then these items again were with the presence of an acquisition tool, this is one of the questions that I asked you about and then indicate the level of importance, basically again a Likert scale of 1-5 for each one of these items. Does this look like a format that would be easy to fill out? Again, these are going to be very familiar, and you'll see each question repeated and just trying to get at how important is this to the firm. Each level, is there anything on this one that you would throw out or any of the additional items? 17 is a yes/no. 18, these are questions about the return on the investment and are there any. Again, we'll be asking the question of how important are these to, the return on investment question, are there any items that you might throw out of here or if there are, because these are actually on the tool so we are trying to evaluate whether or not these are all good . . .
R: I think of all three of them, I would leave them all on there and just let the person put least if they think it's not very important. That way . . .
[talking at same time)
R: I don't know that I'd have different options for each of those different tables. I'd have all three have all the same ones and then let people, even if you added to it, just put least if they don't think it's very effective. I wouldn't think on the ROI that the equipment safety and regulatory requirements would be very important so I would just mark least.
I: Ok.
R: Where software in form of revisions could be very important.
I: Ok.
R: So . . .
I: Alright. I just started down this road earlier. I wanted to follow up with just a kind of the format maybe of getting a survey. It sounds like you don't probably fill out too many surveys. Does it matter to you if one came from a university versus one came from Time magazine. Is there a difference . . .
R: Oh, I would definitely at least consider it but if it took half an hour to do a survey, that would have to be probably unfortunately somebody I know.
I: Well, here's 18 questions. Do you think it would take you 15 minutes to fill this out, go through and think about it a little bit?
R: I could probably do that in 10-20 minutes.

I: Somewhere in that time frame. And would there be a format of paper versus electronic that would entice you better to . . .
R: I'm an electronic guy. If you can make it where you can get it and e-mail it, I click, click, click, click, click, click, click.
I: Uhhuh. I asked that question based on some prior feedback as well because . . .
R: That's just me. If I got something on paper in the mail, first of all, it's got to make it through my screeners and if it makes it through my screeners and I'm looking at it, then ok, I've got to fill it out and then do I get it back and then they need to figure out how to mail it and how easy is it to mail or don't you want to scan.
I: To get through your system email, to get through your system of are there any special requirements for firewalls that becomes, if an e-mail is e-mailed to you . . .
R: Yeah.
I: Is there anything that . . .
R: They're going to say spam; it may get spam filtered out.
I: Ok.
R: I don't know the technical . . .
I: Yeah.
R: Because . . .
I: It comes from an educational institution, is . . .
R: Well . . .
I: Is it something that you know the answer to?
R: I don't.
I: Ok.
R: Then again, it would depend on how many surveys you want completed.
I: Uhhuh.
R: You know, if it's 10 or 20, 30, you might be able to target, figure out how to go through your network of people you know and say, ok, I need . . .
I: However, in this particular case, we'd be targeting all organizations in the state. We're at ten. The question has come up about do you have the ability to make it paper. You have, you're going to get screened as spam either by . . .
R: But what . . .
I: Going snail mail or going electronic and how do you get around. Is there a better way to get around the electronic spam?
R: Well, the other piece of this is whether besides the fulfillment of, of helping with the research is what else is being offered. I mean, is a copy of this tool, the survey results when you're done, what is it that the person gets outside of that fulfilling feeling.
I: Hmm.
R: Contradiction.
I: Do you think that an incentive for filling out and . . .
R: Well, I or as a CEO, was . . .

I: What would be a adequate incentive to try to get someone to fill it out?
R: Well, I think you answered it. You're trying to get all people in the State of Oregon, is that . . .
I: Oregon, Arizona, and Washington . . .
R: Ok. Well, if you're trying to get all the CEO's to answer it, that's a tall order.
I: Yeah. Well, we know that there's a certain response rate but in order to improve that, you know, I'm just . . .
R: Well, outside of financial incentive and gifts, I've got those for where they send you a $5 bill and if it's short enough, sometimes I'll get compelled to fill it out.
I: Ok.
R: I think what I was talking about is more benefit from the standpoint of, ok, I get a copy of the survey results. How could this help my organization? By filling this out, I'm going to get a copy of the tool. I'm going to . . .
I: Ok. I see where time is kind of running short here. Is there anything else that you'd like to add in regard to the questions, anything come up . . .
R: No, I think it's a great concept. I think almost any purchasing process or acquisition process can use important improvement, tying with that ultimate goal of objectivity and making a well informed decision.
I: Ok. I appreciate your time. Thank you very much.
R: You're welcome.

Executive Interview C

I: Ok, we have the tape recorder on, and I just wanted to draw attention to the fact that you signed an informed consent form, and is it ok that we record this session today.
R: Yes.
I: Keeping in mind that we will destroy all the documents once the paper has been written and a professional transcriptionist will remove all names and specific references so we can protect your privacy. The first part of the session is I'm going to ask you 4-5 just demographic questions that allow me later to go back and compare different organizations and people to each other. How many years have you worked in the position that you're currently in, not necessarily this company but in a similar position and in healthcare.
R: Yeah. 11 years.
I: And what is your age?
R: 44.
I: And your gender.
R: I am a female.
I: And in your organization, do you provide services as a part of a multi-hospital system?
R: Do I provide services as part of a multi, no.
I: So we're doing a survey of health care organizations. Maybe you could tell me a little bit about your organization and the kinds of services that they provide.
R: Sure. Our organization is an outpatient radiology organization primarily with multiple centers and multiple locations. We do provide services within the hospital, but it's on a professional service basis only.
I: Ok. So you work in organizations that are part of multi-hospital system?
R: We provide services to multiple . . .
I: Yeah. So you're an independent organization . . .
R: Yes.
I: Working out in, but you do actually work in hospitals and participate in some of the purchases of the equipment for those organizations or . . .
R: There are people within our company that do help the hospitals with their major purchases of radiology equipment.
I: Ok. And those hospitals, are they predominantly less than 100 beds, 100-250 beds or greater than 250 beds? Or is it a mix of those?
R: It would be a mix. The majority are probably the 100-250 beds. There are some small rural hospitals where we may help out as well.
I: Ok, and those, the geographic location in the United States, could you describe kind of the different areas that you provide services in.
R: Right. The major area where we provide services in the State of Washington predominantly now is focused on Eastern Washington. We do provide services on the western side of Washington but is small in scope in comparison overall.

We have physicians providing services just beginning now in the Phoenix area, again very small now but expected to grow over the next 5 years.
I: And is your organization predominantly a professional organization, meaning is comprised of the owners of the company are primarily physicians?
R: Yes.
I: I forgot to ask you this in the beginning, could you describe your position with the company.
R: Chief Financial Officer.
I: Thank you.
R: When you talk about companies, there are multiple companies that are our umbrella, technical management of services and professional.
I: Oh, so could you kind of describe each one of those components and kind of what that means.
R: The professional is the easiest to describe. It is a professional service corp., which currently has about 70 physicians that are employed, and it's entirely owned by physicians, and it provides the professional services to outpatient radiology service companies or location to outpatient radiology centers, and it provides services, professional only, in hospitals but not as employed hospital physicians.
I: Ok.
R: That's the first company. The second company is a management services company, which is owned by a holding company that is 90% owned by physicians. That company provides services to the professional radiology company, outpatient imaging companies and really any other company that has something to do with medical, primarily radiology, but we can provide IT, HR, accounting, strategic, marketing, those types of services.
I: Ok.
R: The third company is, there's a few of them, are outpatient imaging companies. They're all joint ventures typically with hospitals in that area to compete with other groups, and in that typically 50-50 type arrangement where we provide imaging services on an outpatient basis, and those companies employ the techs, the clerical and own the equipment.
I: Ok. So you have quite a variety and sounds like you obviously are purchasing a lot of different kinds of equipment including IT to CT's, MRI's, major equipment and probably from small purchases all the way up to multi-million dollar purchases.
R: Correct.
I: Ok. I'm going to read off a statement to you. There are five different versions of this statement, and I want you to choose the one that you think that best describes you personally. I'm usually the first CFO in my area to try a new innovation. I'm usually one of the first few CFO's in my area to try a new innovation. I usually try a new innovation once I've seen other CFO's or CEO's in my area use it successfully. I will only use a new innovation once I have seen many other CEO's in my area use it successfully. I'm usually one of the last

CEO's or CFO's in my area to use a new innovation. Which one of those statements do you think . . .
R: Repeat number two.
I: I'm usually one of the first few CEO's or CFO's in my area to try a new innovation.
R: I would say two.
I: Ok. And when we talk about the innovations, I think it's important for me to take just a second and say here, new innovations can mean things like new software, new inventions. They can also mean things like a new tool to assess a new acquisition or things like that. So an innovation can mean a lot of different things. I'm going to ask questions and when you're thinking about it, think about purchases of $100,000 or more and think about how innovations how that innovation, that new tool or process or how something like a technology acquisition tool and how that would fit into your answer.
R: Ok.
I: Ok. When you're talking about the capital acquisition process at your facility, everyone is used to the current method of capital acquisition. Do you think a technology acquisition tool itself would be an improvement from the current system?
R: Do I think a technology application tool being an improvement to the current system? I think it would in that I don't think we're very good up front defining what we want. When we go to vendors, that would probably help streamline that process. I think at the end we get all the questions answered, but it's probably not as efficient of a process as it could be using a tool like this.
I: Ok. Next question is most people feel there needs to be a balance between a new innovation and adapting that to your work flow, or adapting your work flow to a new innovation. How important do you think that the capability of an innovation or compatibility of an innovation to your current system is?
R: I think it's important. I think just to buy the latest and greatest because that's what it is, and you're going to make it work no matter what is, is not realistic. So I think it's important that it is adaptable to your current environment.
I: Ok. And maybe a new acquisition tool like we're talking about today. Is that something that just a totally new way we're going to do the process from here on out, is that something that would be acceptable in your company or would it need to be something that looks an awful lot like what you currently use or is it there . . .
R: I think there's a blend. I don't think we would have to say, it has to look just like what we do now because I think if it looks just like what we're doing now, we probably wouldn't need it so hopefully it will look different, newer and better. So it doesn't have to look like it, but it has to be able to at least fit within the realm of what we do.
I: Ok. And how important do you think it is that a capital acquisition tool is easy to use? So is ease of use important?

R: I don't think it's the most important if it gets what you want done and it's a little complex especially if I can see the benefits. I don't think it has to be super simple.
I: Ok. How important is it that you are able to try out a new tool like this before you actually make the purchase or implement?
R: I think that's important to be able to look at it and see how it feels and see how it would work. I think that's important.
I: Ok. Can you think of any examples of anything that you've implemented, new processes, new acquisition, new computer systems and how that would relate, examples of how it went well and didn't go well?
R: There are a couple of new systems that we've put in as far as that I would deal with, new purchasing system, Reqlogic, or Replicon, our new time system, and we went through a lot of demonstration and looking at that in the field and understanding what it would do for us before we decided yes, that's a tool we want to change to.
I: Ok. You mentioned looking at demonstrations of the product. Do you think that is an important thing for CEO's or CFO's to have the opportunity to see a demonstration of how the product or how a tool like this would actually work?
R: Yes, I do.
I: _____, do you have any statements at all, why you think that's important. Is it . . .
R: Well, I think, I don't think anyone or I hope not that people aren't simply going on faith and description of here's what it's going to do for you, buy it. I think most people need to see the benefit before they want to . . .
I: Ok.
R: . . . purchase the tool.
I: Ok. And does your organization currently utilize a formal process for the acquisition of capital equipment that cost more than $100,000?
R: Yes.
I: Could you describe that process? You knew that question was coming. [laughter]
R: I would think that kind of a generalized summary is we start at a committee level and take it up to a board level to say, is this an asset or an acquisition we want to make. Then if the question is yes, then there is a type of almost an RFP that goes out to those vendors and says, here's what we're looking at, here's the date we want to respond by, and here's everything we need. We bring it back, it's evaluated by a lot of the hands on users and managers and then up to the finance committee then up to the board. So that is the process we use now. Again, not quite as formal as what the type of tool that you're looking at.
I: Ok. Do you utilize an official request for proposal in that process?
R: Say again.
I: Do you utilize an RFP, an official request for proposal?
R: As in a piece of form that's common, probably not. Probably a lot of it is calling up a vendor and saying, here's what we like because we have a pretty

strong relationship with the vendors. So I don't know if we necessarily formalize on a piece of paper, here's exactly what we're looking for.
I: Ok. Does your organization have a formal process for ensuring vendors adhere to your corporate policies?
R: Do we have a formal process to ensure vendors adhere to our corporate policies? I'm not quite sure what you mean by corporate policies.
I: Well, do you have corporate policies to ensure safety of people that work for you? Are there HIPAA compliance issues that might come up so in safety compliance, those kind of things, do you have policies out there that or do you have . . . I mean this is probably not a policy, but do you only buy equipment that is . . .
R: No, I would say we don't have a lot of those type of . . .
I: Ok.
R: Formal policies.
I: If you were to generate some policies around those, what kind of items would you think would be important and clear to make sure that every vendor, maybe think of CT or an x-ray piece of equipment, that every vendor has to be compliant with? Are there any items that you would think would be important?
R: Gosh, when I think about that, I think maybe is the vendor a good corporate citizen. The products we make have to already meet some of your specifications because they're used in the medical environment so whether they're safe, I think those are really covered by other agencies. I think the questions around that is GE or Siemens or Toshiba a good corporate citizen or do they have issues going on in their company. It may be something we should look at.
I: Ok. If an acquisition tool contained all those items, do you think that it would be helpful in determining the vendor choice?
R: Yes. And if there was something we wanted to make sure that we have policies around, yeah, then having them in here would be very helpful.
I: Ok. Does your organization track the effect of a capital purchase to its bottom line?
R: Yes.
I: Would you describe that process.
[laughter]
R: With effect to the capital purchase. Before we make any major capital purchase, we have to go through what we call a proforma analysis where what are we buying, what its life, what its cost, around all the piece of equipment, at least to justify that what is the impact on the bottom line. We may make purchases though that have a negative impact on the bottom line or don't impact the bottom line if it's a matter of patient safety or patient care.
I: Ok.
R: But we always look at it and know what we're doing and why.
I: So you do an audit process, at a 2 year mark, a 5 year mark, or is it a continuous process?

R: Against a specific piece of equipment, no, we do it up front and then we continue to really evaluate the complete modality, not the piece of equipment, to track its profitability.
I: Ok. Can you think of, if you're looking at a tool an acquisition tool like we're talking about today, can you think of any items that would be good to be contained in a tool like that, that would help you then to track a return on investment for the future?
R: Yeah, some of the things that I think are important in here, what is the cost to operate, maintenance after it comes off of warranty service, up time, down time. I think if there's information that the vendor has on throughput, average scan times, savings efficiency. I think those are important. A lot of times though we do get those from vendors, and they're hard for us to justify because they don't know our business and how we operate so . . .
I: Ok.
R: . . . but whatever they have could be helpful.
I: Do you track end user satisfaction for new purchases?
R: Not formally.
I: Ok. If you were to start that process, what items do you think would be important to include?
R: For the end user? Ease of use of machine, ease of maintenance, up time, ease of how to install, how cumbersome was that on the system, I think physician input on quality.
I: Ok.
R: Those kinds of things.
I: That actually is the list of questions that I had for you today. I also want to take a little time and look at the survey cover letter and the actual kind of proposed questions and how they would go out to folks such as yourself and, and discuss that a little bit and look at the . . . Do you think they're good questions? Do you think there are changes to those questions? So we'll just, we'll kind of look through . . . The informed consent is a standardized document. Here's an interview cover letter that would go out to CEO's.
R: Umhmm.
I: Basic format is kind of predetermined.
R: Ok.
I: Look at, let's go through . . .
R: Most of the questions . . .
I: These are the questions we just went through and then on the next, this is kind of the survey cover letter that would go out for the questionnaire I'm about to show you. I'd like you to just take a moment and kind of weed through it and say, is there enough information in this letter that would tell me what the survey is about and give me your opinion on that.
R: Ok.
I: The purpose of a cover letter like this is to kind of introduce the project and where is it from, and there would be a logo from Oregon State University on the

top of it. It's also signed by both the major professor and myself and I guess my question is do you get enough information, do you think about the research project and your rights, and completing the forms. Is there enough information there? Is there something you would change about it?
R: No, I think this is clear.
I: Everything looks good . . .
R: Umhmm.
I: Ok. Let's go over and look at the questionnaire. We're going to look at the questions themselves and maybe the scales that we use to collect the information. As I think I might have mentioned earlier, this will actually go through and be professionally designed and probably on glossy paper and so the format itself I'm not looking so much at but we have several, I think, basic questions. 1 through 5 are demographic questions.
R: Umhmm.
I: Question six really looks at trying to describe, to get folks to describe themselves as adapters of innovation and have that listed as tell me which circle, which one of these that you think best describes you. Does that do an adequate job of telling you and an adequate job of describing yourself when you look through that?
R: Yeah, I think so. The only thing I might add up here or the next question is, when you have an organization, maybe there's not many of them like us where it's multiple, CEOs of multiple companies . . .
I: Umhmm.
R: . . . is there something where you say, is your organization part of a multisystem or is your organization made up of multiple entities? Are you professional, technical, investment, management or any combination of the above? It may just help you when you look at what the person is coming back, especially like your hospitals, this could be any combination of depending on what your company is.
I: Ok.
R: Um, I thought six was fine.
I: So number seven, just current method of capital acquisition. Is that a good question? Would you change that question?
R: Everyone is used to the current method of capital acquisition and is used to or everyone has their own method of capital acquisition. Do you think a technology tool would, would help our current system? Yes. Some may say it's used to the current method. Doesn't everyone have different methods? You know, it sounds like there's one . . .
I: Ok.
R: But that might be my only suggestion, used to their own.
I: Question number eight talks about balance.
R: Adopting, adapting the innovation to the work flow and adapting the work flow to the innovation.
I: So . . .

R: Yeah, I think that's a good question.
I: Ok.
R: This is right, or persistent, because no matter what we're going to do, if it turns everything upside down or not.
I: And number nine at the bottom of the page.
R: I think that's a good question. We'll help you gauge on how it works for everybody else.
I: [garbled, low]
R: Do you want me . . .
I: I guess I would back up . . .
R: Ok
I: . . . looking at the scale too. I'm using a five point Likert scale. Is that a good way, R: [garbled, low]
I: How important do you think compatibility is, either very important . . .
[talking at same time]
R: That's fine.
I: . . . put a scale on.
R: The only thing I want to do, know is this, do I get one, two, three, four, five, six, seven choices or five choices.
I: You get five.
R: Maybe with, do I say one equals least and five equals most. Because if I really got it, I mean would I circle that.
I: Ok. And maybe there's a way to design it so that it's a little more obvious.
R: And even
[talking at same time]
R: . . . the least most, somewhat important, not important at all. You know how they do those forms.
I: Ok. And then going to . . .
R: How important do you think it is that the capital tool is easy to use? I think that's a good question because if depending on if everyone says it's very easy, you may have to change your tool to make it very straight forward.
I: Ok.
R: Um, how important is it that you are able to try out a tool before it's implemented? I think that's a great question. Would it be important for the team to have a demonstration? Yeah, I think that's a really good question.
I: And the scale, again the five point scale . . .
R: Yep.
I: Same basic comments that you made before.
R: Yep.
I: Switch over to question number 12. It's basically a yes/no question. Does it seem like a good question to you?
R: Yes. That $100,00, wouldn't that depend on the size of the organization and maybe do you use a formal process and if you do, do you use a different process for high dollar versus low dollar and what that dollar amount is?

I: Ok.
R: I mean that, just to get a feel for your audience. Some may say $100,000, no way, but over $1,000,000, yeah.
I: Ok.
R: Um.
I: Very good. And number 13, this is another yes/no question.
R: I think it looks good.
I: And 14 where you kind of switched to a little bit different format is yes/no, but I'm really looking for, um . . .
R: Ok, back up to 13 real quick. You may want to say, do you include an official one if it's just great. If it's no, maybe can you briefly describe what you use. Would you want to know is it a phone call, is it e-mail and I don't know if that's too much, but . . .
I: Ok. Number 14 really is a yes/no within a drop down below that question. Indicate which one of the items are actually important for vendor compliance with policies. So you'd go down . . .
R: Yeah.
I: . . . for each one of them and you say, well, this is important or no, this is not.
R: Yeah.
I: Does that seem like a good . . .
R: Yep.
I: . . . valid way to do that?
R: Yep.
I: Flip over the page to number 15.
R: You may want instead of a one or a two, just even a yes or no.
I: There is really for ease of, this is actually the first part that you did, was it really a qualitative kind of study with open ended questions, trying to get information. This will be part of the quantitative where it's actually mailed out, circle a one, two, three, four or five. It's actually scored back into a statistical package, and show the differences between people and how they answer the question. That's really why the numbers are there. Number 15 again, is that a good question? Then we have yet a different a five point Likert scale trying to determine which ones are more important than their neighbors.
R: Well, what happens if someone answers no to 15?
I: Then you would just skim on . . .
R: It will just all . . .
I: Or you could answer if you still could answer the question even if you said no. The yes/no part is . . .
R: Just made me feel . . .
I: Or even if they said no, would these be important parts if you were to actually generate one?
R: Please indicate level of importance for the following items to be included in a tool. How about . . . this vendor compliance and . . .

I: So, you're starting to figure out that there are some basic sections in the tool such as equipment questions so there's a section that talks about equipment safety regulations. There's software/firmware revisions being provided so really what we're doing is kind of going back and saying well, here's the sections of the tool. Are there, do these seem like good, valid pieces of the tool that actually be included . . .
R: Because if one of them is not, you may take it out.
I: Right, right.
R: Ok.
I: And is this a good way to go about asking that question and determining the importance.
R: And are you looking for only things that answer yes/no are not provided because would another be if, is there anything we haven't listed above that you think is important?
I: Ok.
R: Ok.
I: I will include that in your response and then I'm just, if, does number 15 look like it would be fairly easy to figure out and tells you kind of . . .
R: Yes.
I: What you need. I'm just going to put this on pause.
R: Oh . . .
I: So number 15, where we're just trying to confirm if that's looks like a good, valid way to answer . . .
R: I think so.
I: The questions. 16 is another yes/no basic question with. . .
R: Ok.
I: Determine vendor choice. Does it seem like a good . . .
R: Umhmm.
I: 17, does your organization track the effect to its bottom line, another yes/no.
R: Umhmm. Good question.
I: 18, would an acquisition tool contain the items below, help with this effort so yes or no, and then again if trying to rate the other level of importance of one item versus another. In relation to return on investment or cost of owning the system over a period of time. Does it, trying to rate these versus each other, are they all important? Are they all very important? Are some more important . . .
R: Right.
I: For return on investment than others?
R: You're right because shipping isn't going to have much to do with return on investment. Right? I mean that, so would an acquisition tool containing these things help with return on investment?
I: And then you rate them from least to most on a five point scale of well, is this one, do I think this one's important or do I think this one's very important or not important just in relation to that return on investment.
R: Yeah.

I: Does that seem like a good way to . . .
R: Umhmm. Most of those, I mean just in the area, most of them won't, a lot of them won't affect your ROI. So . . .
I: Skipping over to question 19, do you track end user satisfaction for new purchases? And if yes, then you would . . .
R: Good question.
I: Skip down to the . . . Thank you. You would skip down to the bottom and you would say, well, if I was going to go back and do end user satisfaction, which ones of these as a part of the tool, which ones of these would pertain to end user satisfaction? Which ones are more important, which ones are least important? Does that seem like a pretty good collective . . .
R: Umhmm. Umhmm.
I: Ok. Then we're on, just a couple more questions about how you would get a survey, the original intent of my survey was to go out and survey all of the folks in Washington, Oregon and now Arizona has been added to my list. And if you got something on letterhead on from an University and it's a survey, is there to make it more appealing for you to actually open up the . . .
R: Yeah.
I: Survey and . . .
R: Good question because I would toss it just because of time.
I: Does it make it to your desk, is it screened out . . .
R: No, most of those things make it to my desk. For me, they get to me if they're to me because _____ doesn't really throw any of my . . .
I: Ok.
R: Stuff away. But yeah, you'd have to figure out a big hook to make it, to get that busy person to fill it out.
I: This survey tool is originally designed to be less than 30 minutes to fill out . . .
R: Umhmm.
I: . . . I think it's probably a little less than that. It's probably more like 15 minutes for the average person because there's no open ended questions . . .
R: Right. No . . .
I: . . . yes/no and circle the ones that are most important. Does that seem like a good time frame or does it need to be shorter than that to get people to . . .
R: No, I think your questions or your format are good. I'm just, I'm just still hung up on, I don't know what you will do to make people complete it.
I: Ok. If you . . .
R: The WEB might help, that would be easier than mail.
I: Yeah. So, if you got it by e-mail, would you be more likely that you would take the time to fill it out . . .
R: It would be more likely I'd even look at, open it and see what it was. Lot of envelopes, honest I'll chuck without even opening.
I: Ok. And maybe if it came from, what would be a better way of sending that e-mail out. You know, say Oregon State University, is there anything to put in the subject line that might, help you to actually open the survey, to even begin it?

R: Gosh, maybe something that if there is such a tool and it's completed, you'd get a chance to use it.
I: So a follow up to the survey that promises to send you the results . . .
R: And if there's a . . .
I: Tool itself . . .
R: Right, for a demonstration to see if it even, because if it's something that you're asking me if I want, I'd say yeah, that sounds good. If I fill this out and I have an opportunity for a discount or something on it later or flat out cash, gifts, candy, I mean, you don't know how . . .
I: So if you get something that promises you something in return, you're more likely to . . .
R: Umhmm.
I: . . . to fill it out.
R: Yeah.
I: Ok. Alright. Any other comments about the survey or . . .
R: Unuhh.
I: . . . any questions for me . . .
R: No.
I: Ok. Well, thank you very much for taking the time today. I appreciate it very much.
R: You're welcome.

Executive Interview D

I: Great, so we've gone through the questionnaire and kind of explained the process this morning and as part of that, I did ask you to sign an informed consent document, which you have done . . .
R: I signed the informed consent document.
I: And I also asked your permission to record this. I said tape recorder, but it's actually just an electronic recording device.
R: You have my permission, ok.
I: As I said, the professional transcriptionist will go through and type this up for me, and they will remove all names and references to organizations. So feel free to go ahead and talk and you can include those if you want if it's more comfortable just knowing that we'll take care of that . . .
R: Ok.
I: All records and documents, as soon as the study is completed, will be shredded by myself and including the electronic reporting will be destroyed as a part of this.
R: Ok, I understand.
I: The purpose of typing this out and making it a part of the hard document would be so that future research done by another researcher could be done on that same material.
R: Alright.
I: So the first part of my questions, we're going to run through and ask some demographic questions that allows some comparison to be done between large and smaller organizations later. Then I'll run through and ask you some, about 18-20 questions and then at the end I'm going to ask you to take a look at the questionnaire itself and give me some feedback on the content of the questions, not necessarily on the design of the questionnaire itself because that will be done professionally, but just the contents itself.
R: Ok.
I: Well, ok. So how many years have you worked in your current position level? Not necessarily your current position but at the same kind of level of the organization.
R: Oh, that I am in now, right now.
I: Uhhuh.
R: Uh, 20 years.
I: Ok. And I'm just going to pull this open and let you see the questions as we run through them. And what is your age?
R: 54.
I: And what is your gender?
R: Female.
I: Ok.

R: Did I get those right?
[laugher]
I: And is your organization part of a multiple hospital system, multi-hospital?
R: Yes. ____ _____ is a 20 hospital system . . .
I: Ok.
R: Organized as a, and this is important for this one, not a holding company but an operating company. So that means all facilities kind of operate in the same way with a single board.
I: Ok. And could you tell me a little bit about where these hospitals are at, are they all in one state or are they spread out?
R: They are spread over seven states so primarily the bulk of the facilities as well as the number of patient days are mostly in Arizona, but there's also Colorado, Wyoming, Nebraska, Nevada, California and Alaska. And they range from bed size of 20 beds to 600+ beds.
I: Ok. This is your current facility you are working in, is that less than 100 beds, 100-250 or greater than 250.
R: It's in the 100-250 bed category.
I: Ok. And then next thing I'm going to do is ask you, I will read off a statement and I would like you to choose which statement best describes you personally?
R: Ok.
I: I'm usually the first CEO/COO in my area to try a new innovation. I'm usually one of the first few CEO's or COO in my area to try a new innovation. I usually try the new innovation once I've seen other CEO's in the area use it successfully. I will only a new innovation once I've seen many other CEO's in my area use it successfully, or I'm usually one of the last CEO's in my area to use a new innovation.
R: Ok, so innovation obviously is a big, broad term, and it means anything from a piece of equipment to a way of doing business.
I: Yeah, it could be a new MRI. It could be the newest GE Six Sigma kind of tools that are use for efficiency. It could be any of those.
R: Anything whether it's a management thing or a tool or a piece of equipment. I fit number two, one of the first to try new things.
I: Ok. Do you have an example? I should have warned you that when we get into short answer situations, I'm going to try to draw more information . . .
R: Ok.
I: Out as a part of that. Can you think of any recent purchase or new idea or innovation or way of doing things that you've been a part of that you could describe that?
R: Umhmm. Well, previous to this position in the facility, I was in a corporate office, and I was one of the founding members who started care management with Dr. _____, and it was a way of doing business of bringing quality and quality outcomes to the forefront and having evidence based practice be the foundation for all the clinical practice that we do. So it was a new way of doing business. Coupled with that, kind of the other innovation that we've brought

along with it knowing that we needed not only kind of knowledge management, but we also needed technology. We thought, brought about care transformation and the installation of the electronic medical record into all the facilities.
I: All right. I know that you haven't said yet but I know that as a part of your position that you just opened a new hospital as well . . .
R: That's correct . . .
I: This facility we're in right now.
R: So this new facility has all that electronic medical records. It has all the foundation and pieces of kind of doing change management, being very involved in getting folks innovated in kind of a new way of doing business and looking at innovative ways of doing a work flow so to speak in a paper environment to utilizing tools that are electronic tools in a new way, in a new innovative kind of environment. So that's kind of the expectation we had with everybody who were not just moving from one place to another with an electronic tool. We're not going to use it the same way, but we're going to innovate in the way we do business.
I: Very nice. Thank you. Everyone in an organization such as this is quite often used to a current method of capital acquisition. Do you think a technology acquisition tool, what we're trying to look at, would be an improvement from the current system that you use?
R: Not being, you know, to answer it in a couple of ways. The method of capital acquisition is always a fun thing. But what I think when I see the capital acquisition tool, that the tool is probably helping when you understand what the technology will do. So the capital acquisition process in a large organization to me is a little bit different than an acquisition tool that helps you figure out what it is that you want to kind of know how to do it. So to me, a capital acquisition process in a large organization is purely a financial methodology.
I: Umhmm.
R: An acquisition tool really has to do with thinking through what are the important things about the capital, the equipment and what I'm going to use it for.
I: Ok.
R: Ok. Good.
I: Ok. Thank you. Most people feel that there needs to be a balance between adapting the innovation to your work flow and adapting your work flow to the innovation. How important do you think that compatibility of the innovation to your current system would be?
R: Ok. You know that I think the EMR is a perfect example. So we said that we are not adapting our work flow to the technology. We're adapting the technology to the work flow so how do we do business and how that innovation tool to help us do our business better.
I: Ok. So would it depend, do you think on the type of innovation itself, would that be a. . .
R: Well, let me think. Ok, so if I think about piece of imaging equipment . . .

I: Umhmm.
R: I mean I still look at it as the bigger picture no matter what. Where's this equipment going to fit in, kind of what I do every day and for what kind of patient am I going to utilize it on. And so, how's that going to fit with kind of my day in that clinical care. Now, clearly if it's kind of a big leap from my never could be able to see this kind of thing before and right now I can. Yes I kind of have to adapt to what the technology is giving us. Maybe that's opposed to the electronic medical records. So there's a little bit more. But I always still have a bias towards the humans are always using machines no matter what. So how do we deliver that care or deliver what we need the product that we want to deliver and how is that tool going to help us. So, maybe a little bit of you would have to adapt to how special that is and how unique it is but mostly it's in the context of a system I think.
I: Ok. Now to the next question. How important do you think it is that a capital acquisition tool is easy to use? And you could draw that out with your other examples of other, other innovations as well. Is ease of use really very important?
R: Well, ease of use has also been what it's telling you. So if, if you don't really have a tool, people might be just kind of winging it or just listening to what the vendor has to say. So if you have a tool that makes you think about this and unless it has a different aspect, sure, it's much more a methodical and gives you much more breadth of information to have such a tool to do that I think.
I: Ok.
R: And no matter where you're in, at a CEO level or in this large organization, it's even the department heads that would like this kind of tool.
I: Umhmm. Over to question 10, how important is it that you're able to try out a new acquisition tool before it's actually implemented?
R: Oh, well, clearly depending on what it is. You never know about anything until you really give it a try. So if we talk about robotics and we want to say how are we going to use robotics and we have physicians who think they want to utilize a robot. If you didn't have a demonstration, you need to feel like you really do need to have ability to try it out as you try out most anything before you actually kind of put it into place. So that's kind of consistent with going back to one of the first questions, would I be somebody who would be the first on the block or would I kind of be one of the first few because I've checked it out to see how it works in other places.
I: Ok. So, kind of moving on to question number 11. How important would it be for CEO's to have an opportunity to see a demonstration of a new technology tool?
R: Absolutely and I think it's, even in a large facility, it's a mistake for, in depending on, the magnitude of the technology. It's a mistake for the CEO's not to be involved if it's a high dollar capital line-up. And, again I'll use a robot. A robot costs $1,600,000. Clearly, we're never going to use it. We're never really going to see it in use too much, but we ought to know more what it's used for

and how's it used, the proforma for it and really what it does for patient care. So, I think we really have to see a demonstration.
I: Ok. Does your organization utilize a formal process for the acquisition of capital equipment that cost more than $100,000?
R: Absolutely. _____ actually, they use the strata process. It's kind of a bidding tool . . .
I: Umhmm.
R: Are you familiar with that tool?
I: I am but if you could describe it a little bit.
R: Well, I couldn't describe it as well as obviously the finance for folks could describe it, but it's a methodology. Well, the first part of any capital acquisition or spending of capital dollars requires a business plan. So that's kind of part of the strata process. So, if you know what you're going to use it for whether it be demographics, whether it be proforma, what are the financials, who's the audience, what you are going to do. So that's always a part of this strata process, and then it kind of gets fitted with the different levels of the organization and then compared to other needs of other facilities. So, the reason for us having a process is because there's so many of us and obviously restricted or limited dollars. So, how are we going to utilize those dollars well. So the strata process kind of gives you a little bit of a methodology about making you think about all the things so that others perhaps who don't really see hands on, who are really making the decisions of the allocation of the dollars. There's a description and you can get kind of a good feel without hands on. So, at the facility level where the equipment is going to be used, that's probably hands on. Above that where decisions are made, there is no hands on. So you have to have some means to describe what you're doing and where's it going to kind of fit in the process with other people to tell the story well enough.
I: Ok. The answer was yes?
R: Yes.
I: Does that include an official RFP that goes out . . .
R: Yes.
I: To vendors?
R: Yes, that goes out to vendors.
I: Yeah, request for proposal that basically defines this is what we're trying to do.
R: Sometimes yes and sometimes no.
I: Ok.
R: Do you have to do it with this and you don't have to do it with this. I don't know if I could describe that well enough.
I: Umhmm.
R: But here's an example, but that's not technology capital for building a new plant.
I: Umhmm.

R: Of course, all the RFP's for what the cost of everything need to be included so, if you're saying who's the likely vendor and what is the true cost, probably the beginning parts of the model. Say, here's essentially what the estimate that it is. As it gets closer, then you absolutely do need them. Then the true RFP, are true vendors proposal.
I: Ok. Does your organization have a formal process for ensuring that vendors adhere to corporate policy?
R: Yes, but it's not always used.
I: Ok.
R: When I first think about when I see this question is at the facility level and I'll think of pieces of OR equipment in adhering to corporate policies actually means who can come in, when they can come in, when they can demonstrate their things, who can they really talk to and so on. Over the years we've recognized that there was just kind of chaos about all the facilities. The vendors could come back in the back door; they could come in the OR. Their point of contact was the OR director and then all kinds of interesting things going on even to the point of sales people actually sometimes doing procedures, which is horrible to say whether or not that that couldn't go on anymore. And probably over the last three years, tightened down on kind of which equipment policies and who can come in, when you can come in, how you sign in, that sort of thing. So that's kind of at the corporate level but to be implemented at each facility.
I: Ok. So you've kind of talked a little bit about some of the items that you think would be important to include in the process. Can you think of any others that would be?
R: So, when you were saying that to me about what they can do and what they can bring in and when they can come in, is that the kind of things . . .
I: You could also include other items that might be a part of the negotiation later or other items that might affect the overall cost of the project. It's ok if you can't think of any right. . .
R: Well, then the next side, maybe that's the business side of it so then when you get to the proposal side, I think from a corporate materials management place, then they're very formalized on what you have to produce, the RFP that you have to answer, what you have to demonstrate, and all of our contracts, mostly are contracts written by us, we don't do it the other way around. We don't accept the vendors' contracts. We kind of always do it our way. So maybe on the business side, there's consistency on all the pieces that have to be . . .
I: Ok.
R: Done.
I: Ok. If in those items that we've talked about thus far, if you had an acquisition tool that contained those items, would you think that would be a tool that you'd use to determine the vendor of choice? How do you choose your vendor of choice? Does that have to do with how they answer the RFP? If they follow the process, are they more likely to be chosen?

R: Well, maybe so but then you always have the user group and let's just say is a software application for how you're going to gather data from patient care. Here's an example, and one of the things as we kind of look at the different vendors. All the vendors may answer the RFP appropriately but then the users have to determine, and I'm not sure if this is in your acquisition tool, what are the outcomes I want to get out of this tool. What are the important tenants, or requirements, of the tool? So if I perhaps use this tool, I'm thinking the matrix situation where you kind of suggest to me, tell me what the important parameters are and then have a methodology for assessing one versus another versus another so that you have frankly an objective kind of way to evaluate or assess what the vendors are saying and their products. I'd also suggest, depending on what it is, that you go see it in action in other places.
I: Uhhuh. Ok.
R: So that should be part of it.
I: Ok. Does your acquisition track the effect of capital purchases to its bottom line?
R: We kind of do the make good. So, when you come back, I think that's what . . .
I: Uhhuh.
R: You're getting at. So when mostly the ones that are large, large dollars so, just to make good, let's use robotics again. So as we purchased five of them, what is the make good on what the performance said it was supposed to be? In a business plan and then at whatever point, let's say a year later, what truly is the actual? So that probably is not done enough, and we really should do those kinds of things. What were the cost benefits? What is the benefit realization that we were supposed to get out of this? We should probably do that on all capital acquisition items. I say we do it probably 25% of the time.
I: Ok. Can you think of some items that an acquisition tool could contain that would help you track the return on investment?
R: Well, ok.
I: Can you think of, maybe you'll have a recent past purchase of something that you wished you might of actually included in the process, maybe it's how performance issues. I'm trying not to guide you.
R: Oh, oh, oh
[talking at same time]
R: So rather than just financial?
I: Uhhuh.
R: Ok. Well, maybe it fits back to what I was saying before. So, obviously, it's how the ROI was supposed to perform financially. But, as you go out and kind of assess all vendors, they're very different things that are important to people. So did it really produce an ease of convenience for the physician? Did it really do operational efficiencies for the department? So I think that not only financial but the methodology from before, what were the important parameters of why you were choosing this and then to go back and do the make good financially on

that piece of capital where we've seen all the other attributes that you thought you were going to derive benefit out of.
I: Ok. Do you track end user satisfaction for new purchases?
R: Yep. Yeah, do we do it all the time and is it part of the make good plan? It should be, but it probably isn't all the time. I think we kind of naturally say, well, if I don't hear anything bad, then it must be ok without kind of doing some formal assessment on it. So you might go back and do the same thing. We thought it was supposed to do this, and this is kind of how we rated it, go back to the true users and say, so, did it really do what we thought it was going to do. So, it's still, I think, part of the make good that we've done.
I: Ok. So items that you think would be important to include in this process might be what was our anticipated.
R: Benefits, yeah, usage, benefit, outcome, what were we going to get, you know get from it. What was the benefits? Were we going to derive internally? What was it going to do financially? What was it going to do for patient satisfaction? So, kind of the whole business about and where we started from. I don't work at the technology unit itself but how does it fit within the system and the work flow, what you intended it for.
I: Ok.
R: Ok.
I: Now I'd like to kind of run through some of the letters themselves and the communications that are going to be used to get this survey out . . .
R: Ok.
I: And look at some of the survey questions themselves and not, again, don't look at the color and some of those things. For instance, the interview cover letter. If you got this by mail or electronically, would this actually tell you enough, did this work, I guess the interview cover letter, was that ok? Did you get enough information before today? Actually . . .
R: No, not for this interview. I think you'd have a different cover letter. [talking at same time]
I: Let's skip over to the survey cover letter itself . . .
R: Ok.
I: And take a look at that one. It says, Dear CEO, Dear COO, Dear CFO, if you look through this one, would you get enough information from this cover letter to know how, what's it about? Would it give you, intrigue you enough just to actually fill out the survey?
R: Um, where in this is it, what do I get out of this? What might be in it for me? Even, not just to fill out the survey, but what this tool might provide for me in the future should I utilize this tool, and I suppose you could say, _____, it's a well defined process for equipment acquisition. If this is to be more broad, I wouldn't just say equipment acquisition.
I: Umhmm. Ok.

R: No, I mean none of this is the tenant of what you were talking about from materials but if you could use for any assessment of a new thing that you were going to investigate.
I: Needs some change of language in the first paragraph.
R: Yeah.
I: I think the next to last paragraph talks about getting copies of the results.
R: Oh sure.
I: And it's one of the things that kind of a main thing that you can get out of it is seeing what are the results, what other people kind of said and that's an offer that's given in this cover letter.
R: Ok. Well, maybe you know and to respond to you, maybe you sent me off in an area of different direction when I asked you about examples. If this is just about equipment, that's one thing. But if it's about the way to look at any acquisition, it's a little bit different. So I'm not sure which way you kind of want to go with this.
I: I think one of the questions kind of goes to do have you a defining process for acquisitions greater than $100,000? It doesn't necessarily mean that it's equipment only . . .
R: Uhhuh.
I: Although a large portion of expenditures that go out of your organization are technology and equipment, but you can spend certainly $100,000 and not to beat Six Sigma and then go out, but you could certainly spend $100,000 as an organization.
R: Absolutely, on anything.
I: Yeah.
R: On anything. So I'd make it a little bit broader.
I: Ok. Moving on to the questionnaire itself. You'll recognize some of the questions that I asked . . .
R: Umhmm.
I: And I'd just like to take a look at each one of the questions and even get a comment. The first questions one through five are really kind of demographic in nature. So is there anything that you would change or found that you'd rather not answer out of any of those questions other than the gender or the age because that does help me with dividing my data and looking at them . . .
R: Ok.
I: Specifically, but . . .
R: Well, I heard you also say that if this gets really specific that you're looking at hospitals . . .
I: Umhmm.
R: So if you intend that it's more than not just hospitals but other types of health care organizations and maybe you want to . . .
I: Ok.
R: Different kind of demographic question in there, and I don't know if you do or not.

I: And then I guess just looking at question six, that's really getting a feel for a person's leaning towards trying new innovations and versus being a person that watches what everybody else does, if it's all tried and true. Is there anything you'd change about this question that might make it clearer?
R: Oh, no. I mean this is very clear to kind of understand, kind of where they slot.
I: Ok.
R: I'm going to go back a second.
I: Sure.
R: So if you let me talk about kind of one of the things that I said if you want to talk about hospitals or organizations, I kind of made the point to you that we operate like an operating company, not a holding company. So what I was getting at is what kind of autonomy and decision making do you have. So I didn't know if you wanted to kind of get to that, some sense of that. You know, do I get to decide on my own or am I part of a large organization where somebody else is truly making the decisions.
I: Umhmm.
R: I mean, if that's what you want to understand them too.
I: Ok. The next question is kind of a yes/no question about the current methodology of capital acquisition. We're going to kind go through each question, and I'm going to ask you basically to look at the question and see, was there anything you'd change, add, delete in question seven. If it looks like an ok question . . .
R: That's an ok question.
I: All right. They could ask the question, and we're going to number eight. I am starting to introduce the Likert scale . . .
R: Umhmm.
I: A five point Likert scale. So it says well, how important do you think that the compatibility of the innovation to your current system? So a person would rate from least to most with a five point system. Do you think that's a good method to a good way to do that? Is there anything you would change about basically 8, 9, 10 and 11? Do you like a different style?
R: Are you opposed to having something like 3-4 things underneath those where you kind of say, you do something that's very specific around equipment, but you do something that's less specific around Sig Sigma at location. Because your answer might be different depending on what you're talking about.
I: Ok. All right. So. . .
R: I like the one to five except I would maybe give some examples because it's not homogenous.
I: Ok. So maybe a little bit more, if it's a SiX Sigma . . .
R: Yes.
I: If that's ok . . .
R: Yes if it looks good but then . . .
I: Ok.

R: Some examples.
I: So 9, 10 and 11 are basically the same. Nine is how important you think a capital acquisition tool is ease of use. Again, you might say that well, it would depend on the type of equipment . . .
R: Umhmm.
I: As to whether or not I think . . .
R: Well, not so much in this one. Because I think you're asking about a tool, and you're saying it is a tool of a guiding and guidelines on how to look at things. Is that important in capital acquisition? I think most people are going to say yes. Well, let me think out loud. So maybe you're saying maybe a tool that is for a piece of equipment might be . . . I just think the tools would be different for different kinds of acquisitions, but you're going to find most people are going to say, sure, tools, that's always a good thing to have
I: Ok. And it's ease of use, the easier it is to use . . .
R: Correct.
I: Might be more likely I might use it. Is that a good thing?
R: Easy to use but use is one word but the ease to help people understand what we're trying to get at. So you have different audiences. You've got the director, and you've got the physicians, and you've got whomever is going to use, you have multiple audiences who are going to be end users. So, shouldn't they understand what the tool is, not that it's just a tool that's easy to use but it's understandable for what would be important for them.
I: Umhmm. Ok. So number 10, how important is the ability to try out a new acquisition tool before it is implemented? Again, we have a five point Likert scale,that allows people to rate whether this is really important,
R: You know what.
I: Not so important.
R: I must have answered those questions wrong before because I was thinking about the new acquisition, not the new acquisition tool.
I: Umhmm.
R: So when my answer before was about the new acquisition rather than the acquisition tool.
I: Right. Well, that's ok.
R: Ok. I think in this question, to me, generally be asking so, if somebody just handed it to you and said, hey, just go for this without it having been fitted kind of for that organization, that's probably not a good thing. But depending on who's going to use the tool, if it's been kind of agreed upon that these are the important aspects of it, then a director utilizing it would be, it's not important to try out the new tool before using it. At a higher level, yeah, you would need to make sure it works for everybody.
I: Ok. And the five point Likert scale just in general for all the questions . . .
R: Yeah.
I: Is that an ok . . .
R: Yeah. Ok. Sure.

I: That seems reasonable . . .
R: Uhhuh, uhhuh.
I: The CEO's that have the opportunity to see a demonstration of a new technology acquisition tool. I see your point. I think any new innovation . . .
R: Right.
I: Would be, it would be ok to answer it in that mindset too but specifically we are talking about the tool itself.
R: Sure because, a demonstration. So I'm trying to think that the tool, that you want to have the tool that has kind of a good front end on it on how we would utilize it to evaluate something then you've used, then you've used the equipment or whatever it is and that the tool has kind of a good back end, make good process on it as well. And then I would think that the benefit of a tool always is and so, what would it give me that I couldn't have thought about before. There's some correlations from the end to the beginning, that I could say, it could give me some report out about it.
I: Umhmm.
R: That would be unique and novel if it could do, if it could do things like that.
I: Ok. Question 12 is really again, A yes/no question, is there anything you would change to . . .
[talking at same time]
I: Down the process for . . .
[talking at same time]
I: $100,000 for capital equipment.
R: Of course, you'd have to ask that question if there's a formal process.
I: And does that seem like a reasonable question? Is there anything you would change about that question?
R: Well, let's see, what are you trying to get at, what are you trying to say? The answer to this I think goes hand in hand with what decision making authority do you have?
I: Ok.
R: So if you are looking for something to come up to you so it has some methodology in a formal process so that you can see it all or do you, because you are able to autonomously make a decision and/or don't you want to know that maybe it's coming to you and you're kind of adding more to it than it goes someplace else for some other decision making.
I: Ok.
R: So you, you know . . .
I: So might change it based, might change the question based on the person that you're asking the question of . . .
R: Correct.
I: Possibly and their power.
R: Correct.
I: Ok. And then the next one is a yes or no as well.

R: Yeah, I would definitely want to know where does the vendor fit in on that and how specific and tight are you asking the vendor to kind of be a partner in this and do they know exactly where they are so you don't get caught . . .
I: Right.
R: On the back end.
I: The next question is do you have a formal process for ensuring vendors adhere to corporate policies? So there's another yes or no, but then I kind of changed the format and I have please indicate below if these would be important for vendor compliance with organizational policies. So, yes or no, would equipment safety and regulatory requirements, is that important?
R: Sure.
I: So people would go down through, and it's numbered one or two to help me do the statistical analysis but then it just gives a people a chance to say, well, this is important or it isn't to me. And again, the referring backup to this is capital equipment . . .
R: Uhhuh.
I: Cost more than $100,000. For each one of these items, is it equally important or is there some on here that I would just say, no. Again, is this yes/no kind of a drop down for these different areas, does that seem like a valid way to ask that?
R: Equipment failure procedure. When something goes wrong but it's a year from now, where is the vendor?
I: Right.
R: Is that in here anywhere?
I: I mean that not to guide you in an answer, but that would be an important thing that you would want to see . . .
R: Yes.
I: You would look at the warranty period, a time guarantee and that equipment failure or if something goes wrong, that's where if you look at the tool, you would say, well, that would probably fall under the lemon clause type or arrangement.
R: Ok.
I: What happens if the failure and you have a clear definition of this is what I mean by failure.
R: Ok.
I: Three months running, it's down more than 50% of the time. That's clearly, oh ok, now 90 days into this, you're going to take the piece of equipment out and get me a new one or my money back.
R: Umhmm.
I: That would be an example of equipment failure procedure.
R: Ok, all right.
I: And these questions, you're going to recognize these over the next five or six questions that I ask. The categories themselves are going to be the same. We're just going to ask in a different, ok, is this important. So you have organizational

policies about installation procedures and making sure maybe the first one is a good example of its meeting all regulatory requirements.
R: Umhmm.
I: Is that important and each question's going to ask it a little bit differently. So I guess back to does this seem like a good way to ask folks if this is important to each one of them.
R: Right. Yeah, I think all these are ok.
I: So it's kind of a yes/no.
R: Yeah.
I: The next one question 15 goes more to technology acquisition tool. If you had one, would that help decision makers during capital acquisition? That's a yes/no. If we drop down below that and say, well, indicate the level of importance and assuming the answer is yes, if you don't like the reason for, then which one of these and again, we're going out to a Likert scale. It's a scale of one to five, and you're saying, well, just basically trying to do the same questions all over again about what, what would you include is what I'm trying to get at it. What would you include in this process? Would a time guarantee be important? And to have it as a part of that tool or do you think it's not important and giving people a chance to rate high or low what's included in the deal. Is that a reasonable way to ask that?
R: Umhmm. Ok, so you're first asking are these array of things, are they good and which ones are most important to you? To ask those because obviously it might be different for different people . . .
I: This is just of kind of saying, well, do you think things are important to be in . . .
R: Yeah.
I: The tool and if not, it gives you well, this is very important. These are the very important ones. These are not. And maybe if you say, well, these three are ones, they are least important, they're not important to be in the tool at all. So I just ask people to rate what they think.
R: What strikes me though, _____, is that I don't see too much about the end users' acceptance of the piece of equipment. Where does that get fit in? This is just about acquisition. To me, this is more about acquisition, and it doesn't touch as much as it could on acceptance by end user.
I: Ok.
R: But if I go to the next page . . .
[laughter]
I: That's good feedback. Number 16 . . .
R: Ok.
I: Is a yes/no question again about would it, if it had these items that we've just listed above, would that help you determine which vendor you would use so if if you already had the acquisition tool, the vendor could either fill out or either provided this or didn't.
R: Umhmm.

I: So if they didn't have a warrantee period at all and vendor A did, would that help you choose and . . .
R: Yes.
I: And that was a yes.
R: Of course.
I: Number 17 was also a yes/no, do you track effective capital purchases, and then 18 is a follow up question, then would the acquisition tool containing the items below help with this process. Assuming the answer is yes, then you would go through and pick.
R: Right.
I: Well, this, each one of these are very important, which ones are important. It helps me to get feedback on what are the important pieces to include in the process.
R: Umhmm.
I: Does that seem . . .
R: Yeah, it does uhhuh.
I: Um, and I guess moving on to 19 where it says do you track end user satisfaction, yes or no and then, then asking more about it involving the things below, then rate the level of importance and so each question kind of . . .
R: Gives to the back end . . .
I: It's to out of each one of these then does equipment safety and regulatory requirements have a really big effect on end user satisfaction or is it more about up time guarantee . . .
R: It's more about . . .
I: Equipment failure processes. Which one, in the survey process, then this question would help me to identify the . . .
R: Which one . . .
I: Based on the feedback . . .
[talking at same time]
I: Which are valid questions for end user satisfaction?
R: Umhmm.
I: Which one of these things included in the tool does this question validate that they're important? So, is this five point Likert scale, is that a valid way to ask that . . .
R: Sure, I think so. Where is your reliability? Is that equipment failure?
I: That's kind of an up time guarantee, equipment failure . . .
R: Ok.
I: Maintenance, those kind of things. So it would be built into those.
R: Ok. .
I: We can take another look at the tool itself. I'm making sure that after we're done with the process here, and I can show you kind of where those fit in.
R: Umhmm.
I: I noticed that somebody was trying to break in to our room.
R: Well, I don't know, ok.

I: But I just have a couple of general questions about the process of how do surveys get to you because the surveys will go out to CEO's, CFO's, COO's of organizations like this. It's intended to go out to Oregon, Washington, and Arizona, which will be determined by a committee. What would help that get to your desk or get to your e-mail? Can you think of surveys that you filled out? Is there a better way for that survey so would maybe asking a direct question just because we're about out of time here. Is e-mail survey, e-mail . . .
R: At this point in time, it needs to be an e-mail survey.
I: So paper copies coming in are probably not going to make it. You wouldn't recommend that.
R: Right, right.
I: And is there anything we need to do in that e-mail that makes it more likely to actually to get to you? Do you get your own mail?
R: Yes.
I: If it's your mail, if I find out your e-mail address . . .
R: Yes.
I: Would then _____, it would actually make it to you.
R: Sure.
I: And is there any way to format the subject line to say that to try to make it look more official, that it's coming from a University? Is there any way to do that that would be, maybe the subject line . . .
R: Yeah, because I would know where it's from because who's this from and what it's about that it truly is that kind of survey.
I: Because we all get spam e-mail and . . .
I: Well, there's the other important thing. It might not make it past the firewall.
R: Right. In big organizations like this, it might not make it past the firewall.
I: So one of the things I would probably need to find out is for large organizations, what causes things to fail coming across. If it's from an educational because this would actually come via e-mail, by mass e-mail, from Oregon State University.
R: Then it might, and it might not. So I don't know the answer to that. So that's kind of an IT question to find out, how they do that in organizations.
I: All right. I see by the clock and the number of people standing outside the door that we're out of time. I just want to say thank you very much, for helping me out with this, and I certainly would be happy to answer any questions.
[talking at same time]
R: Ok, fine. Thank you.
I: Thank you.
R: Ok.

Executive Interview E

I: So we're going to be talking a little bit about a technology acquisition tool for key decision makers. I would note that we have already signed and dated an informed consent. Are there any questions that you have about the informed consent?
R: No.
I: Um, as a part of that, there is actually listed, Dr. _____ is the actual principal investigator in that if you have any questions about it, you can contact him or my self.
R: Ok.
I: Um, technology acquisition tool is kind of a, I sent out a kind of an example of the questionnaire and such, but the technology acquisition tool that I'm talking about would be something along the lines of a new innovation. If you're going out to purchase something like an MRI or a CT, this is something that would be in addition to the RFP process that normally a larger systems or smaller hospitals go through. This would be something that is designed to go in and put everybody on the same page. So you would take it to GE, Siemens, Phillips and say, here are our basic terms that we want, which includes all the shipping terms, payment terms, training for biomed, so it takes the negotiating out of the end of the of the RFP, puts it on the front, and if somebody was to say we can't sign this, they would just be done and removed from the process versus having to go through the whole process six months later and discover that Toshiba can't conform to one of your basic requirements specific to you. And it is a tool that is primarily we're looking at CEO, administrator folks that possibly wouldn't have the time, maybe not the knowledge or all of the things that they need to cover. It would be a way for them to not waste their time if you will in the negotiation process. It actually puts the tool safety requirements and the things like that right there at their fingertips, and they just go from there. So, this process is actually a qualitative assessment and that at the end. So we'll run through some basic questions, and I'll ask for your answers. We will be using a transcriptionist that will remove all names and, and any kind of references and then so you should speak your mind . . .
R: Ok.
I: And we'll take care of cleaning up any data later.
R: Ok.
I: And then we're going to take a quick look at the end if we have a little bit of time to look at the actual questionnaire itself that was going to go out and look not at the design because it will be designed professionally but look at the questions themselves and see if they're relevant in your mind to the question that I have.
R: Ok.

I: So.
R: All right.
I: Question number one is how many years have you been, have you worked at your current position level?
R: 3 ½, 3 ¾.
I: And your age.
R: 53.
I: And your gender.
R: Female.
I: Ok. And the reason that I asked you these questions is because we are sending out this questionnaire. It will go out to all the facilities in Oregon and Washington. One of the things that I could look at if I get enough responses is differences in the responses between ages, sexes and states and also for one of the next questions if you're part of a multi-hospital system.
R: Yes.
I: You are? And is your hospital less than 100 beds, 100-250 or greater than 250
R: Greater than 250.
I: Ok. And I'm going to read a statement to you and, just tell me after I get done which one of the items would fit. I am usually the first CEO in my area to try a new innovation. I am usually one of the first few CEO's in my area to try a new innovation. I usually try a new innovation once I have seen other CFO's in my area use it successfully. I will only use a new innovation once I have seen many other CEO's use it. I am one of the last CEO's in my area to use a new innovation.
R: The second one.
I: I'm one of the first few. It occurs to me at this moment that as we're talking about innovations, innovations can mean things as far as a new 64 slice CT scanner which we are looking at the acquisition process. An innovation also could mean a new tool.
R: Right.
I: So we're looking at how people adopt innovations at their firms. Everyone is used to the current method of capital acquisition in your facilities. Do you think a technology acquisition tool would be an improvement in the current system?
R: Yes.
I: And what kinds of things do you think it would help with?
R: I think there's a lot of gray area in our system in terms of capital acquisition. There's a process whereby you request the dollars, and I think there's an expectation or an assumption that's pretty strong that you've done your homework and if there was a good RFP, the need has really been discussed kind of internally before taking it forward, but, I think a lot of that is unwritten kind of assumptions that really when it comes down to it, is the money and whether there is money or isn't money. And that I think that tool would be really vital . . .
I: Ok.
R: To cling to, really be tight and standardized.

I: Most people feel there needs to be a balance between adapting the innovation to the current work flow and adapting the work flow to the innovation. How important do you think the compatibility of an innovation to your current system and way of doing things is?
R: I guess it depends on what it is that you're acquiring. But often times, you're bringing something in because you also want a process improvement. So to adapt that to an old process, to me, isn't as critical as what are the efficiency that brings and so you have a new process that would be better, than what had been done before. One because the acquisition but two because of just the inherent efficiencies that are within that kind of reason why you're buying it.
I: And how important do you think it is that a capital acquisition tool is easy to use?
R: I think it should be easy. Otherwise, it won't be utilized right. There are people who will try to either gain the system or do the least amount because it's too complex or they won't buy it, which isn't what you want either necessarily. So I think it has to be user friendly, certainly there should be some training in it. It doesn't have to be off the shelf that anybody could use it without some kind of proper administrative training, but I think it needs to be relatively simple or straight forward.
I: Ok. Question number 10, how important is that you're able to try out a new tool or a new innovation before it is actually implemented?
R: Is that for me personally or if I am the person buying it or if someone has within the system?
I: If you had the innovation tool like I'm talking about, you would want to try it out first before . . .
R: I think it would be important.
I: Uhhuh.
R: And probably for adoption if it is meeting the needs and that it's easy to use and what the benefits of the tool are. I think that would be really important.
I: Ok. And how important would it be for CEO's or administrators to have an opportunity to see a demonstration of the new acquisition tool?
R: I think it's critical at least for those that are trying to streamline this process and implement the process in a system like ours.
I: Umhmm. Ok. And does your organization utilize a formal process now for the acquisition of capital equipment that cost more than $100,000?
R: Well, we have an action planning process and a capital request process so over $100,000 you'd be going into a capital action planning process which does kind of require you to develop a business case, but it doesn't go into the detail I don't think of what you're proposing for the acquisition tool
I: Ok. Do you know if it includes any actual requests for proposal or an RFP?
R: I do not believe that it does.
I: Ok. Does your organization have a formal process for ensuring vendors adhere to all corporate policies?

R: There's no formal policies. I think the adherence to is tricky because there are multiple access levels within the system in terms of where a vendor could come in and show their wares or be talking and selling their wares. So there's an attempt to try to have a formal process, but I don't think it's as tight as it should be.
I: Ok. What items do you think would be important to include in that process if you were to have a formal process?
R: Well, I think there needs to be a formal policy that would be given to the vendors, that this is what our system expects from vendors, this is who the contact, the contact people are before you can get down into a department level so that the vendor has that. We certainly know that from our side as to what the expectations are for both.
I: Ok. Question 15. Would the presence of a technology acquisition tool help decision makers during the capital acquisition process?
R: Yes. Definitely. What I was thinking was that first you state what is it that you need to acquire and why and then it would be what are the range. Am I going down the right track?
I: Umhmm.
R: What are the range of products? What's their length, are they brand new in the market or they've been in the market for 20 years and so what are the pro's and con's about having something that's relatively new versus old so that we'd really have a formal check and balance system that everybody is asking kind of the same questions regardless of what it is that you're . . .
I: Ok.
R: Pushing to acquire.
I: Ok. So, I think that second part of that was what I . . .
R: Cost.
I: Think it would be important to include in this process.
R: Right.
I: I think you kind of answered that one. Is there anything else you wanted to add?
R: Yeah. The only other thing that I had obviously looked at the cost of the item, and then the pros and cons. . .
I: Ok. And if an acquisition tool contained the items that you listed above, would it help you determine a better choice?
R: Yes.
I: Ok. Does your organization track the effect of capital purchases to the bottom line?
R: Not well.
I: Ok.
R: In order to purchase it, there's always was the return on investment for this and you do your best guess, and you may be apt to get some kind of a metric, but there's no other than kind of individual monitoring of that. A year goes by, and

it's either something that's working well or it's not working well, and so that's what we hear. It's not well, how did it impact your bottom line?
I: So no follow up by an accounting team that comes back to the original and tracks whether it actually met its target.
R: Right.
I: You don't do that?
R: Right.
I: And if you were to try to implement something like this in your organization, what items would an acquisition tool need to actually have and to be able to do that?
R: I think it would need to have the ability to put in your success metrics. Overall, why you are buying this piece and then what you could me measured against. And something that's hard wired so it's not on a shelf in a document but maybe something even more like an Outlook task or something where it comes at you at 6 months and 12 months and 24 months, and then you have a timeline. It probably doesn't have to go on past 24 months. But then we really clearly prove it did or didn't . . .
I: Ok.
R: Do what it was supposed to do for that particular thing.
I: Ok. Do you know if your organization tracks end user satisfaction for the purchases?
R: Not well I don't think. If we do, I'm not sure, maybe in material management department level. They keep some kind of a database of who's using what piece of equipment and then it's heresy I think, and it becomes a rumor mill almost about oh, the service isn't good here or whatever, and you're never quite sure how that's really substantiated.
I: Ok.
R: It seems to be there's somebody that's claimed to be an expert within the system versus that it's a true hard wire component like here's the data base, these are the experience that this hospital has had, and somebody really tracking that and going back and asking.
I: Ok. A little bit more about what you were just talking about. What items do you think would be important to include in that process? So . . .
R: You want a database I think like who's the vendor, what was the piece of equipment and really, probably very detailed in terms about a piece of equipment because we know that equipment changes drastically, quickly. So that you're comparing something this fairly similar, not something that's . . .
I: Uhhuh.
R: Really antique at this point to a new piece of equipment. So I think a database and then some way to be able to track what were the issues or concerns and how quickly were they resolved or not resolved and why. I mean, and really kind of a detailed spreadsheet I think.
I: Ok. All right. Well, we ran through about 19 questions.
[laughter]

I: I'd actually like to take a look at appendix F. If you quickly take a peek at it you'll notice the first probably eight or seven questions are basically the questions that I started off with.
R: Umhmm.
I: And then in general, again not too much looking at the format of the questionnaire because we'll have a nice glossy format but in thinking of if you got this in the mail, which you will, and were looking at this and it had a cover letter that talked a little bit about what we are looking at and what a technology acquisition tool is. Would these kinds of questions actually help determine whether or not it would be beneficial to different individuals at different levels of the size or organization. Like number eight, most people feel there needs to be a balance between adapting an innovation to your work flow. So using a Likert scale and I think I've stated in one of the letters that it's a 30 minute tool. I actually think we got this down to probably, maybe 15 minutes of having somebody get a survey and trying to fill this out. Is that . . .
R: I think 15 would be the max that you should, people just are so pressed for time. Something that's really quick . . .
I: Ok.
R: Or faster or something that is web based just to submit when you're done.
I: So would you rather get an e-mail, um, survey . . .
R: Uhhuh.
I: Ok.
R: I just respond to those. Mail is going to sit there for a while before I even open it.
I: Ok.
R: Do you want feedback on the questions?
I: Sure.
R: The only, I think the only question or the only feedback really is on this number eight, and I'm not quite sure if you're really asking what I'm thinking is important in terms of . . . Do you think that the compatibility, how important is it to your current system and what if I say, for some things, it may be and for other things, it isn't. So there's some gray area there for me to check.
I: Uhhuh.
R: You know, a one or two when really I'm not there may be a whole different reason for the acquisition.
I: Umhmm.
R: It may to improve a work flow so that it doesn't have any relevance. I'd just be checking it in one way versus having an option to also go, ok, what about how important do you think it is to be able to have the . . .
I: Ok. Maybe if I gave an example and see if you go any further.
R: Yeah.
I: Physician order entry, would you buy in a system like that, how important would it be that it be compatible with the current system entries.
R: Umhmm. That would be good as an example.

I: Uhhuh.
R: Yeah. Because to me, that is something that is pretty critical to be compatible because physicians don't like a lot of change.
I: Umhmm.
R: Where something else you might be bringing it because you want the work flow to be drastically changed.
I: Right, right. And that other scale, how important do you think it is that a capital acquisition tool is used at your facility?
R: That makes sense.
I: And how would you rate that?
R: Probably 5.
I: Uhhuh. And how important is it that you want to try out a new acquisition tool? Again, do you feel that a Likert scale . . .
R: I think Likert works.
I: Is easy, you look at it, you've got most to least . . .
R: Umhmm, umhmm.
I: And it's easy to work your way through.
R: There are a couple like this is ok. I'd probably do a three or a four actually so I think with Likert, you tend to just be neutral.
I: Right.
R: So if you really want to push the answer, either really defining what one means, what two means, what three means versus guessing . . .
I: Ok.
R: . . . I think we know what it means and then whether you really want the five rankings or whether you'd like to tighten it up to get really . . .
I: Ok. I think I did some yes/no on 12, 13, 14. Again, yes, you have a process or not and then this would be some of the actual items that would be included on an acquisition tool. For instance and so a yes/no kind of down through each one of these safety regulations, software. If you look at these items, do you, do you, would you agree or disagree going down item by item that these would need to be included?
R: Yeah, I think they would all need to be included.
I: Ok.
R: The question is, is there something that I can't even really think of right now too, but I definitely think they all need to be . . .
I: Ok. Nothing to drop but possibly if you thought about it, you might even think of some other things.
R: Right.
I: Um, going to question 15, saying that you'll notice that the same items are there because those are items that would be on an acquisition tool
R: Right.
I: Again, I put the Likert scale back on in an attempt to say, well, would the presence of an acquisition tool be helpful but then indicate the level of

importance. So these are the same items or same multiple times through the process.
R: Uhhuh.
I: Um, any comments . . .
R: With this one, I guess I would have difficulty because they all seem to be pretty important, I'd have difficulty doing anything less than a 5 and even in my brain, I'm going, ok, if I do a 4, what does that mean. Does that mean it's going to be potentially dropped or, so the Likert didn't work really well for me, but maybe somebody else would call technical support for this, for what they deal with is never needed. I don't know.
I: Right.
R: It would be all very one sided for me. So it's almost like a yes, it was almost a yes/no is really easy. When you get into this, it's like, hmm, well, unless I am forced to have only 10 items and pick your top, it would all be high.
I: And that would be ok.
R: Ok.
[laughter]
I: I think some more yes/no questions and then an attempt to see if any of these items would be important or less important.
R: Yeah, that makes sense for a return on investment. I think you could clarify, well, I'd have to think it through, but I think it's a little easier to judge that acceptance time frame for instance. It probably doesn't have a lot to do with my return.
I: Then I guess 19 for end user satisfaction, probably different answers for the different level of importance on this end user satisfaction and training for instance.
R: Yeah, I think it would be really important because if you're going to have the discipline to have an acquisition tool that really helps you make a decision. I think we have to have that discipline then to track the satisfaction with that tool. Otherwise, then you've only done part of it. And it would also enhance, this kind of satisfaction would enhance the tool and whether there's something that needs to be added then because you had checked everything off. It looked like it was going to be totally great, and then something failed, and it could have been caught potentially. So I think it's really important . . .
I: Ok.
R: To be able to continually improve on the tool.
I: We've kind of through an evaluation of the tool. We talked a little bit the first part of the process, and I'd kind of like to go back and revisit that. We kind of buzzed through some questions fairly quickly and gave some answers. In looking at the process of what we went through, did you feel like you had adequate information possibly then to actually give? Did you know enough about the project or would you, do you think I should give more of an explanation of what the study is all about to begin with. Both for that process

and then I'm going to ask you the same question about the survey because there is a cover letter, which is attached.
R: This one?
I: That goes on the front, and it's . . . So you have the informed consent which talks a little bit about the research . . .
R: Right.
I: I guess the general question is, do you have enough information? On the first half of the process, did you have enough information by looking at the documents that you knew what it basically was talking about? Did you feel like you needed a better explanation to sit down and talk about this tool?
R: I had enough I think to go through the interview process. I wouldn't have objected and actually it maybe would have refined some of my answers if I'd known a little bit more like is this a tool that would be used for specific industry or across industries and is it just meant to be for equipment or more broadly.
I: Did you get an Appendix E when I sent out this on the e-mail?
R: Uhhuh.
I: That would be the survey cover letter to go out with the actual survey.
R: Yes.
I: Ok. And you might take a moment and look at that and see if that is enough explanation. If you were to get this survey cold in the e-mail or by letter form, there's enough explanation what a technology acquisition tool really is.
R: I think so.
I: Ok. All right. Any other comments?
R: The only other thing you could do, I guess _____, would be if you gave an example.
I: Ok.
R: Depending on who it is that you're sending it to and that it could range from this to this or otherwise, no, I thought it was fairly self-explanatory.
I: One of the questions that I had is because as we work our way through and then I show you this survey itself, I do kind of run through some of the things that would be a part of the tool
R: Right.
I: Would that have been more helpful to do that up front and so you actually see the list of items that gives you a better idea of the tool, but it narrows your . . .
R: Yeah, no, I thought it flowed. I thought the question flows well and . . .
I: Ok.
R: I know it was very helpful to have that information there. Without that, it would have been a little too generic. It was good to get to some detail.
I: Well, I appreciate your time.
R: You're welcome.

Executive Interview F

I: Ok, we've turned on the tape recorder, and I just want to ask you a quick question of you signed a piece of paper that said it was ok to proceed with the process here.
R: I did.
I: And is it ok for us to record this and transcribe it at a later date?
R: It is.
I: And as I stated earlier, as soon as I have all of this typed up, we will be destroying all the records, and you certainly have as you saw in the cover letter all of the documentation of having to get a hold of the IRB at Oregon State University.
R: Right.
I: You can ask any questions of Dr. _____, my major professor
R: Correct.
I: We're here today to talk a little bit about a technology acquisition tool for key decision makers. Specifically, I'm going to start with some demographic information, but I'd like you just to be very well relaxed and speak as we get into some of the other questions what comes to mind. I'll try to help you along with drawing out a few extra thoughts as we go through. But the idea is to talk and speak your mind. First of all, a couple demographic things. How many years have you worked in your current position level within a health care organization?
R: I've an officer of _____ _____ for almost 12 years now and was actually the Chief Information Officer up until April, and in April I took on the Chief Executive Officer role.
I: Ok. And what is your age, sir?
R: 49.
I: And your . . .
R: Male.
I: You're a male. Is your organization part of a multi-hospital system? You mentioned the name of the company a minute ago. Could you describe your organization.
R: Yeah, we are actually three, possibly four entities. We are a professional radiology group called _____ _____ _____, __ which is today 65 radiologists and six vascular surgeons. We are a technical joint venture company called _____ _____ ____, which builds clinical outpatient imaging centers, which are 50/50 ventures with multi-hospital systems. The venture in Spokane is _____, and we're just engaging now a venture in Arizona with _____ _____ on a 51/49% split deal on outpatient imaging centers with _____ _____. The third entity is the one I run called _____ _____ _____ _____, and it is the business arm of these entities. We do all the billing and information technology, human resources, and accounting and finance for the prior two

companies as well as some other potentially profitable customers that may not be an _____ _____ affiliate. And then there's a holding company called _____ _____ _____ so that's really who we are as _____ _____.
I: Ok. And, the next question, the, say you're partner with some, some other health care organizations that are hospitals in their own right. Would you say they're less than 100 beds, 100-250 beds or greater than 250 or are there a mixture?
R: The systems themselves, _____ is large. The _____ _____ _____ that owns half of our technical company here in Spokane is 700 beds and . . .
I: Ok.
R: And _____ _____ _____, which is also a _____ _____ here in Spokane, which owns part of our outpatient business also is, I think they're about 150, going on 200 beds, and the _____ affiliates are all, what is _____ _____? 200 beds?
I: 200 beds.
R: 200 beds. We do have affiliations with _____ and other smaller Eastern Washington _____ hospitals, which are anywhere from 12 to 50 beds, those. So it's quite an assortment.
I: Ok. And I did skip a question, but is, is all those organizations themselves part of a multi-hospital system?
R: Yes.
I: Ok. I'm going to read the next question. It has five different possible answers. It's kind of a scale question. I'll read through them, and I'd like you to pick the statement that best describes you as an individual. I am usually the first CEO in my area, so and this is to describe your usual reaction to a new innovation. And an innovation could be something as simple as a Six Sigma, a new tool that comes out, or it could be a 64 slice scanner, or it could be speech recognition . . .
R: Umhmm.
I: From a certain vendor. So, I'm usually the first CEO in my area to try a new innovation. I'm usually one of the first few CEO's in my area to try a new innovation. I'm usually trying a new innovation once I've seen other CEO's in my area to use it. I will only use a new innovation if I've seen many other CEO's in my area use it successfully. And I am one of the last CEO's in my area to use new innovations. How would you describe yourself?
R: Probably one. We do an awful lot of innovative alpha testing, beta testing, particularly in information technology but also in business models. We've created business models that are joint ventures that are unique. We aren't always the first, but we're either usually the first or, it's either a one or a two, but I'd say we usually tend to lean towards being the one, being the first one to try something.
I: As I mentioned in the cover letter, we're primarily looking at capital investments of about $100,000 or more. Everyone in your organization is used to the current method of capital acquisition. Do you think a technology

acquisition tool would be an improvement from the current system? And then please describe . . .
R: Yes.
I: The reason why you answered yes?
R: Yes, I think it would be because we have a pretty good process but just to standardize our process across all capital acquisitions as much as possible would be, would be good. We're getting large enough now where we need more and more standards, and I think it would be a good thing for us.
I: Ok. Most people feel that they're needs to be a balance between adopting an innovation to your work flow and adapting that work flow to the innovation. How important do you think that the compatibility of that innovation to your current system is?
R: I think it's quite important, but it doesn't mean that it shouldn't also drive work flow change if it's in the best interest of the company. I don't think that new systems necessarily should drive the business, but they should also be looked at particularly with brand new innovations as a potentially disruptive technology so that you can get your business.
I: Umhmm.
R: Sort of an implementation and utilization of something that is new and better, and it often does drive changes in work flow.
I: Ok.
R: But it's not an absolute 100% one way or the other.
I: Do you have an example of something that you've . . .
R: Yeah, we put in SpeechQ, which is a voice recognition product, which was a dramatic change in work flow, and we knew it would be an improvement overall, but it certainly hasn't been easy. 64 slice CT we know will change work flow, but the technology is perceived as something that we want to be engaged in order to get the exams and the market share that that would bring our business as far as referrals.
I: Ok. When you say disruptive work flow, you mentioned speech recognition. How did that disrupt work flow for its users?
R: By its disruptive technology. I mean something that has an opportunity to take a new quantum leap in terms of delivery of service . . .
I: Ok.
R: To our customers. You know, something that really disrupts the whole industry sort of like, you know, a brand new way to get reports out as opposed to transcription. So SpeechQ is a disruptive technology that I think if we don't do it, uh, our report turn around time will lag, and the industry will jump out in front of us, and the standards will be coming two hours now for a standard report turn around time.
I: Umhmm.
R: Prior in transcription, it was 24-48, you know, 72 hours so in that way, voice recognition is disruptive in that it totally changes kind of the model of the expectation of the delivery of service. Within the organization itself internally, it

disrupted our work flow because the radiologists had to learn how to do a whole new dictation model. They had to learn how to edit reports instantly instead of maybe 10-20 hours later after they came back from a transcriptionist. And perceptions all the way across the gamut.
I: Uhhuh.
R: High Chart as well as the Bell Curve of acceptance and capabilities that bringing on this new technology. Some took it on very well, and others have struggled, but overall it's a success, and the board's committed to doing it so.
I: Ok. Well, how important, kind of leads us to the next question, how important do you think that a capital acquisition tool itself is easy to use at your facility? How would that help?
R: Yeah, I think it would have been easy to use or it, it would get set aside. It has to provide more value than the energy it takes to make it work.
I: Ok, ok. So you would think of it as being important for it being easy to use?
R: Right.
I: Ok. How important then is it that you're able to try out a new acquisition tool, speaking for yourself to try out a new tool before it is implemented.
R: I think I'd like to phase it. I'm a big believer in phasing new processes or even new technology, whatever it might be. I'd like to try it maybe with a particular purchase, something like that. Does that answer your question?
I: Do you think it's really important that you be able to try it before you actually implement a process or if you had a name a tool like what we're talking about, is it important for you to personally be able to try it out before you actually have to use it?
R: Yes, I think so.
I: Ok.
R: To get in my mind.
I: Ok. And how important would it be, do you think, for CEO's to have the opportunity to see a demonstration of a new technology acquisition tool?
R: I think it's important. I think they're going to want to see something before they agree to implement it system wide.
I: Uhhuh.
R: A demonstration is probably a pretty quick way to get a CEO to either buy in or say this isn't going to work. It's probably the quickest way.
I: Ok.
R: Rather than giving them a hand out or, you know, trying to give them a document or something to look at I think. I think that's important.
I: Why do you think that's important, for somebody to be able to see something? Is it an acceptance of seeing it in use or what makes that important?
R: I think capital is one of the things that CEO's look at extensively at least once a year and on an ongoing basis, you know, as these things are acquired and purchased and placed in service. I think it's one of the things that is probably amongst the top 2-3 things that CEO's watch.
I: Umhmm.

R: And it's near and dear to their heart. So I think before they accept a new tool, they're going to want to be confident that it's going to add value, and then itself will work before they say ok, we're going to go ahead and put this in.
I: Does your organization currently utilize a formal purchasing process for the acquisition of capital equipment that cost more than $100,000?
R: Yes, the organization has a formal process if it costs more than $500. [laughter]
I: Could you describe that process and how you go through that process specifically?
R: Yeah. We do a capital budget every year on an annual basis. Anything that's over $1500 is capitalized. Each entity brings forth, we gather kind of a wish list. We cull it from all of our staff and employees first. We organize and review that at the operations and general management level, and it gradually works itself up to the director and officer's level like the Chief Operating Officer for the technical company. We'll take forth the capital budget, and then she will present that to the board. We categorize things in must have's where certain things are absolutely required to have in the capital budget, the cost of doing business more or less. And then we have proforma items where a capital purchase will be justified not really as a cost of doing business like, for example, a 64 slice CT or something we can get by without it technically. But it's justified by a proforma saying here's the qualitative reasons we need it to be competitive in the market and to be able to do better quality work or something like that. And here's the exact exams so we can do it. We can bill for on this system that you can't do us. We've got quantitative financial measures as well, and we looked at a payback that varies based upon the cost and the life of the device or the system. So we do, you know, kind of a strategic analysis on the non-must have's. You know, it's a strategic purchase, what's the payback and also the ORI on it, and what are the qualitative aspects of that. Then a proforma item can make it into the budget, and then we'll purchase it and put it in service.
I: Ok.
R: And it's done annually. And then each capital item is brought forward, before we actually spend the dollars, one more time for approval. So we approve the overall capital budget on an annual basis, and each item over $1500 comes back to the operating committee again, not the formal board but at least the operating committee to say ok, this is approved, it's in the budget, now we're going to spend these dollars now. So speak now or forever kind of hold your peace type of thing. It's one last shot.
I: Ok.
R: And then we will purchase it and place it in service.
I: All right. During that process, do you usually include an official request for proposal, an RFP?
R: It's yes. I'd say in most cases we do. From the big modality vendors, we certainly do and from the IT vendors, we also do if it's a new product that we're

not familiar with and not just an enhancement to an existing product in some way.
I: Ok, ok. Do you have some sort of a formal process at your organization for ensuring the vendors adhere to all of your corporate policies?
R: No, I don't think we do.
I: If you were to develop a process like that, can you think of any items that might be important to include in that?
R: Well, yeah. I mean, definitely HIPAA, corporate policy for redundancy, which I'm not even sure we have corporate wide. We'd have a task force to create that, but the vendor should probably play a role and be accountable for that. Corporate policies for, you know, online service and support. We have our own internal policies for when we take things down, systems down for maintenance and support. That would probably be very wise to write into a vendor contract initially or even put it in during this type of proposal. So what I understand, we don't take systems down except at 2 a.m. on a Sunday morning, those types of things, whether it be a modality or an IT system so that if they decide they need to do something, it's an exception and not the rule or we would have to approve it. It's probably, just off the top of my head, that's what comes clear, but I think it would be actually very prudent to build in whatever you can.
I: Umhmm. Ok. Would the presence, you think, of a technology acquisition tool help decision makers during the capital acquisition process?
R: Yes, I do.
I: And what items would you think would be important to include in this process?
R: Items as far as capital you mean . . .
I: Uhhuh.
R: Type of items? Anything over $100,000. Is that the question?
I: It's kind of the question.
R: Yeah.
I: You kind of mentioned some regulatory items. Is that going to go or up time guarantees possibly, things along that kind of line of what did you think of that might help?
R: Yeah, I think that, I would like to include, it might be different between modalities as opposed to information technology systems as opposed to maybe a building or a new, major imaging center that we're building. But I think that it would be good to have essentially all modalities built into a standard checklist which we've tried to do that where we have a certain sign off process before we actually start cutting checks. You know, where we have individuals like ___ _____, our operations manager or the Chief Operations Officer, the CEO, the respective company all sign off on this before we go cut the check in addition to the normal delegation of authority which requires two signatures and so on. So I think it could be applied to just about everything. You just apply it at different extremes. You know, if you're buying a $1,000,000 magnet, you might apply something like this acquisition product at a little bit more depth than you would

for a $5,000 IT purchase, but you probably still have many of the same subcomponents.
I: So possibly some kind of scalable tool that . . .
R: Yeah.
I: Could be changed depending upon what the dollar value was or maybe or maybe even what type of purchase.
R: Well, maybe you don't go to this extent for something that's less than $100,000, but I would think that anything over $100,000 is a significant purchase for just about health care organization today. Capital wise because they're always looking at that to offset, you know, other overhead costs and other costs and direct costs. You can't defer, you know, so I think that something like this would add some extra due diligence to those offsets and either justify it better or not and make sure that once you do get something, that it isn't going to backfire on you just due to, you know, some regulatory requirements or the technical support requirements or something like that that you might not think of at the time of the purchase.
I: Ok.
R: So I think it would be, it's a good idea.
I: Ok. Would you think that in having something like this up front would help you with your selection of vendors? So drive the choice of vendors itself.
R: Yes. I think it would exclude a number of vendors initially if they weren't cooperative to your own policies and internal procedures. You know, a lot of vendors we run into are not, we've selected vendors often not due to product but due to their flexibility.
I: Ok.
R: You know, so it's, and a lot of that flexibility has to do with our ability our policies, and our particular practices and things. So if you can isolate or identify those, carve out those vendors from the very beginning that would be very helpful.
I: Ok. Does your organization track the effective capital purchases to its bottom line?
R: We're getting better at that. We do in some cases. In the most visible products for information technology products, for example, we know that our cost accounting has gone from $4.25 per report down to about, we think, $2.25 or $2.50 in the last 1 ½ years because we have all of our allocated costs that we push out into our imaging centers and so on for every function. So we've tracked that very closely. With the modality purchases and things like that, when we decide to spend $1,200,000 on a new magnet or something or whatever it might be, I'm not so certain that we do that, that we actually track the increased throughput through into cost accounting. Sure, it all comes through at the end of the day in the cost accounting, you know, the cost per MRI. What's our profitability per MRI? But I don't we track it necessarily back to that one individual purchase compared to the other 10 or 12 MRI's that we might own in the market.

I: Ok. Do you, what would you think that might need to be included in an acquisition tool that would help you track return on investment?
R: That's a good one. What items do you want to include in an acquisition tool to track return on investments?
I: What things do you think that in your experience in the past, maybe if I didn't rephrase the question, but what things have cost you a lot of money in the past that if you would have known about them up front, what types of processes or items that you would ask questions diligently on the front end?
R: Well, up time, up time guarantees. Overall service ability, overall training and implementation. If it takes longer to get up and running, then you'd expect it, which is usually the case. Vendor monitoring of usage of the equipment possibly to feed us on our overall utilization. If we could put in vendor monitoring and performance measures of whether it be volumes or exams or procedures or overall utilization or acceptance, you know, of the product. If you're getting the number of exams per day that you did in your proforma maybe, the vendors that you could get on this particular CT, and the vendor could help drive, help give you that data or monitor that data with you so if you're not hitting it, you don't need to call them and say, hey, we're not hitting the volume. If they could watch that prospectively and have triggers where they would come and give additional support or implementation if those triggers aren't hit. So they are sharing the risk with you a little bit maybe.
I: Uhhuh.
R: And the same on IT. If an IT investment is lagging, there's often additional training or something it needs. If you could build in prospective measures into this type of agreement where you're tying it back to you own cost justification and other justification measures into the agreement up front, that the vendor was responsible for monitoring prospectively or whether you needed to give them the data or not then they would agree to come back and make sure you're succeeding. Whatever you can do there would be great. You know, in the past things that have bitten us are usually extensions of projects, cost overruns on implementations, down time particularly on modalities that were unexpected. Those are the big ones. Government acceptance for reimbursement. Snafus that maybe you didn't expect.
I: Ok. Does your organization track end user satisfaction for your new purchases?
R: We do but not in a routine and structured way.
I: Ok. By now, you're probably recognized that the question is going to be what items would you think important to be included in this process? What kind of things would you think you would want to track?
R: I want to track against the expectations that we had up front. We expect to do 12 MRI's a day on this device. Are we achieving that? Are we achieving our payback, our cost accounting that we get up front? Are we meeting all of our internal policies? Is the machine or the system, if we do a user satisfaction survey, are you basically happy with this type of device or system from both the

clinician, the physician as well as from the multiple levels in the organization? The technologists like it if's a system or if it's a modality. The radiologists like it if it's a system or modality. Do the ordering physicians even think that this is adding value to our product delivery? That would be interesting to do a little survey that we don't do. Do the administrators think that it's provided the value that we expected? You know, all of that tied back to a precursor and a selection agreement might just be something where we shared it up front with the vendor and then they sign off on what they're willing to be held accountable to helping us deliver.
I: Ok.
R: Certainly if there could be some financial penalties or reduction in service fees or follow up training or maybe even, I doubt, some sharing on the up side. We wouldn't want to do that. If it's a raging success, then the vendors earned their money.
I: Yes.
R: If it's not then we want, some hooks to tie them in further down the road. You know, ultimately the ASP model can do that, you know, where you pay per exam, but most of those are 5-7 year contracts anyway. So it's just a lease with a guarantee volume. But if you can get that contractual agreement to where you pay on a per exam basis for some things without an obligation to do certain volume over time, that's the ultimate win. Then the vendor is totally at risk with you for risk sharing in terms of you don't pay for it unless you use it and if you don't have to commit for the long term. They're very incentivized to make it a success.
I: All right. That's actually the initial questions. I think what I'd like to spend a few minutes on looking at with you is the tools, the survey tools. So this is, the session we had today is really a kind of a qualitative analysis and the end result of doing these kind of analyses and questions is to go back and re-fine the tool itself that would then go out, be blanketed out to CEO's in health care organizations in the three state area. What I'd like to do is have you take a look at that. I have a cover letter and see if it would give you enough information, not having the ability to look at a tool itself but would it give you enough information, you think, and explain the process and what I am looking for that you'd understand what we're doing.
R: I think this is fine.
I: You would get enough information? Are there any pieces that you might change?
R: No, actually it's good. It gave me some ideas. Safety is such a big deal these days. I think what you're targeting today's health care environment is under increasing pressure to improve quality control costs, maintain safety and enhance customer, you know, maybe even patient satisfaction ultimately.
I: Ok.
R: But I think it's good. I think it makes the point. It assures the participants confidentiality. Do you say here that you'll share this information with the

participant? Would you like a copy of results requested yet and may receive a copy. That's always nice if you participate. That adds a lot of value. I know class does that and everything. You know, if you participated in a class survey, you get the survey free, which are normally quite expensive. So it's a good motivator. Yeah, I think that's fine.
I: Ok. I'd like to run through the official questionnaire that would go out. You have, I think, a copy right here. You'll note that basically the questions are in the same order and basically the same questions that I just asked you. As we're going through the process, the questions probably one through seven we could kind of skip down through. Did you feel like those questions, if you went through question six, is there anything in any of these questions that you would really change? Keep in mind that this questionnaire will be on a glossy format with nice color and shrunk down to fit onto; be to done in a professional way. We're really looking at the content of the questions themselves.
R: Do you think that, will the questionnaire, equipment, specifications, questionnaire and such vary based upon how you answer question six? If you're really a doctrine person, this is the ultimate conservative end of the line wait till its proven type of CEO. Will the tool vary?
I: Well, I think that's part of the survey. That's part of the question, is there a difference between . . .
[talking at same time]
I: As we get these back, we will be testing to see if there is a significant difference between those. So we'll have all of that. We'll have age, we'll have size of facility and so we will be able to, you know, test for differences in each one of those. Possibly if we skip down to maybe question eight. I started utilizing some Likert scales and really again is there anything about the question and the use of Likert scale you would change or do something differently along those lines.
R: I think the scales are good. I think the answer, I'm just struggling with this questions. Most people feel that there needs to be a balance between adapting the innovation to your work flow and adapting the work flow to the innovation.
I: So it's really a question about the compatibility of the innovation to your current system.
R: So I guess you're talking about ultimately how flexible you need to be on either side.
I: Which one do you think is more important?
R: You talked a little bit about it, you know, an innovation versus something that's just helping you do something better. Does there have to be like requisite variety in both parties in order to compensate for the changes? And how much flexibility do you have when using the new tool? So I think it's great. I think the least to most is a very good way to rank questions.
I: I think the next 9, 10 and 11 are basically the same kind of format of getting folks to . . .

R: I think nine is a great question how important do you think capital acquisition is to be easy. It has to be easy. How important do you think it is to try a new acquisition tool before it's implemented? I think this is good. I think it's a good way to kind of rank and rate these things. There's nothing to really change on those.
I: Twelve is kind of a yes/no. Thirteen's a yes/no as well along with 14. These are some items that really kind of putting these things into more of a, so really trying to get an idea from each respondent. Why do you think these things are important? Now this list is going to be very familiar because we're going to use the same list. So the question, you think, those following items, are there any that you would just, do you think they're all important? And is a yes/no sufficient?
R: I think they're all important, and I think personally every one of these is important to me.
I: Ok.
R: To get all of these things into a contract up front, training, training, installation, acceptance, warrantee, up time, guarantees, equipment failure procedure, power requirements, payment terms, shipping terms and acceptance terms. Yeah, I don't know why I wouldn't want all of those written.
I: Ok.
R: I think those are good.
I: All right. Number 15 is another yes/no but then I switched to a Likert scale on this question and then looking at the level of importance again for each one of those items to be for the presence. So you think anything different when you saw this? So all of these items would be, in fact, important to include in an acquisition tool?
R: Yes.
I: Ok.
R: Now, are you looking to use both of these questions and then to kind of rank it?
I: Yes. So we're getting with respondents based on age, grouping of hospitals and you would run down through these and say, ask these questions.
R: So the first 14 is kind of a ranking, and the 15 is the rating.
I: Uhhuh.
R: So if I say, yes, I need equipment safety in 14 then I'll tell you how important that is to me in 15 relative to 15. I like the ranking and rating. I think it's really important. I was going to mention that, and you've done it. You've made the rank, is this thing necessary or not? And if it's necessary, how does it rate compared to the other, how do you compare it to the other criteria? I think that's great.
I: Good.
R: Yeah.

I: Number 16 is a yes or no. Seventeen yes or no. Eighteen, and then we went to and then saying, well based on all, you say yes to having to help me to track or look at all ROI's, return on investment. Again, we're doing . . .
[talking at same time]
I: And how important that is and each one I'm trying to figure out well, if that's the most important thing to you, how does each one of these then, how do you rank those.
[talking at same time]
R: No, that's interesting. I think often people don't directly relate up time to the ROI, but they certainly should. Equipment failure, I mean it's all definitely tied to our ROI payment terms. It also could be driven into an ROI if you could spread them out further obviously. Shipping terms might not be quite as important. Yeah, it's interesting. I like how you've set this up actually. I wouldn't change it.
I: When it comes to the survey itself, I mean as I think put in the cover letter, really, we're trying to go for 30 minutes or less but actually I think this one is supposed to be geared to something much less than that. Is there an optimal time? If you get a survey, how that survey comes, is there a preferred method that you would receive that?
R: Would I receive this handed to me by someone, am I going to be walked through it over the phone do you perceive or I just answer it?
I: Well, I guess my question is, how would you be most likely if you were getting a survey like this? Is e-mail a good way to get you to respond? Is it something in the mail that's glossy and fairly easy to read and has a self-stamped envelope? Is that something that's easy to get you to do? What's your preferred method?
R: Well, I'm kind of; I'd like to be informed in advance of something like this. I think ideally, if I could be informed in advance that this was coming by means other than or in addition to e-mail.
I: Ok.
R: So you get to me through my assistant or you get to me through a mailer and my assistant best or a phone call. The best way is to have somebody tell me verbally that this is coming either on the phone or something. You know, just to get an alternate path into my brain because I get 5,000 e-mails.
I: Ok.
R: And I do answer surveys via e-mail but odds are I might overlook it if it's just a random, it I'm not expecting the e-mail, I might overlook it. It might not make it to me. If I get a nice cover letter and a phone call to my assistant saying the cover letter is coming, will you please give this to him or if I get a call directly saying, will you please look at this, it's coming. Then when it comes, I'm happy to do it on e-mail. You know, I'll do an e-mail survey preferably even over a piece of paper.
I: Ok.

R: But I'd like some forewarning both for your sake and my sake that it's coming or it might get spammed out or I might not see it or anything. Otherwise, I'm not opposed to filling out paper, filling it out and sending it back. That would be ok too.
I: You mentioned spam and firewalls. In your organization, if I sent something, if it came from the Oregon State University Department of Public Health and got e-mailed out through your e-mail system, would that make it through and I had your correct e-mail address. Would it make it through your firewall?
R: It probably would make it through both my spam and my firewall because we have a product called Barracuda that has a black list. It filters out 60,000 spams a day company-wide for us. All black listed. And then I can go in and identify something as a spam or beyond that, and it learns. But most things that come in that I haven't listed as spam that are just from an unknown source, it will let through unless there's a word or something that indicates that it's a spammer.
I: Ok. All right.
R: So I think it would probably get through, but then it doesn't guarantee that I would pay attention to it.
I: That's correct. That's good. Again, your kind of preference, how you would see that happening would be some kind of notification to . . .
R: Yeah.
I: .Or to you . . .
R: At least a cover letter to me or my assistant and if not, preferably a phone call, but I know that takes a lot of time.
I: If I sent a cover letter under University letterhead, is it likely to get to your desk?
R: That would help. Because it immediately rules you out as a vendor, you know, or a cold call.
I: No, I totally understand. Any other comments about or questions that I can answer?
R: You piqued my curiosity actually, and I'd really like to see the product as it comes out and how you can standardize something like this is very intriguing, and I think it can add a lot of value. It definitely would be a challenge to standardize something that could go across capital as well as hardware as well as software as well as everything else. I think it's a great idea.
I: All right. Thank you. I appreciate your time. I notice people are pacing outside your door. Thank you very much.
R: You're welcome.

Executive Interview G

**[This interviewee was very difficult to hear. He spoke very softly and got softer as his answer got longer.]

I: Ok, I appreciate you allowing me to come and interview you today. I want to call out that you have signed an informed consent document. Is that correct?
R: Correct.
I: And is governed by the IRB at Oregon State University, I have sent you all the questions in advance, and you have had time to review those. We've also talked about those a little bit. Today we're going to talk about technology acquisition and a tool that I'm doing some research on. Going forward and this whole process is governed by my major professor, Dr. _____ _____, and there is on some of the documentation I have sent you his contact information if you were to have further questions that you don't have for me later on.
R: Thank you.
I: Just wanted to make sure that you knew that this is governed through that. So we're going to start talking about the technology acquisition tool and its use as a new innovation such as a CT scanner, a 64 slice CT scanner, but also new innovations can mean things like a Six Sigma project with General Electric or Motorola that uses though so that might be something new that comes into new organizations as you're thinking about the use of a tool, you can think about it in a very grandiose way of anything that comes in. So it might be something that a 64 slice scanner might have a different process than a new thing like a Six Sigma process that maybe a CEO or CFO might actually be more involved in the process and might sign on for. The question is, would a tool like that be useful? So we're going to start with Appendix B, and I'm going to run through some interview questions. The first 3-4 are mostly demographic to allow me to kind of segment the market a little bit in my research and draw some conclusions hopefully at a later date.
R: Ok.
I: How many years have you worked at your current position level?
R: Six years and nine months.
I: And you're a CFO in that organization?
R: Correct.
I: And your age, sir?
R: 51.
I: And your gender?
R: Male.
I: And is your organization a part of a multi-hospital system?
R: Yes.
I: Could you describe the system a little bit for me?

R: It's a multi-state system primarily focusing in acute medical-surgical hospitals.
I: Ok. Does it have, is it only hospitals or does it have other types of organizations? Does it do long term care?
R: No long term care. I think that's pretty much all been divested. They have a psych hospital and some physician practices.
I: Ok. Primarily in what part of the United States?
R: Western part.
I: Ok. So it's a multi-hospital organization. Does it run the gamut of, in question five I ask do you have less than 100 beds, 100-250 or greater than 250 beds? Does it run the gamut there?
R: Within the hospital system, yes. We have hospitals that have less than 100 beds and hospitals that have greater than 200 beds and hospitals between 100-250.
I: Specifically, the organization that we're sitting in today, what size of an organization?
R: Seventy-six beds.
I: Ok. I'm going to read a statement to you that has multi-parts to it, and I'd like you to kind of read along with me and tell me which one of these best fits you, you think, in adoption of new innovations or technology.
R: Ok.
I: I'm the usually the first CFO of my area to try a new innovation.
R: I would not describe me as the first to try a new innovation.
I: Ok. How about one of the first?
R: I would say one of the first to try a new innovation.
I: Ok. We're going to move down to question seven. I guess in question six, can you think of something in recent past that you've been a part of? Here at this organization, I don't know that this facility is a brand new facility.
R: Umhmm.
I: And I know that there were a lot of decisions that were made. Can you think of anything specifically that would have described your, one, being one of the first few in your organization, your role here in this organization?
R: Well, I think as an organization, we're one of the first to try CPOE computer physician order entry. When we get specific to my functions, I would be one of the first to have kind of a business intelligence dashboard-type product that would start to roll out. So it kind of runs the gamut from small systems to larger hospitals.
I: That dashboard, could you describe that a little bit for me, what that does?
R: It's just a financial dashboard that allows us to analyze and trend volumes, expenses, kind of makes you think of a dashboard in a car. You've got a new gas gauge, you've got your speedometer, and you've got your oil temperature, water temperature, oil pressure . . .
I: Uhhuh.

R: Just metrics that you frequently look at from a financial perspective to determine how the shift started.
I: Ok. Is that a product that an outside company is providing or is your organization developing that?
R: The software tool itself is an outside company, and it's being developed internally.
I: Ok. Thank you. When you look at an organization statement like everyone is used to the current method of capital acquisition in your organization, do you think a technology acquisition tool such as the one I've showed you would be an improvement from the current system?
R: Being part of a larger multi-hospital to hospital system, a lot of the mechanics associated with that are already in place so for a lot of venders there are already contracts in place that decide the process. We work with, you know, we go through the process of when we acquire capital and I think you have in one of your questions at what level does capital require some governmental approval of this organization as a formal process of acquisition or capital over $100,000. Our limit is $250,000.
I: Ok.
R: So when we have something that's over $250,000, we have to go through another proforma. It has to go in a multi-step process that's requested over a period of three years. You go through a series of approvals from various people within the organization in IT, new materials, etc. It may not get specific into, if I could understand what your tool does, it may not get into specific into a specific road map of relating to if this happens, you need to do this and this is who you need to contact or this is a regulatory requirement associated with it. It doesn't get that, really that down specific to really kind of guide you through. It more or less relies on what people that have that type of experience within the system. That doesn't necessarily guide them down to that kind of path or the process, run through the process.
I: Ok. If you were looking at a, like your system that you were just talking about with the dashboard system, was that something that went through the normal routine process for. . .
[talking at same time]
R: Yeah.
I: They're really pretty standard.
R: The acquisition of the software that's it's developed in went through the process of the capital acquisition process.
I: Ok.
R: So it would go, you know, from formal, what is developed and went through the approval process and then it was purchased.
I: Ok, ok. Looking at new innovation and adaption of new innovation, most people feel that there needs to be a balance between adapting the innovation to your work flow or adapting your work flow to a new innovation such as looking

at your dashboard system. How important do you think compatibility of the new innovation to your current system is?
R: For the work flow? Well, you know . . .I view it as a three leg stool when you have people processing technology, and you have to be good, and have people balance between. If you have new technology that requires a different process, it should be an improved process to leverage the people resources.
I: Umhmm.
R: So, you know, I'm in favor of modifying the process in order to meet the technology. I think we demonstrate that by the implementation of electronic medical record here. There is some process for engineering, processes that had to be re-engineered in order to be able to accommodate the MR, and those are pretty rigidly enforced to avoid workarounds or workarounds. But at the same time you can't make it more difficult. You need to improve the process, not hamper the process. So new technology should be in a position to enhance and improve the process, not make it more complicated.
I: Ok.
R: I think oftentimes what we find is we there's promises related to new technology, but it requires additional resources in order to achieve those promises.
I: Ok. Question nine is an ease of use question. How important do you think that a capital acquisition tool is easy to use at your facility?
R: The same as the other process. It needs to be easy to use. I think particularly in an environment where you have people that have been with the system or with the hospital for a number of years, you know if it's not easy to use, they fall back to old habits so, you know, it has to improve the process, make it easy to use or if it doesn't, it has to be in a position to provide important information related to the process of acquisition. I don't know if this electronic part of the system will work to preserve the programs. Is there going to be a road map as to exactly what it is but, you know, it has to be able to give it. You say if it captures information, it has to be able to report on so let's say I need this, I don't know necessarily where to go to get it, who to contact or what information I need in order to start the process. Someone really helps guide them and then capture the information so it knows that wait a minute, we got something. Especially in a large system, we had somebody in Timbuktu that had the same need or requirement, and this is what they did. So it acts as a knowledge database, a knowledge warehouse. I think that would be beneficial. So getting additional information out of it to generate maybe the additional work required . . .
I: Ok.
R: Does that make sense?
I: Moving on to question 10. How important do you think it is that you be able to try out a new acquisition tool or a new technology or a new innovation before it is actually implemented?

R: Well, I think with most everybody, you need to understand how it would function in your environment. So yeah, I think that would be extremely important.
I: Question 11, how important would it be for CEO's or CFO's of an organization to have an opportunity to actually see a demonstration of new technology?
R: What a good question that is. One of the things that I forgot to mention is we're exploring the acquisition of a da Vinci robot for our surgery department, and we brought, had the vendor bring one here on site so that surgeons can view, play with it a little bit, kind of understand how it might work and operate. I think once you see that, you kind of gives you the idea well, how might this be deployed. Once the surgeons see it, they started thinking well; maybe this isn't such Star Trek type of technology. It might be something I might be able to utilize. So we've seen it, but it's always the see and touch, you know.
I: Uhhuh.
R: Type of thing that's important to take care of everybody.
I: That's a great example. This is a question you alluded to earlier. Does your organization use a formal process for the acquisition of capital equipment?
R: Perhaps more than $100,000.
I: Yeah.
R: It's $250,000. Other than that we bring capital down into two forms based on what is being distributed from the corporation, what's available from the corporation, to either borrow the primary through operations and what we can finance. That money is then split out to non-threshold capital which is a bulk of money that's given to each facility in order to spend as they wish based on their capital such as a new roof or something like that. A piece of equipment. And threshold capital, which is that capital which is greater than $250,000. For non-threshold, it's given to the facility, and the facility then determines how to use that so there's no real approval process. For the threshold capital, you have to go through the process of filling out in accounting the three year plan, what your capital cost is going to be and if they're approved, then you go and it's a more proforma development. The proforma determines the financial viability of any acquisition. So that's when we to go to a formal process.
I: Ok. Moving on to the next question. Does it actually include an official request for proposal, an RFP? Do you actually go out to vendors with a formal RFP process? Do you know what process is?
R: That would kind of really depend and anything that we've done from that, at least I can recall here, would not develop to a formal request for proposal. Often times, it's purchasing equipment that, for example, we were at one time had contracted GE for medical imaging equipment. So you pretty much knew that's what you were going to get. Now they've kind of gone to more of a best of breed type of structure, and I'm not seeing RFP's going out for those types of things. Where I had seen request for proposals is that in software acquisition, but

then we go out and do a request for proposal for the acquisition, a particular type of function application . . .
I: Ok
R: To do that. I don't know once we may develop a request, a proposal and it may go to materials management because we have a centralized materials management and what they do, I'm not really aware if they do that, if they have a series of vendors that they work with. Often times we will recommend vendors, contract vendors so those relationships that we're going to establish so there's not always a need for an RFP.
I: Ok. Moving to question 14, talking about a formal process. Does your organization have a way of ensuring that vendors actually adhere to those corporate policies such as safety policies? Do you have, do you know if your organization has some sort of formal process of signatures from vendors. How do you guarantee they conduct themselves in a certain way when they're on campus, do you know?
R: Well, often times it's related to, let's say that they would adhere to HIPAA policy, and we have a requirement that there be education applied for compliance and HIPAA. They have to be able to demonstrate either through an Affidavit or some other type of pronouncement that they have education in place that is similar in nature to what our compliance and HIPAA education is. If they don't, then they to attend our compliance education. So, that's done kind of contractually. And there's other policies related to, you know, vendor performance and behavior type of things that there's certain expectations.
I: Ok.
R: But other than the kind of the compliance with HIPAA, there's not even . . .
I: A lot of times what we tend to think of in situations like that is when vendors have gone bad.
R: Yeah, yeah.
I: What things have we done? Did we have a policy in place? Not so often as that it happened.
R: Well, for example, we have a vendor policy that requires them to check in and receive a temporary badge within the _____ policy to direct them how to enter the building. There are things that, but I can't of anything from a behavior standpoint. If they're bad issues, but normally that's a phone call and don't send the guy back.
[laughter]
I: That's a very direct policy, ____. Moving to number 15. Would the presence of a technology acquisition tool with some of the items that I kind of briefly and I was brief on purpose because I didn't put ideas in your brain but to have us kind of talk openly about would a tool like that help and what kind of items would you think would be important to include during that process, meaning on the very front end of a process where there might be some kind of a doubt in a small organization perhaps you can use the bigger items where a CEO, CFO or COO or actually a front line of some of the negotiations where tools would be

important there or in an organization like this where there might be a smaller software piece that you buy that might be for more than accounting use that doesn't include a lot of other people. Think of it in that way. Then what kind of items would I think to use on the front end and try to get everybody on the same page and ensure that I'm not wasting my time with the vendor perhaps.
R: Well, I think you really need to have some type of process guidance that really helps determine the value or need of the new technology. You know, it really helps you solidify, not only in your own mind, but in everybody else's mind that look, this is not a technology that would really add value to us as an organization. It sure would be nice to have but, you know, it doesn't add value. Often time, it's done financially through the development well all the time, pretty much it's done in finance or through development of a proforma but there is nothing usually said, this is how this technology should be used and how it might apply to your environment. So I think, kind of an ok, do you want, hello, do you want to buy this new technology. This is what the new technology, have you thought about what this new technology could do for you and this is how it would be applied. This is how it is used in your environment. These are alternatives to that, how you would do that I don't know. But if it kind of helped you guide through that process. I think if you could get comparative quotes, some system would allow you set up comparative quotes, some Consumer Report type of thing that said, you know, this product, how do the two products compare? If you want to write a Consumer Report magazine. Write something like that. I think that's all helpful. The biggest struggle we have in many ways is really guidance and a sign off through the process. We get, our current product, you know, once we enter it into the capital tracking process, so once you entered into it, dive into it, you go through a series of sign off's, but it functions, but it's not always correct as to where it is within the process. But you need really kind of expand beyond that and really kind of go down through the lines. Is this everything it takes until it's entered into a capital tracking process and where it is in the process and then evaluating if it actually did what we thought it would do. So before, during and after.
I: Ok. If an acquisition tool contained the items that you were talking about, would it then help you determine which vendor that you were going to purchase that equipment from?
R: I would hope that it would determine or establish or affirm the need for the tool, a need for the new technology and then guide you through it.
I: Ok. Question 17. Does your organization track the effect of capital purchases to its bottom line?
R: Yeah, remember the differentiation between non-threshold and threshold?
I: Umhmm.
R: On threshold, we were quite doing that good analysis using 1-2 years after the acquisition of the capital to really say did it do what you thought it would do. Did it meet the financial goals? Did it meet the other type of goals that you said it was going to do?

I: Ok. What items will the acquisition tool contain that would help you track return on investment? Are there any questions that you could ask up front or any kind of things that you would want to know?
R: Well, certainly, what we would do now is we'd develop a proforma, and proforma lists the volumes, for example, listing the cost associated with it. And when we do make good, you have to go back and basically say, yeah, the volume had, this is the cost associated with increased debt so you'd have to be able to track return on investment. It depends on what your drivers associated with that return on investment. Is it volume? Is it return on investment through reduction of costs? Is it return on investment through improved reimbursement or improved revenue or whatever it is, but it would depend upon whatever the driver associated with that ROI is. I'm trying to understand, you know, where this tool would reside to be able to capture that type of return on investment type of information.
I: That's really kind of a first thing that you're talking to each individual vendor about, and I don't want to put ideas into your head. I mean, we're going to talk about the second phase, get there in just a minute, but it's really about capturing well, what do you think we would, what kind of things would be talk to a vendor about and ensure that their in compliance with our policies perhaps or safety issues. What kind of things would we talk just, what do you think would be useful to know up front and to track up front so that you could then come back in a year or two years and would help you with that process. Again, maybe think back in your career of when you got ready to do a return on investment and well, you should have asked that up front.
R: Ok, ok.
I: So.
R: We usually have all the information associated with it. What often happens, though is that, you know, we do the proforma and all the other costs that kind of come on, oh, we need to move an electrical outlet or we need to this and all these other costs often, you know, are not really kind of captured, kind of maintained and sometimes are really difficult to really kind of get at particularly if they're not included as part of the project. Some of it may be capital items, and some of it may be done operational that are not included in the capital cost of equipment. So that might be helpful…
I: Ok.
R: to kind of capture that type of information.
I: Do you track end user satisfaction for new purchases?
R: Not really other than the make good, not really in a formal process.
I: Ok.
R: We might go, hey, Joe, how's that new piece of equipment working out, you know, but not in a real formal process.
I: You're probably getting used to my follow up questions by this point since we're on the last one. What items, you know, if you were trying to include some things on the front end . . .

R: Uhhuh.
I: And some questions you'd ask vendors, can you think of anything that would be important to include so you could track end user satisfaction later?
R: Well, you know, like all salesmen, they're going to, vendors, you know, vendors are salesmen. But often they make promises to, you know this is going to this or it's going to do that. I think if we, we need to be probably more diligent in identifying those and then tracking did it really meet those requirements.
I: Ok.
R: You know, if you're going to say that this is going to save you a .5 FTE, they didn't really save you .5 FTE, I guarantee it probably cost you .5 FTE. You know, if it's good, we're going to say that it's going to reduce more stress injuries or anything of that nature. How you quantify that? What mechanisms do you have in place to measure at the inception of implementation of technology versus down the road and how do you set the measure so I think, you know, if something can really help establish what those measures of satisfaction are.
I: Ok. We're going to shift gears just a little bit, and I'm going to show you some pieces of this innovative tool itself and including cover letters and then the questionnaire itself, and I want you to not pay too much attention to the format and the lack of glossy paper.
R: Ok.
I: That will be covered as we talked a little bit earlier about by a professional. We have a cover letter, and you have Appendix E that you might look at [shuffling paper]. If you read this as a cover letter or as a part of an e-mail, does it give you enough information about and if you already read it, you can go ahead and just comment, but does it give enough information to know what the survey is about and would it motivate you at all to help out with it, the questionnaire.
R: I think just in today's environment, there's a lot of people that really kind of over survey.
I: Umhmm.
R: So I think one of the things that might help and maybe one of the things I'm still kind of struggling with a little bit is what is that acquisition tool. Maybe you can dig into that because if I'm reading it, I wouldn't know what an acquisition tool is and if I don't know what I'm talking about, would I be less inclined to participate in the survey.
I: Ok. The survey itself is kind of designed to be 30 minutes or less. I really think as we go through, it might be more of a 15 minute survey.
R: Ok.
I: One of the questions is that longer than you think you, yourself or an average person would want to put into answering and what kind of format would you like it in. So let me ask me one question.
R: Maybe.

[laughter]
I: What's a time frame that you think would be, if you got an e-mail from, would an e-mail or a letter through the system, how would it, what's the length you think . . .
[talking at same time]
R: Well, half an hour is a long piece of time. You know, I think even 15 minutes to sit down and do a survey is, you know, is a good piece of time. I would say 10 minutes. If I can't complete a survey within 10 minutes, I'm getting bored.
I: Ok.
R: You know, I've got other things to do. I've got a phone call or something happens of that nature. Unless it's something that's really, you know, kind of very much in depth and you're going to become very, very involved in the information.
I: Ok.
R: Let's say we're doing a survey that determines where a finance employee should be located, and it's a survey that's done from down town. I think you're interested in that because it has a direct impact on my performance and my job. Other surveys, you know, may not have the direct impact or the information. It may not be useful to me for the next three years or what have you. Then I would be less inclined.
I: Ok.
R: So you really, it's what's in it for me.
I: Right. Ok.
R: I find that if they give me a dollar to take the survey, the survey goes in the trash, and the dollar goes in the pocket.
[laughter]
I: Um, you know from the standpoint of would you, the format that you did that in, would be a paper copy thing that comes in the mail. Would it be more likely that you would open it if it came by e-mail? Your e-mail address and that's one question.
R: I think if you do it by mail, it means I have to find a post office box.
I: Uhhuh.
R: And, you know, I don't know where the closest one is here. We probably send outgoing mail through our mail department so it's really actually over there, but it still means I have to walk across the hall . . .
I: Ok.
R: And remember to do it. So, if I wanted to participate in the survey, I think it's much easier to have a link to a website through an e-mail and you answer the survey. That seems to very quick, painless. Once you hit submit, you're done. You don't have to worry about mailing it.
I: Ok. And would it be helpful, do you think it would help people to open my survey if it had Oregon State University, part of a research, and in this

environment today there a lot of people that say they're part of a research program to get you to actually open it.
R: What I see often times when I see a survey, I automatically think well, what are they selling?
I: Right.
R: You know, that's going, and you can get in and even read after the first couple of questions, you automatically know, you know, that where they leading or, you know, would your company be in need of a better widget that costs less than $10,000 and you know, stuff like that, you know where they're leading to. And so surveys that I have participated in, once you get that thought, then well, this is really kind of a sales ploy, and then it's gone.
I: Ok.
R: You know it's difficult. You know, I think there are people that like to take surveys. I'm not one of them.
I: Right.
R: So it's really got to have something that really interested me for obtaining the information as a direct relevance to my position or to my job or to hobbies or interests or something.
I: Ok. If you get something from an university that says this is part of a research for a PhD, does that help you at all open it or is it more likely that you will close it?
R: I got to be honest. Unless I know _____, I wouldn't.
I: What I'm really trying to get it because it doesn't sound like paper is going to be making it to your desk.
R: E-mail, unless I know where it's coming from, I probably wouldn't even open it.
I: Right, yeah.
R: You know, a survey from Colorado State University, well, good luck, I hope you get your PhD, I hope you get your….
I: Ok.
R: You know whatever you're going for, good luck.
[laughter]
I: I got it. So moving along to Appendix F is really the questionnaire we talked a little about earlier, and I want to just go question by question. I want you to kind of give me your opinion about. Is this a valid question? Is there a way to improve this question? Of course, the first several questions like question one, you know, how long did you work in your current position. Is there anything you would change about that? These are kind of basic questions.
R: I think that's fine. You may want to format as to really what you're asking for. You know, I think you talked about it. Are you asking for years, months, how specific do you want to get.
I: Ok. What is your age?
R: I would recommend that you put categories in that, ranges based on . . .
I: Make it easy.

R: Yeah, make it easy.
I: All right, I got the easy part.
R: Ok.
[laughter]
I: No, I'm right there with you because I get them all the time. Gender, anything? You know, it's kind of a male or female thing.
R: I'm not going to try to pick apart. That's pretty specific.
I: Anything, you know, the organization part of a multi-hospital system, yes or no. And then the follow up question less than 100 beds, 100-250. Anything you'd change about those that . . .
R: Well, I think, you know, you ask additional questions beyond this so if that's the type of information you want to know, you say, you know, are you multi-hospital system. You know, maybe have something down below that says, you know, general acute hospital or the type of, list all the systems or hospital types that you have within your system. So like a long term hospital or SNF. You know, then you kind of check it off or click a radial button, something in that nature as far as, you know, what you're specifically asking for. If you need to ask a follow up question, you need to ask a follow up question. You're doing the survey because you're not directly crossed it.
I: Right, right.
R: So if you want specific sets to ok, you are a multi-hospital system, do you have acute hospitals, do you have long term care, do you have this and check all the above.
I: Ok. And then six was really kind of a self-description question about how do I see myself in relation to adopting new technology. These are, is there anything, is that a valid way to ask that question or do you see anything here that you might change or do you think it's fine the way it is?
R: I think that pretty good answers it. What can I say, you know, are you on the bleeding edge or the leading edge? Yeah
I: Ok. And then question seven is a yes/no question. Do you think a technology acquisition tool would be an improvement? That's kind of a circle the, check the box kind of how that would be designed. I would envision that as maybe on a survey, some of these yes/no's would just click the box, put an X in it or anything. You just check a box.
R: I think understanding what a technology acquisition tool is would be helpful. It could be, for example, decision support system. You could ask 100 people what a decision support system is, and you would probably get 87 different answers. And so their importance and relevance to them, they may be thinking of something totally different that what you're actually intending to produce . . .
I: Right.
R: So it may be important to them but if they got it, it's not at all what they had in mind so that might change their idea so I think some definition behind what the technology acquisition tool is.

I: Ok. Then with question eight, we start to see some Likert scales. How important do you think the adaptability of innovation to your system so these how important questions. Is a Likert from least to most with a numerical? Well, obviously I'm putting numbers in there so that I can pull that out from my survey and attach a value to that. Does that seem a reasonable way for you to click on a box and X marks the spot of how important I think . . .
R: Yep.
I: It is.
R: I think you have to be careful that the number of this type because, you know, you might of have a habit of going ok.
I: Right.
R: I'm done.
[laughter]
R: So if you keep them specific and break them apart, format so you don't have this big long line that you're looking at, that you don't degrade your initial test because you have to fill in the box.
I: Right. Twelve is another yes/no question. Again, you know, the level, my whole paper is talking about $100,000 or more, and that's just a number that I picked to call something a major capital piece of equipment. Obviously, it's organizational, but it's a yes/no question. Thirteen's a yes/no question. Do you have an RFP? Are those and does your organization have a formal process for ensuring that vendors adhere, yes or no. Does that seem a reasonable, you know, again, click on the box. Does that seem like a reasonable way to do that?
R: Yep.
I: And then vendor compliance with organization would start to represent out of the tool that I developed. These are really pulling out the specific sections within that tool.
R: Right.
I: So equipment safety regulatory requirements, training per Biomed, equipment failure, power requirements and shipping terms. You now start to see some more pieces of that. Please indicate if you think they're important for compliance with your organization's policies.
R: Right.
I: So you would go down and say yes or no, and I assigned it yes as one and two as no. Is that a fairly quick way again because I got the ease of use part earlier? Think you could down through and go click, click, yes/no, yes/no, and yes/no on a computer screen? Would that be a reasonable way to answer that?
R: Umhmm.
I: We have just a couple of questions left.
R: I'm just thinking you passed the street, you know, just fit in and put together RFP's for software selection.
I: Umhmm.
R: And let's say you know what the capabilities of the software is before you even get each vendor's software, before you get there and you really have to

guard against phrasing questions so that the lead of the answer leads to one particular vendor.
I: Right, right.
R: So I think you want to guard against that not that this does it but when I saw this, I just thought, I remembered that because it's very easy, you could get pressure to highlight questions that enhance the one particular vendor's technology over the others. I: Then on to question 15. We kind of introduce the same exact sections out of the tool, and we're asking, would the presence of an acquisition tool help decision makers during a capital acquisition process and then indicate the level of importance for each one as it relates back up to, would it be important and again, you're doing a Likert scale here so would safety and regulation requirements be very important to be included in the tool or not important. This gives everybody a chance to say, well, training for the operator, boy, I really think that's got to be in there or I don't think it's important. And you'll see this basic format for the next couple of questions too. If we develop something on a, sounds like we're heading to a PC screen, that somebody could point and click and go through it fairly quickly. Does that seem like a reasonable way to try to collect that?
R: Yeah, nothing to change about it. Again, as long as the context here so they understand . . .
I: Ok.
R: What the tool is and I think really kind of what the benefits are. Otherwise you kind of get the feeling like you're shooting in the dark.
I: Ok.
R: I don't understand the context what the benefits of the tool are or how the tool might be applied. Does it matter to me if a circle a two or a four?
I: Ok. Sixteen is another yes/no question of would it help you determine if you had all of these things, would it help, you know, if they had acceptance testing procedures . . .
[talking at same time]
I: And you had all that up front, would it help you? It's a yes/no question. We looked at, I think 17 and 18 as well are yes/no questions.
[talking at same time]
I: Do you think this is important or do you think that, does your organization for 17 track capital market purchases, yes or no?
R: Yeah, umhmm.
I: And would an acquisition tool containing the items below help you with this effort? Yes or no. And then I'm asking, well, out of all of those that you think that any of these would help you with return on investment. Which one of these would be more important to include for that reason or not? Return on investment for payment terms? Shipping terms might be really important.
R: Yeah, I can understand that.
I: Training for Biomed. That's very important for cost.
R: Training an operator, you're not going to get any return on your investment.

I: And this would be a way for somebody to come and say well, from least to most and rate each one of these versus which ever for return on investment.
R: Yeah, I'd say I can see that you have a time guarantee.
I: And then, do you track end user satisfaction and again, we're using the same exact table to say well, how do these items that are on this tool for end user satisfaction. Which one of these do you think would be important? Do you think a warrantee period or lack thereof would anything to do with the end user being happy? Equipment failure procedures. If the company doesn't come back when you call them, do you think that would be important for end user satisfaction? So we're kind of going through each one of those and saying why I think this is important and they don't think that is important.
R: The uptime guarantee I think would be.
I: Yeah, ok. That got us through all of the questions I think. Do you have anything, any other feedback you'd like to give me before I turn the recorder off because I'm really proud of the fact that I always end on time.
R: Well, good.
[laughter]
I: So you have about 30 seconds left on my watch.
R: I think just the comments I made about keeping things in context and, you know, understanding what the purpose of the survey is I think is important.
I: Ok, all right. Well, I appreciate it very much, and I'll shut this off.
R: Cool.

Executive Interview H

I: I'm actually acknowledging that you have indeed signed an informed consent. Is that correct?
R: I have done so.
I: And in that informed consent, you agreed to allow me to record this session?
R: Yes.
I: Which we will be using a professional transcriptionist who will come and transcribe this in the proper format and that transcriptionist will remove use names of an organization or mine or your names. She will remove that and will also destroy all records upon completion of my dissertation.
R: Ok.
I: So we're going to talk a little bit. I took a couple of moments before I turned on the tape recorder to give you an example of the technology acquisition tool. I had some interview questions, which I shared with you in advance that we'll go through and ask you. You know, answer the questions and expand on them to what you think. The first set of these are going to be demographic in nature, and I'll get started now. How many years have you worked in your current position level, not necessarily just at this organization but at any organization in health care?
R: Probably, let's see, probably 17-18 years.
I: And your age, sir.
R: I'm 53.
I: And what is your gender?
R: Male.
[laughter]
I: Ok. And is your organization part of a multi-hospital system?
R: Yes, it is.
I: Could you describe the organization a little bit for me.
R: _____ _____ is a multi-state, multi-hospital organization that has 19 hospitals throughout western states of which six of those are in the city of Phoenix. _____ _____ is also a wholly owned entity called _____ _____ _____, which operates eight surgery centers at the moment and about to be nine. And I'm the CEO of _____ _____ _____.
I: Could you describe in that health care system the size of the hospital facilities in general? Are there some that are less than 100 beds? Are they predominantly 100-250 or are they 250 or more?
R: My current job doesn't have anything to do with hospitals. It's a surgery center. They range from doing 200 cases a month to about 1,000 cases a month. Your previous question of how long have I been in this level of a job. I was a hospital administrator before I did this, and my previous two jobs actually were regional CEO's where I had responsibility for 6-8 hospitals. The last time I was

actually a hospital CEO was about 10 years ago, and that was around a 200 bed hospital.
I: Ok. I'm going to read off a list of brief descriptions of, and I'd like you to choose number one through five. Which one actually describes you as an individual? Please tell me which one of the following statements best describes your usual reaction to a new innovation. I'll take a moment to describe that a new innovation can be something like a new CT or an MRI. It could be a new process like GE's Six Sigma process or work out process. It could be software, hardware or anything in between. I am usually the first CEO in my area to try a new innovation. I am usually one of the first few CEO's in my area to try a new innovation. I usually try a new innovation once I've seen other CEO's in my area use it successfully. I will only use a new innovation once I have seen other many other CEO's in my area use it successfully. Or last, I am usually one of the last CEO's in my area to use a new innovation.
R: Two.
I: Ok. In your organization, everyone is used to a current method of capital acquisition specifically. Do you think a technology acquisition tool would be an improvement from your current process?
R: As you gave me these questions, I really had to think about what _____ _____ uses as an acquisition process, and it might almost be a misnomer to call it a process. There's clearly one there, but it's probably more about capital allocation than it is about particular product choice. And I thought about that and why would we not be involved in a more formal process to actually choose this vendor or that vendor for something that we need. Backing up a little bit, there's probably three elements to our, if you want to call it a process and I'm not sure I would give it that formal of a term. Usually in my line of _____ _____ _____ _____, we will get some requisition from _____ for a new monitoring system, a new anesthesia system, make it something new for inside the OR, lights, tables, instruments. And that usually comes up from, especially the key items, the really big things, it's usually coming up from the physicians so they already have a vendor in mind a lot of times. In many cases of special equipment, there's only one vendor. So it's not a matter that you're either going to have it from that vendor or not. That comes up through the process and then usually we'll filter it over to materials management, and they will either have a contract with that vendor or not. And I would say 98% of the time they have a contract with that vendor that already determines the price. So there's not a whole lot of negotiation. If it's something that's going to require installation of a significant time, then it would be floated over to biomedical engineering, and they would kind of come through and make sure that you have the ability to install it from a power standpoint, from a structural standpoint. They may get an architect involved or not depending on the circumstance. And then finally, the contractor will come through, and that's sent to legal. Legal has X amount of terms that look for especially in warrantee, indemnification, those kinds of

things. So it kind of winds its way through that system and basically when I get involved is usually getting approval for the capital.
I: Umhmm.
R: All this other stuff has either gone on in some cases even well before the purchase such as the contract negotiation with the vendor. I'm really just about saying yes or no to the capital allocation.
I: Ok.
R: So going back to the question, would a technology acquisition tool improve the current system and I think I would say that the system actually works pretty well, but it's very segmented so everybody does their little component, and it all works well. Where I would miss is how's a tool going to bring all that together any better than it already is?
I: Umhmm.
R: If we've gone through that much work, then I'm not sure where a tool comes into that process. Did that make sense?
I: Uhhuh. In your organization, do you ever purchase anything on your own or have someone, several vendors come in and present something, some new surgical process or tool? And that's really kind of where the kind of question is well, if I'm involved in that myself, would it be helpful to have a tool that had basically all those processes that you just described but already have it in a format. Before the RFP ever goes out to hand to somebody and say, can you comply with all of these? Can you provide me with a 90 day out clause and any service agreements? Can you provide me with ongoing updates and would that be helpful to have that as a start versus already having physicians be interested and already have them kind of decide the company that they might want to do business with and really promote that? Would it be better to have a tool that would maybe remove one of those vendors and removes the sales piece out of it and actually put everybody on a more of a level playing field that, ok, all of these vendors that I'm talking to at this point are all going to provide me with the basics. Would that be a helpful tool or is that something that in a large organization is already basically done?
R: Well, I would say most of the big equipment purchases we make, which is really where the surgery centers are where most of our expenditures are made in new technology, and there's a recent example. The HD TV monitors are huge now in the surgery center business. Basically, three vendors that are out there claiming that they're kind of at the top. They're may be a smattering of others, but 2-3 vendors. As we went to the doctors and asked them, are you interested in this and to go back to your previous question, a couple hospitals or surgery centers have gone out and bought these things, and now the whole building surgeons go over there and use those things and say, look, you no longer measure up to what are those doing. So we had to make the decision as an organization. Our monitors are very good. They're fairly recent technology. Are we going to be in that first few or are we going kind of wait till the end and use our existing equipment and more of its useful life up and then go, we decided to kind of go

ahead so kind of reinforce any idea we'd rather be in the first few than wait till it's kind of swept the market. But when we got down there, there are only two vendors the doctors will consider. I won't name those vendors. I'll just call them Vendor 1 and Vendor 2. We brought each vendor in for demonstrations. As it kind of turns out, the decision, we're not going to be across the eight surgery centers. Each surgery center is going to have to make its own decision because these monitors interface with other equipment and if you don't have the right other equipment or depending on what other equipment it has, it tells you what vendor is going to be the best one. So it gets down to our surgery centers probably had a choice of one vendor even though there may be six other vendors out there.
I: Umhmm.
R: Ready to sell. Doctors kind of say, well, we're not going about Acme Corporation up there because we don't even know who they are, they're kind of new. And oh, by the way, you've got this other vendor's equipment that all has to plug in. Therefore, unless you're going to make significant adaptations to your existing equipment, you're more or less going to have to use these guys.
I: Ok.
R: And it's also maybe what neighboring facilities have used so the doctors are already used to that equipment, and they don't want you doing something different then they would have to get used to doing so. Would it be advantageous to be in front with that technology tool? Only to the extent I think that you might give the vendor some idea what they're going to have to negotiate with you when it comes around. Of course, they try and give you that standard contract, and _____ Legal has some specific criteria they must meet about termination clauses, warrantees, indemnifications, those things. The vendors are usually fairly negotiable on those things. So that kind of negotiation, which is probably fairly common in the way we do things. By the time we get the physician preference, links to other equipment, we're down to one or two vendors we can work with. I would say having a tool might be helpful to start the conversation, but it wouldn't be a great leap . . .
I: Ok.
R: In our existing process.
I: Moving on to the next question. Most people feel that there needs to be a balance between adapting an innovation to your work flow and adapting your work flow to the innovation. Keeping this in mind, how important do you think that compatibility of the innovation to your current system is?
R: Yeah, of course, going back to the original definition of innovations in a broad sense. That gets to be a fairly difficult question to answer. And these monitors, we had to make sure that we bought something that was compatible with our existing systems. Otherwise, it would no longer just be an expense of the monitors that we have to consider, but it's best perhaps either replacing existing equipment or adapting it. But going beyond . . .

I: Actually, what I'd like you to think about is having an innovation such as a tool like I just showed you, keeping that in mind, how would important would it be to have that tool be something that's very similar to the process that you already have. How important is to be compatible with it, and the thought processes that people already have?
R: Ok, yeah. Thanks for the clarification. For _____ _____, absolute critical that the tool be adapted to the existing system for the reasons I described to how our current system works. Right or wrong, good or bad, material management has its silo of activities as does legal has its own silo, and that's the way these departments work. If you were to try to bring a tool in and say, we want this tool, you would completely turn over the _____ bureaucracy, which means you'd get the probably implemented somewhere around 2015 by the time you got there. Plus I would think most people in the _____ system understand the existing system and are ok with it. The bugs have been worked through the complaints. The system is kind of adapted to the facilities' needs and if you suddenly throw a wrench in all that, using the tool that you have here setting up to find a vendor, you're kind of maybe treading on legal and on materials management before they would normally and naturally get involved in the process. In fact, materials management may have negotiated a lot of these things with the vendor on a similar kind of master agreement, and you'd have to make sure your tool was compatible with that master agreement because technically, the vendor has already negotiated with you. So yeah, it would have to fit our existing system.
I: For ease of use, how important is it to be easy to use?
R: Yeah. If I re-define easy a bit to include being quick, once a facility is kind of going through maybe true for _____ Hospitals or surgery centers, once the facility has kind of gone through the capital allocation process, which is often done in say a year or so before, during a budget cycle before you get into something, you've gone out and kind of given the expectations to your universe out there, your doctors, employees, whatever that you're going to go, you're going to buy this thing, then steam off for marketing reasons, it needs to go quickly and so the tool your question refers to easy and easy in this context means it needs to facilitate the process going faster, not slower. Otherwise, you've got problems with your constituency.
I: Ok.
R: Does that make sense?
I: It does. How important is that you're able to try out something like this new innovation or this new process or an acquisition tool before it's actually implemented?
R: Interesting question. For ____ ____, it might be actually the wrong question. The right question would be, how important would it be to run this by materials management, biomedical engineering, legal and the capital allocation process and get their buy in before you tried it. That would have to be the first step. At ____, you would have to pull some proofs together and say, here's the stipulations you may want to give to vendors going forward. There would be

three or four parties, the ones I just named, you'd want their say before you did that. Once they had their say, I think they'd be ok with you doing whatever.
I: So buy in possibly from those other groups and make sure that it fits with their needs.
R: Fits with their needs and with the standards they've already set. Perhaps a contract somewhere in legal terms.
I: Ok. How important would it be for CEO's to have an opportunity to see it actually demonstrated and in use?
R: I don't think really all that important. I think what the CEO would want to know is has legal bought in, has biomedical engineering bought in, has materials management bought in. Does this tool reflect their thinking about what we should be telling vendors and if it does, I think the CEO would implement as something coming from them, that we are doing this to help get some of these things done before they get down the road in the process.
I: What if you were a CEO of a smaller organization that didn't have possibly all of the networking and . . .
R: All the bureaucracy.
I: That as well or backup to have anybody to actually ask. Would that change? Would you as CEO want to know that other people have tried it or perceived how this process actually worked? Would that change your answer do you think?
R: Yeah, I think it would change it a great deal. I think I've always worked in a system so in some form or fashion, I've always had the components we've just described. They may work a little different. They may relate to each other a little bit differently, but almost all of those components have been there for me to use in whatever role I've had. But it seems to me one of the scary things that our free standing surgery center has to be deal with more or a free standing hospital that doesn't have these, how do they get that kind of expertise? How do they get purchasing expertise? How they run out and get a lawyer to help them with what a service contract should look that? Those folks just aren't down there hanging on trees. They're very, very expensive. So having a program that they can get into that kind of started with a tool, setting some expectations for a vendor and how that vendor should relate to the organization could be huge for someone like that.
I: Does your organize utilize a formal process for the capital equipment that cost more than $100,000?
R: Yes. For me, as a CEO in our organization where it starts is the actual allocation of capital itself. I have a budget obviously every year, and I'm actually allowed to sign off on PO's up to $250,000. If it's between $250,000 and $500,000, I have to go to my boss, and he has to sign. If it goes over $500,000 then I have to a committee called The Finance and Strategy Committee and get their buy off. That's a fairly long capital justification process, not so much the questions that an acquisition tool would ask but what's the return on investment, what's the strategic value of what you're doing. Those are the kinds

of questions that have to be answered before they'll agree to allocate the capital. Once you get that approval, then you can go into the acquisition process, but you're really not supposed to start it until then.
I: Ok. And does that process actually does it include an official request for proposal from the vendor's?
R: Not through the allocation process. The only thing it's funny because there's a catch 22 as part of the allocation process. You gotta come with prices you've gotta build a fairway significant or fairly accurate estimate of what it's gonna cost you to do what ever your requesting. Which means you've gotta go talk to the vendors or architects, engineer, what ever you're involved with. But that's a lot of times with our company because we do have contracts with all most all the various health care vendors out there. Usually you can just go to the contract and say alright give me the prices. Or if its construction or usually we have some pretty recent construction you can base some estimates off of and that's usually what we take into the allocation. Once the money is set then ok you can go and spend your million dollars, seven hundred and fifty thousand, ten million, what ever it is then the process of acquisition of formally starts. You start narrowing down your vendors and who you are actually going to purchase from so the acquisition tool really wouldn't be needed till after the allocation process has occurred.
I: Ok. Does your organization have a formal process for insuring that vendors adhere to all corporate policies?
R: Yes, and that is the legal reviews job. They have a set of criteria that their contacts must meet. Every contract with a vendor over ten thousand must to through legal.
I: Ok. Do you know or what items do you think would be important to include in that process? Do you know what they consider to be?
R: Yeah, they are specifically looking for term or out clauses, they have very specific criteria that you have to meet. Especially in service deals. A warranty is huge in their expectation there. HIPPA, all the HIPPA requirements especially if you're going to get something that is moving patient information back and forth. And then the whole product liability, indemnification is a big part of their review. They have very definitive things they require vendors. If vendors won't agree then we don't have a deal. As I was thinking about this question in my view of legal here in eight months, since I've been in this job those are the big ones that came up. Oh, any physician ownership issues, obviously, all the fraud and abuse. If we are buying a service from a doctor, or buying a product from a doctor, or doing a deal with a doctor of any kind and we do. In our service centers we do buy some of our technology from our physicians. They bring the technology with them, we pay them. So if there are any physician issues then can become a significant part of the review.
I: If an acquisition tool contained the items above would it actually help in vendor choice? Both in your organization currently but also think about, well, if you were a CEO of a small organization as well. So I think I would ask you to

answer the question of your current organization. But then maybe rap around it and think about well if I was in an independent organization and I had something that kind of covered some of those issues on the front end. Would that be helpful?
R: I think where it would be helpful in the context of the current organization is it might speed the process. I think probably the most aggravating part is the negotiating with the vendor. You pick a vendor, everyone gets excited, and looks like you're going to complete the deal. Contract comes through, the attorneys go whoa. First of all it takes them 2-3 weeks to review the contracts if it's not on rush order. So you're kind of slowed down. And if you end up in any kind of negotiation at all on these terms then that can even slow you down more. That has been probably the most aggravating part of the process of my current system as we have found negotiation occurs virtually toward the end of the legal terms. How many times have that squirreled a deal, my twenty months, maybe 2 or 3 times? Interestingly enough, here recently in the last month in each of those cases there was a good alternative it was not one of those cases were we only had a choice of one vendor. We just ended up a stalemate. All those were cases where we had either a choice to do the deal or not or another vendor. So ultimately, our process didn't cost us getting the deal done but some times it slowed down. Could be interesting for legal to actually put those terms on an acquisition tool such as you described and give it to the vendors. And say look this is about where we are going to be when we negotiate this contact. If you can't do these things or if these things are different then your general terms let's negotiate now. As we go through rather than waiting for the very end and finding that we got a hang up. We could speed things up. In terms of an independent organization I think it could be, just in the same context we talked about a few minutes ago. These independent organizations are probably more loathed to use attornys. First of all they probably don't have them in house or almost always don't have them in house. So they have to go out in essence find that service on the market which can be terribly expensive and may not be in tune to that organization. So it's just a part time attorneys work that he does every once and a while. So having something better defined by an organization, almost like a consulting organization, a good tool that's been developed by someone that has expertise in the area. Can probably same them legal cost and time. Our organization, our case, we have five in house attorneys. And a number of para legal's that review these contacts. So we have a pit of a different mode there.
I: Moving to another question. Does your organization track the effect of capital purchases to its bottom line?
R: Yeah, on the purchases over, and I am going to have to guess here, I think it's over 2 million dollars. It may be a little different than that. But there is a dollar limit or dollar threshold that the purchase crosses over that you have to do a two year loop back after you've owned that business or have started into that enterprise. Two years you have to go back were your assumptions good and

accurate or not and that actually has to be reported to senior management. In fact we just did that for the purchase of the surgery centers.
I: It sounds like that is an accounting audit process that is it an accounting department function or do you actually take care of that?
R: Yeah, in this case the one I was involved with we actually prepared it. Now we have our own accounting department so that was part of it. We also had to do the strategic end as well. So the purchase had to be justified both strategically as well as financially.
I: What items in an acquisition tool would help you to track return on investment. What kind of items would you want to make sure you had included in maybe the purchasing arrangement and deal that might help you.
R: I can't think of any particular except that you want to make sure that all of your costs have been recognized in doing the deal. A lot of times getting into the acquisition you focus on like in this silly example: maybe an easy one you buy an MRI and you go back and pay a billion dollars for that MRI and you kind of do a return of investment. However, you had to build a building you had to do a lot. Maybe you had to modify your building to put it in there. Maybe you had a choice between that and a seven hundred thousand MRI and there were some differences in capabilities. That would theoretically generate more volume. So with the acquisition tool could help is when you go 2 years later that you remember all the criteria about which you eventually made the decision. And there fore properly evaluate it because ultimately return of investment means how much did you invest. And that's not only the direct hours but the opportunity issues the case volumes you either did get or didn't because you chose to go one way or another. And in this recent thing I did we had to do all. It just wasn't the surgery centers that we had to consider we had to consider the impact on hospitals. So we had to go back to the original tool and all the assumptions they made cost volume movement and so on for all the _____ entities.
I: End user satisfaction do you track that for new purchases?
R: Formally track no. No we would not formally track on most just new purchased equipment. But informally yes. The surgery centers in particularly our partnerships with doctors. So the doctors have agreed to these purchases and they take money out of their pocket in essence to make these purchases. A little bit different then hospitals which don't have those partners. And if a particular purchase is not going well we usually hear it very clearly in our partnership meetings. But in this case it is not so much the aggravation maybe you might experience in your job because our doctors made the choice to start with. We decided to take money out of their pocket to make the purchase so it helps us not to take total blame if something goes wrong. We have a surgery center that took a chance with a new vendor on some cona scopes they'd use one vendor for years and years. Kind of an up start vendor who said look we have a better mouse trap we'll sell it to you cheaper. After a couple of months of demonstration all the doctors using them they agreed they were better pieces of

equipment. But they haven't held up very well under the stress. They have enjoyed the equipment when it works. So we have had one of those kind of down time problems. It a been interesting with your acquisition tool to have struck a deal with this company to say if your not up enough you have to take it back . What was negotiated in the deal though that the company must always immediately replace anything that goes down with an x amount of time. Because they realize we were a bit of a pilot site for them and an unproven product. So they've been amazing in replacing broken equipment immediately. And keeping us up and running so that really hasn't been a problem. That was negotiated as part of the deal since it was some what of a flyer with a new vendor and product.
I: Well your kind of describing kind of the follow up question I had there. What items do you think would be important to include in this process? You described kind of an up time guarantee and a parts replacement or replacement of equipment. Are there other items that you think that might help end user satisfaction? That could be included in a tool like this.
R: Yeah the whole service thing. On real critical equipment for us we always get very focused on service. And to some degree I don't think the tool could be standard in that regard. Because there's equipment that is critical in other words a case can't proceed without it. In which case we really want fast response time on service. Because potentially in that line of cases it can put us out of business until we get it replaced. Then there is equipment that has work a rounds which we feel less concerned about. So we wouldn't have a standard service option going out to a given vendor because obviously for higher levels of service their going to charge you more so we want to fit the need with the price we are going to pay. But I would say almost 90% of dissatisfaction with equipment for us after we purchase it is at the service level very rarely are we surprised that the equipment is not what we wanted because we rarely are buying equipment that the doctors haven't used elsewhere. Obviously vendors are always doing new improved tied to price but even then the core price is what we were used to it just know a new gadget on it or some new upgrade. Rarely, rarely, do we not get what we thought we were getting. The question is how often? How often is it workable? And so service is the biggest post purchase issue to deal with. Did I answer your question?
I: You did. Very well thank you. I wanted to turn attention to a couple of other items I brought with me. The first is the survey cover letter it self that would go out to the leaders of the organization. And have you take a quick peak if you could and just say if you think this cover letter explain to someone who hasn't talked with me doesn't know anything about this tool. Would it explain what the survey itself is about?
R: Hum yeah I think it does fine it gives you basically what you are trying to do. And who it's for and how it's going to be used.
I: Ok any additions or anything you can think of?
R: No.

I: Ok then I'd like to turn and spend a few minutes going through the questionnaire. Again looking at the questionnaire for the questions themselves not the format or anything like that because we'll be working on that later. But looking at the questions themselves the first five questions really are demographic allows me to kind of look at people and who might have answered a question in a certain way later. But question 6 are there any thing you might change about that question really trying to describe the individual and how quickly they adapt new innovations. Is there any thing looking at that question you would change?
R: No the only thing that I would debating whether it's 2 or 3 and probably answer I bounce back and forth depending on the technology and innovation if it presents a really competitive advantages then I bounce to a 2. If it looks like something that has long term process improvement then I might bounce somewhere around a 3. and let others implement it so. I think strategically I would bounce between those and really don't allow for that kind of answering the question.
I: Questions 7 is really a yes or no. Anything on that question that you might change make it more clear?
R: I think when I went through this the first time what I didn't have is a acquisition tool as a model because I didn't have that first piece it's almost hard to answer without having something a little more concrete in mind. In terms of what is meant by a tool we have a process and I was thinking what would the tool be doing to my process I don't know I don't have a model of it exactly what they are talking about so that was a little more difficult.
I: So a little better explanation in the cover letter about what a technology acquisition tool is what it might contain items that it might contain. Ok alright. Question 8.
R: You can see I misunderstood what the question was. So you were actually asking whether we would what's the balance between the acquisitions being adaptive to current work flow I thought it was any mid innovation. Not the acquisition tool itself.
I: You really could take that answer and it either way. It sounds like it might be better to further define that question to say given this tool described above how important is it. I probably asked a bigger scope question there. And then I used a 5 point Likert scale trying to get how important is it is not important is it really important is there any comments about Likert scales over these next questions. Maybe 8 through 11 do those seem adequate is that a good way to measure what do you think?
R: It might be in terms of collecting data the best you can do in that context it's probably alright but just as we have gone through kind of a narrative or discussion approach to it every time I tried to answer these questions I would really rather say this. But its true with any number scale perhaps these questions are a bit to open ended for this the more definitive question like how important is it that you have dinner every night that something that you can lock on to real

hard. How important do you think that a capital acquisition tool is easy at your facility that's kind of vague almost? Makes it harder to be specific cause I could go again most like we said before at one level I could say its not very important at all if I kind of like the current process we're using which may be good for half the acquisitions then maybe there's another half of the acquisitions for different reasons I'd like to have better tool and yet it will be real important for it to be easy to use. I could give you an answer along that whole range depending upon which acquisition I may be thinking about. Does that make sense?
I: It does very much so. If you see anything maybe looking at each individual question you might change looking down through.
R: I think for the rest of those the same comment.
I: ok, question 12 is a yes no 13 as well.
R: Twelve is a definite yes.
I: Fourteen is a yes no and then move on down into yes no's for each indicate the following items would be importance really kind of giving a list and you'll see this same list of items basically that's covered in the acquisition tool so trying to get feed back on what do you think each one of these are important or not important. And just a number scale so it's easy to input into a computer program.
R: Yeah it would be interesting to do a forced ranking on that.
I: So almost a five point? To say almost ….
R: Well you got 2, 3 , 4, 5, 6,7,8, 9,10,11,12,13,14,15 it would be interesting to make them force rank 1-15 most important to them.
I: Ok
R: But again you'll run into that problem of what exactly am I purchasing if I'm purchasing something with a huge computer component soft ware revisions will be important if it's a hardwired piece of technology then that becomes not so important. So it becomes what purchase do you have in mind when your answering this is how you going to do it. I felt the frustration with yes and no is that ideally they would all be yes. I would want the vendor to comply maybe the real question is how flexible am I going to be if a vendor is unwilling to comply. Perhaps shipping terms I'd be more flexible it's not usually a huge component. Payment terms would be flexible because we don't borrow from vendors we always pay that's not going to be important at all. But it might be important to a hospital struggling or center that's got to watch its cash flow. I don't know how you get to that type of facility and the actual technology your buying could change the answers to this fairly significantly.
I: Question 15 deals with the presence during the capital acquisition process and then we are kind of we re going through a Likert scale on this one. Kind of ranking each one and independent of each other.
R: Yeah nothing else to say.
I: 16, 17, 18, really kind of yes no.
R: Yeah no problem.
I: Level of importance for each one of these around the return of investment question. Just having folks kind a of rate well which one of these would be

important to answer for measuring that later. Anything you'd change on that one?
R: I don't think so it's a thought provoking question you usually don't think about those questions a return on investment like power requirements but so it kind of forced me to think so in that standpoint it was interesting but I still say the same comment to some degree the answers may change depending on what technology you are buying.
I : Well I think we have gone all through the different sections of I'd like to ask your opinion of couple of these things kinda of trying to gear this survey to something that could be completed in 30 minutes this is kind of my stated goal but I really think we have something probably do able in 15 minutes or less is that a good time range that you think what would be the time range that would if you got a survey in the mail or on the web what would increase the likelihood that you actually completing is it something that would be I guess speed vs. ….
R: Speed definitely I think one important thing just as we know each other that was obviously an important thing would I answer something that just came in the mail probably not. Unless I knew the individual or there was going to be some return back to me a lot of the times the same folks that do these things will give you the results back in 30-60 days 90 days that would be big.
I: So the option to have the data actually supplied back to you at the end of the survey The other question that's come along having a paper survey vs. something emailed to you. Is it more likely you'd fill out a paper survey, put it back in a self addressed pre-stamped envelope?
R: Much more email surveys if I agreed to do the survey email would be better
I: Ok and any concerns about it making through spam ware and fire walls if you have you had any surveys that come through? This survey would be on letter head or would come through Oregon State University.
R: Good question. I don't know enough about our security wall we could ask the IT person next door. I can't tell you any surveys that have failed to come to me but almost all our surveys have come through our own professional organizations.
I: So reliable organizations that normally are fire wall listed. Is it more likely for you to answer a survey coming from an organization such as Oregon State University so if it came from a university?
R: Yes much more likely if I haven't heard of the organization I m not going to do it.
I: Anything that I could do to make the survey more likely to make it to your desk or email and have you open it up?
R: I can't think of anything Steve.
I: Ok I think that's it do you have any other additional comments I've run out of questions.
R: Nope
I: I appreciate it very much. I will turn the tape recorder off.

Executive Interview I

I: So we are here today to talk about a technology acquisition tool for decision makers. And we are going to run down some questions. I would note that the informed consent has been signed and any names that we do come up as we do call each other names during the process here will be removed as part of the transcription piece. I have hired a professional transcriptionist that will take care of that for us. As we go down through I am going to ask some demographic questions and the purpose of the demographic questions are to allow me to do some multivariate research later on the data and this tool. We're going to ask some questions now and we're going to go back and look at a questionnaire in a few minutes that has some of the similar questions on it and at that time I will ask you if you think that those are actually valid questions to ask and are those good questions to say is there a difference and this survey by the way is going to be send out to all CEO's in the states of Oregon and Washington. And so one of the things that we could do with demographic data is to say is there a difference between Washington and Oregon and is there a difference between age groups. So first question I'd like to ask is how many years have you worked in your current position level.
R: Current position level?
I: So as a CEO of the organization….
R: Of this organization five years a thirty two years in total in senior management of a health care system or hospital five years in current role.
I: And how old are you sir?
R: I am fifty five and actually I'm going to editorialize, you said that I can talk, that is a very good question to ask with respect to technology acquisition in my opinion because younger CEO's think very differently than more seasoned CEO's like me and you. You know what I mean?
I: I like the word seasoned. And your gender?
R: I'm a male.
I: And is your organization part of a multi hospital system?
R: It is it's part of a multi health care system not just a hospital system as you know we have a health plan and a medical group a physicians division which makes us even more unique I think than just a hospital system
I: And you work in just one state?
R: We work in five states, Alaska, Washington, Montana, Oregon, and California.
I: In your hospital your part of a system would you say that the majority of your hospitals are 100 bed do you have hospitals in those categories.
R: We have hospitals in all of the states and we hospitals that range from about 650 beds the biggest one is in Spokane actually now and the smallest one is in Colville Washington. But the smallest one is about 8 or 10 beds. So we have a

whole variety of hospitals my guess is the average size of our hospitals is probably between two and three hundred beds. We got some real big ones and real small ones but a lot of medium size ones.
I: For the next question I am going to read you a couple of statements and then your going to respond with what you think is the best description of yourself as someone who your actual reaction to new innovation and this would be question number 6. I'm usually the first CEO in my area …
R: Could you give me a favor define "new innovation" for me.
I: Well new innovation would be it doesn't have to be a product it can be an idea absolutely. And in general if these first questions do want we want to talk more in general with this question. So it could be a new MRI
R: A new process for doing something.
I: Yeah, General Electric is coming out with a new Six Sigma product. Are you going to be the first CEO in the area to try to get on board with it or one of the first? Are you usually once I've seen other people kinda of use it. I will use a new innovation once I've seen many other people. And I'm one of the last cause I want to make sure every body in the whole area has used it and its' known as the state of the state and I'm ok I'll adopte that.
R: I'm going to be kinda of evasive here I think I've got two answers. The first is that within the _____ _____ _____ my current system I am probably a number one am usually the first or maybe one of the first to try it. But because we are a very conservative organization my guess is we try things as a system a little bit late that other systems. So I look at it in comparison to other systems in the northwest its probably I usually try new innovation once I've seen other CEO's. Does that make sense my answer? I think we're I think I and a few others are more forward thinking for our organization but probably about average for most organizations.
I: In typical organizations everyone is used to the current method of capital acquisitions. So now we are switching to actual equipment. Do you think a technology acquisition tool would be an improvement from the current system?
R: Well this is why before you turned on the microphone I was asking you the question in talking about when you talk about technology acquisition new technology or existing. I think we have a very sophisticated capital acquisition system and a technology acquisition system. If we want to buy an MRI which is not new technology but existing technology we look at need we look at volume we look at ROI we look at location because as I said earlier we have a lot of physicians division offices we have out patient facilities we have joint ventures. So we look at a whole host of things and we have a decision matrix essentially we have a capital acquisition request form a technology acquisition form yada yada yada.. So I think that's pretty sophisticated and I think we do a good job. The place that I don't think we do a really good job is new technology acquisition. Example: 64 slice CT. We don't necessarily analyse, investigate, call health tech, and get a lot of information. It's kinda of the doctors say I need 64 slice CT to look at your heart everybody's got it buy it. There's a lot of

technology like that in the OR that I think that's were new tech that's why I ask you what definition of new technology was. A new technology tool would come in really handy.
I: And do you think, this isn't really one of my questions I am going to just follow up with that a little bit. You know there is a wide range of hospitals within the organization. Within this system, do CEO's have the ability to go out and investigate and buy new technology for the organization within your system? So could the CEO at ….
R: Pick one.
I: Flagship hospital over here at _____ _____ medical center which will be removed from the name. Could the CEO there investigating a new piece of equipment maybe it's not MRI but maybe it's a lab equipment maybe its something that is new do they have the ability to go out and kind of sign for that.
R: Yes. They have the ability to sign for that they have the ability to go out and investigate and do the research and get the information in order to prepare their argument for the budget review process. So they have the ability to go to health tech and to have health tech say gee, every hospital over 500 beds needs a 64 slice CT because your going to save money on caths whatever I don't know I am making all this up. But you know what I mean. So yeah they do have that ability.
I: Ok, so back to the original question then a technology acquisition tool that puts everybody on the same page in meaning vendors if you have five vendors sitting in front of you because one of the things that can happen to anyone in that process is there are a lot of promises. So if it's a 64 slice CT brand names like Phillips, GE, or Siemens come in and make a lot of promises and the question might be asked verbally well "what the uptime guarantee on this equipment?" What kind of training are you going to provide? Would it be helpful to have an acquisition tool that kind of puts everyone on the same page?
R: Absolutely. Yes the other good thing you need with this. Somebody needs to create; this would be a good business for you and me to go into the buy.com of medical equipment. I just bought one of my children a big screen TV for their 5th anniversary big screen TV. I went to Best Buy, went to Sears I went to all these places. I got on the internet site called BestBuy.com was at 25% less no tax, no shipping. Somebody needs to do that with GE, Siemens, and Phillips. All these bums who ____ us with the price of their equipment.
I: Well the last couple of comments might be…..
R: You know what I mean. Somebody need to go say gee, we can get equipment for less how can these guys do it by dot com with Samsung. You know what I mean? So yeah I think a consistent tool that people know what their expectations are that are living up to their promises that we could then go back and say gee you said that you'd do X and Y.
I: Yes, and you haven't done it. Part of the problem and this tool was meant to be a compliment to the RFP it does not replace the RFP actually starts before the RFP process so it would be. Ok your going to come in and do a presentation to me for this gismo here's the rules your going to provide my bio med department

with training your going to give full support your going to give do all of these things and if you can't do it because there is experience in the industry that push come to shove and get down to the end of the game somebody withdraws and says I can't do I can't perform that way. Well you just wasted all your time with brand X because you could have thumbed them out in the beginning. If they would have said that to begin with that was the intent.
R: Yeah I think its great good idea.
I: So most people feel here needs to be a balance between adapting the innovation to your work flow and adapting your work flow to that innovation. This is number 8. So how important do you think the compatibility of an innovation be to your current system.
R: I think that the innovation shouldn't have to be compatible to the current system because that defeats the purpose of innovation. Most people feel that there needs to be a balance between adapting the innovation to your work flow and adapting the work flow to your innovation. I think you have to redesign both innovation and work flow together. For instance if whether it's product or process or change if it's innovative you shouldn't be encumbered by current process or your gonna encumber the innovation. I don't know if I make any sense but you should be able to design your process redesign process around the innovation rather than try to fit what ever innovation you have into the current process. There maybe opportunities to fit it in and if they can that's fine but you shouldn't encumber your creativity and your innovation because you have a current process. I don't know if I made sense or even answered that but.
I: Yeah, while you were answering it occurred to me. The answer to your question how do you define an innovation well a new technology acquisition tool could be an innovation.
R: Yeah no kidding
I: We're talking about changing a process it's an innovation it could be as simple as that. My study really kinda looks at a tool that helps with buying with purchasing so it's really kinda of looking at that purchase process. But an innovation is simply changing that purchasing process.
R: Yeah but if you have an innovative tool, you have a new tool that's innovative. Too often we say gee that doesn't fit in our current system so we are not going to adopt that innovation. Rather than saying we're going to adopt the innovation how can we change our operations and our system to comply with that adoption.
I: How important do you think that it is that a capital acquisition tool is easy to use? So this is to ease of use.
R: I think it's really important that it be easy. Because it seems to me that those people that are using it are mid managers. And they have enough to encumber them in their jobs. One of the things that I like to look at as an example we have core values as you know respect, compassion, five values , respect, compassion, so you have this? Respect, compassion, justice, excellence and stewardship another system that we recently joined with that has the value of simplicity I had

wished that we had adopted that because we try to make things to difficult here. So in that spirit I think that any tool that we do needs to be simple easy to use and again no encumber the process.
I: Ok, going on to question number 10. How important is it that you're able to try out a new acquisition tool or innovation before its actually implemented?
R: Well how important is that you be able to try a new acquisition tool I think you should try it. I think you should pilot it. You should know what it's gonna take how easy its gonna be how it's gonna work. I think its really important. I don't always think though that you can try out a new innovation that's the whole concept of innovation is you know you're trying the whole thing at some point. So I wouldn't necessarily lump acquisition tool into all new innovation. So I think a new innovation tool you should try. You should pilot you should maybe say we're gonna try it this year and see how it works hear what kind of feed back we get. But that's not necessarily the case for all innovation.
I: Ok, so how about a demonstration how important would it be for a CEO to have an opportunity to see a demonstration about something like a new acquisition tool would work?
R: I think it would be really important again its I'm not sure I'd say CEO's but senior leadership because there are some, it's just an editorial comment, some CEO's that really don't care and leave it to their chief operating officer or leave it to their operations officer. For instance our current CEO would want to see this if I were CEO based on how I manage I don't care I would leave it up to my chief operating officer so I'd say senior management . I think it's really important that some decision maker have the opportunity to see it.
I: Well were gonna look at the survey tool here in a minute. Make due note of possibility of changing this. You've alluded to this a little bit before but I'd like to talk a little bit more does your organization use a formal process for acquisition of capital equipment that cost more than a hundred thousand.
R: Yeah we're doing it and I think it's probably 2 parts know that the more I think about it. We have a capital equipment capital budget process for requesting the purchase of an overall piece of capital equipment. Like say you want to purchase a new R&F room right that goes on a list you have to justify it. Then once we say yes and we bless it then you as a manager there is a process to go out and get bids for it bids have to we have group purchasing agreements so they have to comply with group purchasing you know the companies we buy for sometimes are prescribed but we do have a formal process both approving and purchasing and acquiring the technology.
I: Ok, does that usually include an official RFP or request for proposal through the company
R: I'm certain it does you would have to tell me you've done it more than I at that level. But I'm sure it does. Or somebody has done it more.
I: Yes, it does. Does your organization have a formal process for insuring that all vendors adhere to all corporate policies?
R: We have a formal process for requesting that they adhere to our policy. I'm

not sure if we have a process to insure we don't?
I: I don't know either.
R: I think the insuring is a difficult problem, Stephen, I think that we have again we have a process to ask them to comply. For instance when we hire housekeeping when we go out in third party housekeeping organization to do our housekeeping we want to make sure that they provide benefits that they provide fair pay that they don't do family planning I don't know I'm making this up. That they comply with the ethical and religious directive those sort of things. But I don't know how you insure it so I don't know the answer to that.
I: Ok, well the next question down is so what items do you think would be important in keeping in mind this is a technology acquisition tool. So kind of putting your thinking cap on of items maybe it would help if I just kinda of threw some items out there.
R: That would be great.
I: Things like safety you know like requiring that they actually adhere to safety and regulatory requirements. For instance you can actually in the state of Oregon buy a piece of equipment it's not illegal to buy a piece of equipment that isn't UL tested.
R: Ok
I: But it is a requirement of this organization. So that would be an example. So safety kinda of things let me run off a few examples and then you can tell me how important you think those are or not. Future software or firmware revision for the equipment, technical support for ongoing maintenance, training for operators and service, installation. How do you go about bring that piece of equipment in how do you insure that you don't do damage to our site? Things that sometime go over into the bio medical part of the company but acceptance testing that who gets to accept this piece of equipment who gets to determine whether it's actually functioning as we think it should function, warranty items.
R: I think those are all good. But I guess my question then would be based on your question does your organization have formal process for insuring vendors that adhere to all of our corporate polices. I'm not sure those are all our corporate policies. I'm not sure there is a policy on soft ware maybe we do I don't know. What ever your soft ware recognition or software compatibility does your organizations have a formal process for insuring vendors I don't know what else you would say here. When I think of corporate policy is I think of policy like I don't want to buy and maybe this is way out of scope I don't know I don't want to buy I don't want my company buying, and this is off the record, I don't want my company buying XXX tennis shoes because XXX doesn't pay fair wages to it's employees in Indonesia. That's not necessarily it's a corporate policy because our policy is that we pay fair wages and provide fair benefits. I want to deal with companies that also provide fair wages and fair benefits. So that's what I would think this means. You kind of said something different I think you see the distinction so I don't know how to answer that. I think the items that you articulated are really good as far as assuring that the product is high quality safe

compatible durable I don't know all those attributes of a good product but I don't know how that related to my corporate policy.
I: I think in explanation and it's duly noted that this might be slightly unclear question. Part of the process today is to try to define those really looking at cause I think you were on track to the policies on an organization so you're looking at overall high level policies of how we interact with our environment almost. And this is really more geared towards legal ramifications is the thing safe to use basic kind of policies which your organization may or may not have and the question is well then you as a CEO buying a piece of equipment do you have a tool that makes sure that all companies that bring a piece of equipment or that you buy a piece of equipment actually adhere to those basic core policies that are safety related.
R: And I think those adherent criterions that you mentioned are good I'm not sure there policies that relate to our organization but I just think that they are good solid purchasing criteria.
I: If an acquisition tool contained the items that we kind of talked about and including the items of benevolence to the environment. Would it help you to determine if you had those listed and you put those down up front? If you got the answers up front do you think that would be a good tool to help your choice?
R: Absolutely that was part of the acquisition tool that would be wonderful yeah to know those sorts of things. Because obviously those are questions that somebody's gonna ask. And that's maybe back to the issue is the CEO the right person to be talking to because you may think of corporate policy as a manager very differently then I do as a senior manager. Maybe it's just terminology. I don't know.
I: Well I think there are CEO's and CEO's that different size organization that relates back to the question of what size facility that you have because one of things I'm going to be looking at is there a difference. Between how you would answer that questions and how somebody in a smaller organization which I'll be interviewing would answer that question. Does your organization track the affect of capital purchases to its bottom line?
R: Yeah, absolutely as you probably know we have a very vigilant CFO who makes sure that in the technology capital request process there's financial justification in the purchasing process there's financial justification after its purchased there's particular on big items there's what we call make good reports and other organizations you've been in I'm sure have make good reports as well. Hum so yea that's really critical that the purchases are tracked. The bottom line is tracked based on the purchases.
I: Can you think of any items that an acquisition tool should contain as something that you would start the process with that would help to track return on investment later five years later?
R: Say that one more time.
I: What items should an acquisition tool contain to help track return on investment.

R: Over some projected period of time obviously well the cost of the item is hum the life of the item if it is upgradeable are we going to have to like GE does buy a whole new platform just because it's 18 months out. I would like to know projected upgradeability of you know what the platform is
I: So that's the fork lift upgrade? GE does a fork lift upgrade.
R: I've never heard that.
I: It's called a fork lift upgrade.
R: I love it move it out bring a new one in I love it.
I: Different kind of upgrade path but it kind of brings to bear, you know, well what are you're as a vendor, what is you upgrade path and what kind of guarantees can I get from you about that upgrade path.
R: The other item is maintenance ya know we've got a year of maintenance what is the anticipated cost you know. You know if you work in radiology for a long time you would know how long a tube would last I don't even know if we use tubes any more. A tube would last right so you know to budget for on the new piece of equipment you're going to have to budget for a new tube every 18 months or something. So maintenance.
I: And you know some items one could think about too are ya know how long are you going to have your parts on supply so that if you have a piece of equipment and we continue to be stuck on x-ray equipment today but something in the OR that actually lasts. The lithotripsy piece of equipment that actually lasts a really long time. How long are you going to keep parts on file?
R: That's a great question. Yeah those are questions that I wouldn't think about asking but to look at ROI, those are great questions.
I: Just to finish that thought really quickly that in that might be part of the point of a new technology acquisition tool is to put those things that someone that a CEO that might be looking on the forefront on a smaller organization without a lot of back up. Might need something that but the things in front of them in that they don't normally think about. And do you track in user satisfaction for new purchases?
R: Hum, ya know I don't really know if we do or not. The way I track it is based on complaints it's kind of on a exception basis you know, if we buy a new, getting out of x-ray and going on to operating room, if we buy a new microscope for the neuro room. I don't as a CEO senior management necessarily track anything. I don't think… I mean maybe the OR manager sends out a questionnaire to all the neuro surgeons how do you like the microscope doc, I don't know.
I: Ok, if you were going to do that and track that for example physician group might be an important group to know if the gismos or the CPOE equipment that we just bought was that a good buy.
R: I think that's a great idea and we may do it I don't know
I: If you did what kind of items would you think would be important to include in that process.
R: In the question items in the questionnaire?

I: Kind of tying it back to the acquisition tool but not really.
R: Yea, I think you maybe want to ask them does it meet your expectations you know have them grade it exceeded meet I don't know. How the tool works. Did it meet your expectations? Is it something that you'll continue to use going into the future? Is it worthwhile? Is it easy to use? Does it make your work easier? Hum I don't know.
I: So we've answered the questions I'd like just a few minutes to just ask you a couple questions about the process we just went through itself because it occurred to me as we were doing that, that maybe I need to have a better explanation of what the technology acquisition tool is, what the purpose of the survey is, an explanation of the tool. Do you have any comments about how this process just went?
R: I thought it was really a good process actually but I was confused with what the technology acquisition tool was. I think a better explanation that would help I think defining the term innovation can be talked about maybe up front define some terms. I think maybe up front too an explanation or a disclaimer we know that you're the CEO of a hospitals in a bigger system bigger hospitals in a bigger system and we know you may not have the detail or be able to answer these questions as just like you said a smaller hospitals CEO would be because there some of these questions that it's like I don't know if we have these process I'm hoping somebody does but I don't know. But I thought they were really good questions.
I: That's the end of the questions. I wanted look at appendix F and we're going to look at each individual question. Basically the same questions I just asked but I would have you look at the verbiage of the question itself and give me your opinion. Is it a good question? Is there something off of these questions that you would actually change? So the first 2 or 3 are demographics. So question number 1 would there be anything that you would change from that?
R: No.
I: Question number 2?
R: No.
I: Three is also a gender male/female. Also your number 4 is a yes/no. Is your organization part of a hospital system? Keep in mind who the audience is going to be and is it a straight forward answer and would they be able to quickly answer it. And question 5 your hospital less than 100 beds 250 or greater than 250 is that a reasonable question and that people would understand what you're trying to ask. Is there anything you'd change?
R: No that seems good.
I: Question number 6. Please circle the number of the statement that best describes your usual reaction to an innovation. If you read through those statements that I read to you earlier, you'd be able to read through that understand what the question is and circle the appropriate responses?
R: Yeah, I think that is pretty straight forward.

I: Number 7. A yes/not question and a statement question. Is there some way that you might write that question might be different or easier to understand
R: Maybe a better explanation of what the tool is but your cover latter does do that.
I: Questions 8 through 11, in fact quite a few of the questions in the remaining section I adopted a Likert scale to ask for how important do you think the capability of innovation to your current system. What do you think about the structure of the question? Likert scale, does that seem like a reasonable way to measure somebody's response to a question?
R: Yeah I think this is fine.
I: So, if you're looking at 8, 9, 10 and 11, do they all look ok?
R: Yeah, I think they look ok. They all look good.
I: Moving on to number 12 just a yes/no straight forward 13 as well yes/no and then 14 yes/no with a follow up trying to rate each one as important for yes/no. There is a listing of different things that could be included in an acquisition tool so do you think these things are important or not and you said yes or no you can rate those down through is that good.
R: Yup, this is great.
I: So question 15, this one is the presence of acquisition tool, would it help yes or no. And then the follow up is, well then indicate which one of the items would be included. l I think this is important but these others are more important so we have expanded to the full Likert scale each one of the items.
I: 16, would it help you determine vendor choice? Yes or no and another yes/no question
R: Yeah, you've got good question.
I: 17 is another yes no question
R: Ok
I: 18 is another yes/no but then for return on. Do you think that's a good way to do that or do you have suggestions on number 18?
I: Ok number 19 which is the final question. Do you track end user satisfaction for new purchases? And then the follow up to that, well if you did or didn't which one of these do you think would be important part of measuring? Using the Likert scale, is that a good way to ask?
R: Yes.
I: I trying to design something into the fifteen minute time frame to have some body sit down complete. Do you have any suggestions how we would get this in front of somebody?
R: The faster the better. I do open my own mail but e-mail would be better.
I: What do you think of the cover letter? Does it have enough in it to tell somebody well this is what the research is about?
R: Yeah, I think it does a good job in terms of explaining what it is. I wouldn't change anything>
I: Well, that concludes the questions. I just want to say thank you for

participating I’m going to turn the mic off.
R: My pleasure.

Executive Interview J

I: We are here today to do some research for my dissertation and I just want to ask you real quick you have signed a informed consent. Is that correct?
R: That is correct.
I: And also wanted to ask you if it was ok that I record this session
R: That is fine
I: Keeping in mind that if you do inadvertently name names and put in company names and those kind of things, that will be pulled out by a professional transcriptionist will take care of that. This research does become part of a permanent record as part of my research and the purpose of that is to allow someone in the future to continue that research if they so desire. Question number one how many years have you worked at your current position level, not necessarily this organization but as a CFO?
R: I have worked as a CFO for nine years seven years in the current role where I am a regional CFO for a subset of _____ operations in Arizona that account for about 75 to 80% of our overall business.
I: And your age sir?
R: I am 47 years old.
I: And your gender?
R: I am a male.
I: And is your organization part of a multi hospital system?
R: Yes it is. We have over 20 facilities located in 7 states again, predominant bulk of business is located in the Phoenix, Arizona, market place with large urban hospitals but we are also represented in California, Colorado, Wyoming, Nebraska, Alaska, and Nevada.
I: So my next question really kind of deals with specific organizations but I assume that you have some hospitals that are 100 beds, 200 bed, 250 does that accurately describe.
R: Yes we have all of those we have I think as small as 10 beds we have a number of what are referred to as critical access facilities I think we have 6 of those that are under 25 beds predominately in rural market places so we have one of those in Arizona the rest are outside of Arizona. Most of our facilities are in the larger facilities are in the 2 to 300 bed range we have 2 that are over 600 beds and we have a couple that are a little over 100 beds that are startup facilities. The one is our specialty cardiovascular hospital.
I: Do you have facilities that are other than strictly hospital organization facilities do you have some ambulatory surgery or other kinds….
R: Yeah, we have a number of, non hospital operations or non acute care hospital operations. We have behavior health centers. We have surgery center joint ventures with physicians, we have 8 of those. We have a joint venture with a medical imagining company and we have a joint venture with _____ Labs. We

own physician practices and we also own _____ Alzheimer's Institute which is an Alzheimer's clinic. I think that pretty much covers it for now.
I: We're talking about a new acquisition tool and the purchasing process that organizations have, so when you are thinking of a new innovation and an new innovation could be something like a new 64 slice CT unit but it also could be something from General Electric like a Six Sigma process, so an innovation could take on a lot of different forms, doesn't have to be technology itself. Id like you to describe yourself. I'm going to read 5 statements off to you and if you would pick one of those statements. Which best describes your usual reaction to a new innovation- I'm usually the first CEO or CFO in my area to try an new innovation – I'm usually one of the first few in my area to try a new innovation - or number 3 I usually try a new innovation once I've seen other CFO's in my area try use it successfully – I will only use a new innovation once I've seen many other CFO's in my area use it successfully – Or I'm usually one of the last CFO's in my area to use a new innovation. Which one do you think best describes you?
R: I'm probably going to break the rules and I'll go back if you need me to. I would say as an organization or me personally we're somewhere between 2 and 3. On some technologies or innovations we are. I can be supportive of early adoption if there is clear studies and evidence that there is a positive differentiation. In other cases, we like to wait and see a little bit. I like to wait and see and we're not in the middle of the pack. We like to see things that have been successful in the market place. Some of it's a cost benefit perspective. Obviously if it's a higher investment required or major change in a process I like to see a little more evidence of that being successful in the market place though that's not always the case.
I: And specifically for the rest of the questions keep in mind these are for you as an individual don't worry so much about the company itself. Would you stick with between 2 or 3 for your self personally?
R: Yeah, I think that I think that I represent the where the organization is on things. I'm very much the same way on certain things that can become very apparent that there's a competitive advantage and it's worth the risk and so very supportive of early adoption or other things I'd like to see worked out a little bit. That's been a philosophy that's worked out pretty well for me personally over the years.
I: Moving down to question number 7. A general statement about the organization, every one is used to the current method of capital acquisition. Do you think a technology acquisition tool would be an improvement from the current system and technology acquisition tools are the forms that I have showed you to begin with? It kind of is an attempt to level the playing field if you will between different vendors.
R: Short answer is yes. I think the information that you put together in the process of the acquisition tool is something that could benefit our organization as an example. And I speculate it would be extremely beneficial to many other

organizations. What we have found or what I have found over the years is that our processes are a little more advanced than many other organizations and some of that is just because we're a system and we have the opportunity to leverage best practices of many learning's and having said that we have opportunity to learn and grow within and the tool that you but forth have some very good aspects to it that I think could benefit us as an organization.
I: Another general statement. Most people feel that there needs to be a balance between adapting innovation to your work flow and adapting your work flow to innovation. How important do you think compatibility of an innovation to your current system is?
R: I believe it is extremely important. It is important and you do need to be flexible and it's…. I don't want to sway to far off the path.
I: Oh, go ahead.
R: If I can use and analogy it's like a football coach that comes in and has a system it's equally important to adapt to the athletes to the system as it is to the system to the athletes. And I think as an organization we have, I am tying this into our own personal experiences we made pretty significant investments in technology, the standardization which served as kind of a platform for organizational changed to adopt workflows. On the other hand we had certain work flows that are core to what we do, cash collections etc., that it's very important that we have the technology adapt to that because we don't want to disrupt our revenue streams on certain things. But I do think compatibility of innovation is an important consideration and I think with what you have put together, the tool that it wouldn't be a major over haul it would be a fairly flexible process for an organization like ours to adapt to and adjust to.
I: And then number 9. How important do you think that a capital acquisition tool is easy to use? Is that vitally important or is it……
R: I think it's important. It doesn't, we look at things or I look at things and we have critically important, if you don't have it shut the business down. It doesn't fall into that category but it's very important in that it can help you make good business decisions and one of the challenges we have as an organization, especially because we are a large system with many pieces, is to develop tools that are standardized that people can utilize to help stream line the processes so that we don't have everybody out there doing their own thing and you loss some of the benefits when that is occurring. That can also be true in a smaller organization that might not have the expertise if you help provide a tool for them to follow a process to insure that their resources are protected or maximized from a efficiency stand point that is very valuable. So I see multiple benefits within what your thesis is on and I think a tool that's easy to use and adaptable across a multitude of facilities is very important but something that can be beneficial from a standardization perspective.
I: Question 10. How important is that you try out a new acquisition tool or a new innovation of any type before it's actually implemented into our organization?
R: Very important. I never, well I won't say never, move forward in anything

and certainly the organization I work with until we've seen pilots or test modules of things. Our preferred mode, incase you're interested, is to pilot things at a facility to see how it works before we spread it across on a larger basis. Back to one of your earlier questions, it has a little bit of a tie into this and it speaks for me as well. Organizationally we said we're not going to be first in line for a new innovation or technology but we're going to be early in the process. But what we're going to do better than anyone else is to be able to take that technology or innovation and replicate it across multiple operating units. And so that is a very important aspect of what we do we'll be able to try that out on a pilot basis understand how it works and how it might be applied to differing organizations within out organization because we're not just a hospital system or a physician system we are a multitude of assets as we talked about in the entry. Something that is extremely important to us.

I: That ties into question 11. How important would that be for a CEO to actually have an opportunity to see a demonstration? So in a case like this of a new innovation or technology tool, is that a extremely important to be able to see how it actually works and a demonstration of that?

R: Yeah, I think it's really is very important and it's not just for the CEO. It gets other operating units involved too to see if the tool or innovation might have applicability beyond just the area of focus that you have identified. One of the things that I have found over the years is that many processes have over lapping characteristics to them whether its purchasing or what have you and so to be able to take an innovation like this and share it with the CEO's and other key stake holders in the organization is something that would be very important. Not just understanding how it might apply to a particular facility or a particular function but is there any other applicability to either other functions within the organization or as I mentioned earlier other operating units. So it's a definite must we very seldom, I very seldom move forward with something without having the opportunity for myself and other key stake holders to participate in some kind of demonstration project to understand how the product or technology or innovation actually works in a real life setting.

I: Question number 12 does your organization utilize a formal process for the acquisition of capital equipment that cost more than hundred thousand dollars?

R: Yeah, we have a process for all of our acquisitions regardless of cost. And it changes as it becomes more expensive and what I mean by that is for equipment cost over 250 thousand we have to utilize formal business plans that lay out a variety of things. Including many times demonstration projects for items of lesser cost but would be between that 100, 250 we still have the normal acquisition process that we go through. And there is kind of a check list we go through it wasn't necessarily as detailed as some of the things that you had included in it but we have to make sure we are buying from reputable vendors that there are any law suit, that their in good standing with the governmental agencies and some things along that line just to protect ourselves. But yeah, we do have a process one of the things that we could probably benefit from is tightening down

on some of the expectations and metrics and that is some of the things I saw in the tool that you had outlined in terms of things are going to be delivered within regulatory requirements and some of those standards that you have applied to the Oregon experience.
I: So the answer was yes, we do have a formal process. Does that include a official request for proposal as part of the process?
R: Yes, though I am hesitating because I can't remember the dollar scope that we require formal RFP's. Over a certain dollar threshold and it escapes me at the moment what that is, we require formal RFP's. I will say typically for items under, I think a quarter of a million or certainly under a hundred thousand, we don't require that, though we have prescribed vendors that we work with. We do utilize a GPO, group purchasing organization in order to try to leverage purchasing power. So a lot of things for many of our equipment, we have preferred vendors along certain lines and if you go outside of that vendor your have to be able to document why that need is. But we . . . there's a little more flexibility for items that are lower in cost value we have some broader guidelines as to what we want to do and we do have to have obviously a contract with anybody that we have a relationship with and that's regardless of dollar amount. It's a little surprising for an organization of our size to make sure we have done some of the legal background checks and those types of things but not a formal RFP that's for typically larger commitments whether it's capital or not capital items.
I: Next question kind of talks about something you just hit on as well. Do you have a formal process for insuring that vendors adhere to all your corporate policies and if so what do you have some specific items that you might consider to be important in this process? So that's number 14.
R: I don't know about all of our corporate policies and as I mentioned I think the starting point is to insure that we are doing business with vendors that not are on any of the OIG or watch dog list as a not for profit organization. That's something we have to pay particular attention to in order to stay in good graces with CMS or the Medicare provider and we…. that's kind of a starting point for us. They have to, certainly if it's a technology they have to be compatible or intergraded with existing systems that we have. They have to be a legal entity that operates typically within the bounds of the United States. And the other thing that we try to insure that any organization we do business is in good business standing because we typically look at relationship from a long term perspective and we don't want to… we're cautious about jumping into relationships with vendors that might not be able to sustain themselves long term so financial stability and their ability to prove that is an important aspect to us. Certainly as a not for profit organization, adherence to our compliance programs compliance is certainly something that is very important for us and fortunately governmental regulation provides a lot of oversight and what we have to do and can't do. We do have a formal process for insuring that the vendors adhere to say the most significant corporate policies that we have. As with any process, its not

perfect but we try to build in the checks and balances make sure we're doing the due diligence and the homework and paper work that is necessary to protect the safe guard of the resources that we invest in largely because half of who we get paid from is the government and Medicare and Medicaid.
I: Number 15. Would the presence of technology acquisition tool do you think help decision makers during a capital acquisition process and if so what items would you think would be important to include? Subject matter for instance…go ahead…
R: I was going to say would the presence of a technology acquisition tool help decision makers, it certainly would. I think the more issues you can address during the evaluation process the better job you'll do of utilizing the limited resources that we have and I guess simply said make sure we're acquiring assets in the most efficient and effect way possible. The types of things we would want to include in the process, we have touched on some of them. Make sure that it meets all the health and safety standards. If its equipment, obviously an important aspect meets all the state and federal regulatory guidelines and certainly that is critically important because of the certification that's required and often the benchmark for the federal preview. To make sure it meets the standards for the tremendous investment we're making into technology. So much of the equipment that we buy today is integrated into the information systems that we have from clinical data bases to financial data bases and the ability for that equipment to be able to integrate so we can extract the information out of that is critically important. All the way down to warranty and how long warranty what things are going to be warranted what kinds of metrics or performance guarantees are within product procurement. Anti lemon laws, they did it for vehicles. We've run into a number of issues and we've learned over time where we have spent millions of dollars on a piece of equipment and within 12 to 18 months find out the equipment wasn't performing as expected and we have tried to build some language in that protects us. Safety is tremendously important since we are dealing in the health care business and the product we have deals with the human beings and any time your going to have human interaction with a process or piece of equipment you have to make sure it meets the safety guidelines in providing the level of service of what ever that piece of equipment happens to be doing. All of those things are critically important in the process. Other things like arbitration what happens if the equipment or service doesn't perform up to your expectations. What are the opportunities for arbitration? Who's going to intercede in those things to make sure you have a comfortable process to have third parties look at many disputes? And I think performance standards, I touched on that earlier but the more you can lay out what the product or service or equipment is supposed to be doing from metric perspective, and the ability to be able to measure that to some degree, whether its through health standards or other metrics can be very valuable and going back and evaluating the performance of your acquisition was compared to what your expectation was.
I: Well number 16 is kind of a follow up question that if you had an acquisition

tool that actually contained all of items you just listed would it actually help you or your organization to determine vendor choice do you think.
R: I think so. I'm somewhat hesitant. Would it help prioritize vendors or would it help exclude vendors? It certainly would help exclude vendors if it couldn't meet the critical criteria. I could see where it could help you prioritize vendors if you but a scoring system or you weighted the criteria at some fashion in terms of selection criteria that if you applied that to the tool it would be something that you could go through and score one against the other. Certainly there are some deal breakers that if they can't adhere to it would eliminate them as I was mentioning earlier. But I think the ability to apply some grid to that from a weighting and scoring mechanism could be a basis to help evaluate the vendors that you might want to go with. I hadn't thought of it from that perspective.
I: Does your organization currently track the affect of capital purchases to its bottom line? If so, could you just describe that process?
R: Yes. Again it's a scoped. I believe I mentioned earlier for capital acquisition over a quarter of a million dollars require business plans and business plans require proforma's proforma's require measurement of volume and financial metrics. And then those are, typically for those approved projects, are layered into a strategic financial plan that we have that takes five year proforma's. Each of our operating units and layers significant capital purchases in on top of kind of same store business, so at the end of the day we have five at least five year projections of what our organization performance is going to look like. How that drives our operating margins, how that drives our balance sheet metrics, and how that provides the cash flow necessary to reinvest in our selves from what I'll call a routine capital acquisition basis and secondarily how that allows us to go to the bond market and borrow funds for strategic capital acquisitions. To recap, we procure capital in two fundamental means. The cash flow that we generate we utilize 60 to 80% of our free cash flow to take care of our routine needs but we also build up our balance sheet so we can go to capital markets and issue bonds for larger strategic projects that are typically tens of millions of dollars if not hundred of millions of dollars. So the ability to understand the affect that a capital purchase will have on our bottom line is critically important to us. And then the other thing we do is we go back periodically and do make goods off of, here's what we said it was going to do here's what actually happened. What we did we learn from that? It's a good process for us at a more mackerel level. Again, we just do that for things that are over a quarter of a million.
I: OK, so you have an audit process, an official accounting process you go back. In looking at question 18, what items should an acquisition tool actually contain to help that process of return on investment and auditing?
R: I think from a pure financial stand point, a few things. Certainly the cost of what ever the acquisition would be. Certainly the direct cost, also the maintenance of that asset over time so an estimate of what that would be. I really think and acquisition tool would focus on the cost side of it. I think the business plan can focus on the overall ROI in terms of you say your going to buy a piece

of equipment. I don't think the acquisition tool would necessarily need to focus on the volumes that would be driven it would need to focus on the volumes that that particular piece of equipment is capable of providing. I think that would be a relevant aspect of it. But cost and maybe capacity would be the items that come first to mind to me. And then the business plan process needs to take those elements and combine them with market data and consumer volume utilization statistics and demand, and link the two up for the complete return of investment picture.
I: And then we are down to our last question. Do you track in user satisfaction for new purchases and then what items do you thing would be important to include in this process whether you do it or not.
R: You know we don't but that's an interesting…. we don't on a formal basis. We do on an informal basis. We work with the end users. We have committees made up of end users including physicians who we consider an integral part of the end user, whether directly or indirectly. We get feed back kind of informally on what's working, what products have we liked and why. We try to look at some quantitative data in there you know repair and maintenance history, down time, those types of things. Efficiency, how quickly a piece of equipment will process things. We try to measure that but we don't formally measure satisfaction where we send out surveys or something formal like that. That's an interesting concept. I think the important items to include are some of the things I just mentioned. What are the relevant aspects or variables that the equipment provided? Whether it's faster through time, better imaging capability, less training time requirements, or more integration into existing systems. Really quality and quantity are very important factors especially when I think of most of the larger equipment we use is of imagining nature and the ability to process quickly accurate results in a timely manner that are easily accessible are all critically important elements that are important in that. I think one other thing that is probably going outside the bounds but the more you can centralize information. I think your tool and some of the work you're doing, is focusing some of that, the better off you are in terms of, you got information you got a piece of equipment over here that provides certain type of information. Another piece of equipment over here, that capability to centralize it and have it all in one spot, it can be extremely valuable for not just clinical provider but organizations. Certainly the physician community is a very significant aspect.
I: Ok well that's the end of the questions. What I wanted to do now is we have another appendix which is appendix F and we're going to look at each individual question. Basically the same questions I just asked but I would have you look at the verbiage of the question itself and give me your opinion. Is it a good question? Is there something off of these questions that you would actually change? So the first 2 or 3 are demographics. So question number 1 would there be anything that you would change from that?
R: No.
I: Question number 2?

R: No.
I: Three is also a gender male/female. But if you would ask the question differently you certainly please speak up. Also your number 4 is kind of a yes/no. Is your organization part of a hospital system? Keep in mind who the audience is going to be and is it a straight forward answer and would they be able to quickly answer it. And question 5 your hospital less than 100 beds 250 or greater than 250 is that a reasonable question and that people would understand what you're trying to ask. Is there anything you'd change?
R: The thing I would just throw out. Is your hospital part of a multi hospital system? If the answer is yes then you might want to expand, what are the operating components. The very thing that I think you asked me, what are some of the other elements that help understand really the characteristics of the organization that you're trying to find a fit for. But hospitals do things differently than physician practices, physician practices do things differently than laboratories. So you've got a system full of those. It's important to find what are the lowest common denominator they all have in common and then what things would you have to possibility tweak a little bit. For instance, physicians typically don't buy the level or magnitude of equipment that the hospital would buy. So is there anything that we would tailor differently from a process stand point? I don't have an answer for that I just throw that out for something to think about.
I: That's exactly why we're here to do. Question number 6. Please circle the number of the statement that best describes your usual reaction to an innovation. If you read through those statements that I read to you earlier, you'd be able to read through that understand what the question is and circle the appropriate responses?
R: Yeah, I think that is pretty straight forward your trying to assess how aggressive are you with new innovation. Are you an early adopter or late adopter or something in between?
I: Number 7. Well I won't read the question but basically a yes/not question and a statement question. Is there some way that you might write that question might be different or easier to understand? Keep in mind that this is going out to a 3 state area basically to every CEO in that area.
R: Yeah. I just throw out a thought. If you have somebody, lets say a CEO that's from a small hospital, they might have a very simplistic method of capital acquisition. They know what they do today but they don't know the capabilities of what others are doing. How do you lead those that maybe haven't seen, you know? One of the great things that I have had the opportunity with the organization I work with, we are many things to many people in many different ways. We had an opportunity to look across and say lets identify some best practices. As I think about us, if I were only one of what we are, I would see it one way. I don't always know what the capabilities are. So when you think a technology acquisition tool would be an improvement, if they haven't seen anything better it might be hard for them to grasp on to. So anything that you can share what that brings to the table, it might be helpful.

I: Questions 8 through 11, in fact quite a few of the questions in the remaining section I adopted a Likert scale to ask for how important do you think the capability of innovation to your current system. So it's a least to most, circle the one that you think. It also helps in the numerical values to research. Plug the numbers into the software and get an answer of relationships. What do you think about the structure of the question? Likert scale, does that seem like a reasonable way to measure somebody's response to a question?
R: Yeah I think if would allow you over time to see what are the most relevant aspects that somebody might be looking for.
I: So, if you're looking at 8, 9, and 10 take them one at a time. Do they all look ok?
R: Yeah, I think they look ok. What I like about that is it would tell you over time what's more important. The work flow adaptation issue, is that more or less than is the tool more easy to use at your facility. And that helps gear you towards the tool, that its work flow adaptation for me is more important than how easy it is though is it an important aspect. You want to be able to roll it out. Yeah, 8, 9, and 10 they all look good.
I: I guess 11 was on that page as well.
R: Yeah, it might not be just for the CEO it would be CEO or other key stake holders. An example in our organization our CEO doesn't always see everything. He expects people that work in the subject matter area to have the expertise.
I: And we are moving on to number 12 just a yes/no straight forward 13 as well yes/no and then 14 yes/no with a follow up trying to rate each one as important for yes/no and what your going to see is starting to see the rest of the question and there is kind of a listing of different things that could be included in an acquisition tool so do you say do you think these things are important or not and you said yes or no you can rate those down through is that good.
R: Yup, this is great.
I: I don't know if I mentioned, don't pay to much attention to the format of this. It's the content that's important. I will have help from the survey design folks at OSU.
R: Yeah, I think that's good. The other thing that I might consider here is much like in 8, 9, 10, and 11. How important are these things you know. Someone might say gee all these things are important but a critical factor is safety revision or whatever, so that would be a consideration. I would find value in that. Like shipping terms are less important to me than the warranty period or the equipment safety and regulatory requirement. But are shipping terms important, well yeah but….
I: So question 15, if you flip over to that page then we kind of expand out. This one is the presence of acquisition tool, would it help yes or no. And then the follow up is, well then indicate which one of the items would be included. You actually get to choose. Well I think this is important but these others are more important so we have expanded to the full Likert scale each one of the items.
R: You might be able to combine them, it's just a thought.

I: Ok
R: So yeah that's exactly what I was talking about. That gives you the relevance of importance I think is a good thing.
I: 16, would it help you determine vendor choice? Yes or no and another yes/no question
R: Yeah, that's where if you could weight these, apply the weighting to the score; you could use that for a vendor choice perspective. Say we're going to pick out the top 2 scores see a demonstration project then at the end of the day it almost becomes a gut feel to some degree. Yeah, you've got good information for that.
I: 17 is another yes no question
R: Ok
I: 18 is another yes/no but then for return on investment what it's really asking someone who's answering the question. They go down through each one of these items and say well I think based on measuring return on investment later, was this important to return on investment. And so people would rate this least to most important for each one of the items. Do you think that's a good way to do that or do you have suggestions on number 18?
R: Well when I think of return investment, I think what did it cost me and what is it going to cost me so I look at some of these things I guess these are ….
I: Some of these are going to be more important or less important then that's up to the individual answering the survey question
R: But one of the things I would add on here is what the cost of the product is. Is that in here? Is that the payment terms? I took that as being the term you know how you can pay what is the project cost me I'm looking at company x vs. company y both have the same these are all relevant factors but a relevant factor is one is going to cost me million dollars the other is a million 3 what do I get for that so I think that would be an important one.
I: Ok number 19 which is the final question.
R: I want to go back to 18. The other thing I things are, I'll call it processing time frames. You know, if it's a piece of imaging equipment, can you do more tests? Is there easier set up? Yeah, I guess you have set up in here. A lot of the equipment we look at, you can choose to process 6 patients an hour or you can process this many tests per hour and the turn around time with this many slices.
I: Right and this tool isn't really designed, I don't want to lead you and your answers. This is supposed to be open ended, but to answer the question this is in addition possibly to the request for proposal which would have some of this is kind of information if you will. But I will put those down. I think I'll stop there. The idea at this point is not to guide you at all but to have you freeform kind of on your question. Excuse my interruption.
R: No sometime I need that (laughter).
I: Do you track end user satisfaction for new purchases? And then the follow up to that, well if you did or didn't either way which one of these do you think would be important part of measuring? You know, if you had training for the

operator do you think that would be important for the end user? Would it improve it? Is this a good valid question the way it's asked? Using the Likert scale, is that a good way to ask?
R: Yes. The end user is going to care about many of the things. Down time, warranty, training requirements, those are all relevant in the front end. The more you can link those two it's a better process.
I: We have a couple minutes left. I promise to end on time. The attempt is to try and put something together that will go out into a survey. You always have a problem with getting to the person that you're trying to get to. To get that in front of them and actually have it in a format that would interest them enough to fill out. So a couple of questions. We're gearing something into the fifteen to thirty minutes time frame, probably more like fifteen minutes, to have some body sit down and either circle on a piece of paper or on a computer based. Do you have any suggestions how we would get this in front of somebody? Do you answer your own? Do you open your own mail for instance or do you open your own email?
R: A little of both. A couple of thoughts, if you sent me this, the shorter the better. This isn't bad, 20 questions. I've had people send me things that are 6, 7 pages. I've got to really know what somebody is doing and benefit me if I'm going to stop and take the time to do that. Many times things come to me that really aren't. I'll use this as an example. I think that part of your target audience, if they have them, is not necessarily the CEO. It's the purchasing people or the CFO. In small organizations it's probably the CFO because he or she is going to be intimately involved in all the aspects of acquisition. An organization like ours, we have a vice president of purchasing, that's what he does. This would be of interest to him. So make sure you get it to the right person and that requires a little diligence on who does what. I think your cover letter is a good start to make sure it really hits home to what is your trying to accomplish and what the benefit is for them.
I: Do you think that cover letter; it's a one page cover letter. It has to do a lot of things include explaining coverage of the IRB, those kind of things. But does it have enough in it to tell somebody well this is what the research is about?
R: Yeah, I mean that it spells it out what it is.
I: Might try to get it in the first paragraph, first line?
R: And express what's in it for them. Here is what we're trying to do. Here is the benefit. You have it well defined. It could help you, I think that's here. Nicely laid out in terms of explaining what it is.
I: When your getting a survey would it be better for that survey to come in written form or electronic?
R: I like electronic. Especially if I can go in and just check stuff, then I can just send it on. Paper, I am really hard pressed. Look at and my office. It's clean right now, so a lot of times I might not even see it.
I: So talking about email. Is it important, the format of the email itself? The subject line or from Oregon State University, if you saw something there like

research proposal Oregon State, would that help? How would I format that to get you to actually open the email?
R: Yeah that usually helps for me. If I know who it's from. If I look at it and have no clue, I usually exit. Now if the university sent me something, any university, I probably would open it. Why did the university send me something? Then if I see its part of research, for me that is usually meaningful. Ok, somebody is trying to do something here in a thoughtful and scientific way. I'm usually willing to spend some time to do that. If it's a vendor, that's the stuff I want to filter out. I don't want vendors getting through to me and dogging me down.
I: And even research these days has taken on a negative. Just putting research on it, I wonder if having a actual organization behind that saying from Oregon State University, would that help?
R: I think that can be very beneficial. I think most people, I'm just giving you my reaction but I think most people would think the same way. They see something from a university and they are usually curious. Why did the university send me something?
I: Any other suggestions? Sounds like you are pretty web based.
R: I am. That's what works for me. It's easier. It's convenient. I don't have to go out and ask somebody, can you make a copy of it and send it off. It's there, send one to your file, I have one in my file, done. I can do something like this in probably 10 to 15 minutes.
I: Well I'm out of time and I appreciate your time and effort. I'll let you know how it turns out.
R: Ok and good luck.