U.S. FEDERAL GOVERNMENT CIOs: INFORMATION TECHNOLOGY'S NEW MANAGERS - PRELIMINARY FINDINGS

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The Clinger-Cohen Information Technology Management Reform Act of 1996 (Clinger-Cohen Act) has changed the dynamics of how federal agencies view and manage their information technology. The mandated provision for Chief Information Officers (CIOs) is to act as information change agents and technology "watchdogs" for their agency. To observe how government is reacting to employing CIOs, field studies were conducted by e-mail with eight agencies to discover the successes and the challenges of this new information initiative. Four of the agencies contacted were mandated by the Clinger-Cohen Act and four were non-mandated. The results of this study depict varying levels of agency compliance and commitment to the Clinger-Cohen Act in regards to the operative nature of the position.

INTRODUCTION

Federal agencies are being forced to reevaluate their information resource management habits. Years of wasted funds, failed projects, and a lack of competency in information technology (IT) has led the General Accounting Office (GAO), the Office of Management and Budget (OMB), the President, and members of Congress, to force change in government's information policies by the financial monitoring of agencies' expenditures. Through the passage of the Clinger-Cohen Information Technology Reform Act of 1996, commonly known as the Clinger-Cohen Act, and as required by Executive Order 13011[1], the U. S. Government is starting to examine how the private business sector and innovative state governments effectively manage their information technology resources that have proven beneficial to the customer. Along with the subsequent reduced costs and efficiency, "best practices" of private business and state governments have also provided added value of quality, quantity, and timeliness to customer services [2].

In general, citizens are becoming more educated consumers of information and are comparing inefficient government information practices with the efficiency of the more business-like attitudes of the private sector [3]. The government frequently has no competitors, but citizens expect it to at least keep pace. Elements of efficiency that customers can measure are the time they spend: standing in line or, being placed on hold at the end of a phone connection attempting to access information [4].

In order for agencies to provide effective public service, Chief Information Officers (CIOs) must market themselves through the ultimate result of "customer fulfillment" to improve the CIOs' poor image. It is known that the general public is not

cognizant of what information providers do. Many information providers, such as librarians, are perceived as clerks [5]. The combination of rapidly proliferating information and information technology advances is beyond the abilities of the average citizen to keep pace [6]. Educating lawmakers in information technology (many do not have experience or knowledge of the potential advantages for government) can be a daunting task and Congress controls the funding. An active dialog between Congress and CIOs is essential to the goal of wisely planned information technology projects and serving the public's information needs.

HISTORY / BACKGROUND

A 1994 GAO study found and subsequently disclosed that more than $200 billion was spent on IT since 1982 [7]. (IT is used here to mean the management of information systems, not the management of information itself). Inefficient IT systems and the difficulty of accessing information led to a number of failed IT projects. Some of these failures resulted in millions of unauthorized student loans, over $1 billion in mistaken Medicare payments, and the unfortunate release of sensitive data on federal law enforcement informants. In a specific instance, the GAO noted that $700 million had been spent on computers and equipment to upgrade a deficiency in the Veteran's Administration's claim department. Originally, a compensation claim took an average of 151 days to process; after the system was installed, the waiting time increased to 228 days. The agency apparently did not consider whether an automated system would improve the claims process, as there was no goal setting for what the automation could accomplish [8]. Overall, the GAO concluded that the federal sector has failed to plan

adequately for the purchase of information systems. In addition to not establishing a need, agencies take far too long to receive and implement systems. Furthermore, once implemented, the systems are ineffectually managed.

Senator William Cohen (R-Maine), armed with knowledge from his Government Affairs Committee on failure after failure of information technology systems, costing millions of wasted tax dollars and nonproductive time in implementing systems, originally introduced a bill on June 19, 1995 to reform governmental IT practices [9]. After eight months of hearings and amendments, President Clinton, on February 10, 1996, signed the Clinger-Cohen Act, (P. L. 104-106) [10]. With the passage of the Clinger-Cohen Act, agencies now have the authority and responsibility to make measurable reforms in performance and service delivery to the public through the strategic use of IT. President Clinton's Executive Order (E.O.) 13011 complemented the Clinger-Cohen Act and served as a guide to mandate IT reform.

Some of the major criticisms and concerns surrounding the effectiveness of the Clinger-Cohen Act revolve around government's inefficient IT track record in a complex policy environment. Not only is the federal government a behemoth to try to change and control, but its unwieldy nature makes it difficult to implement a new direction towards reducing costs and raising performance.

The federal sector, under the scrutiny of the press and the public, has been criticized as implementing inefficient information retrieval systems and electronic customer services that only serve those who have access to online technology [11]. Inexcusable lag times in processing claims or providing information has not put the

customer first. The lack of efficiency in information systems and untrained staff to utilize the new technology has hampered the flow of data. The Federal workforce must have adequate knowledge and skills to become technically literate [12]. As agencies are increasingly pressured to use an electronic medium, such as the Internet, to disseminate government information, there is a disparity in the large percentage of the population that does not have access or skills to utilize the World Wide Web (WWW) [13].

The Clinger-Cohen Act addresses the issue of customer service by requiring CIOs and agency directors to have information systems knowledge, to focus on customer service and to manage IT programs on a modular basis (short term) instead of a multiple year plan. The Clinger-Cohen Act is based on the belief that it is better to track success or failure of IT's efficiency in order to ensure the best practices of providing information to the public. Through "lessons learned" and subsequently shared among CIO Council members, it is anticipated there will be agency-wide efforts to engineer effective systems on behalf of the consumer [14]. Since government must serve citizens equally, the government needs to support community computing centers in urban and rural areas that offer computer use, skills, and online government resources to the public who do not have their own means of access. There are currently hundreds of public access community networks supported by federal and local monies. Funding models are becoming more diverse, including government-operated sites (often in libraries), sites operated by public broadcasting stations and sites operated by non-profits and

commercial Internet service providers (ISPs) that operate on a local level [15]. This free access movement, on some level, may lead away from the precipice of an information society of haves and have-nots [16].

The GAO, OMB, and the public believe many federal agencies have engaged in poor planning, decision making, management, and execution of systems intended to "add value" to agency services. The GAO and OMB have documented waste resulting from rushing into new technologies without establishing a need for a specific IT application or considering a reengineering plan of existing IT [17]. All too often, information schemes were purchased without a prepared business case of cost benefit and analysis as long as it looked good on paper [18]. Christopher Hoenig, director of Information Management and Technology Issues at GAO, gives the government an overall rating of C-minus to a D-plus for managing its IT funds [19]. Technical expertise acquired through the process of education and training is required to successfully utilize agency capital for IT projects.

Executive Order 13011 requires an agency CIO to expand, encourage, and partake in continuing education [20]. To accomplish this, CIOs must understand their organization, its mission, and the available technology that is a best "fit." CIOs are encouraged and supported to implement "best practices" in investment management by a subcommittee of the CIO Council, the Education and Training Committee, which actively promotes training programs. To achieve this goal, the Council identified and adopted future IT workforce planning as laid out in the Clinger-Cohen Act. A committed CIO has the potential to take advantage of the educational opportunities offered to expand his or her knowledge and expertise that is positively related to increased

organizational effectiveness.

Another apprehension in the migration towards the new IT paradigm, is the existing tension between Congress and federal agencies. Congress is increasingly skeptical and consequently tightening purse strings due to the common perception of IT capital abuse, low performance results, and unfamiliarity with requisite technology. Complications, such as a lack of continuity in election year turnover in the legislature, administration, and in congressional committee structures requires patience and knowledge to reeducate newcomers and integrate the new IT philosophies that accompany them [21]. The Clinger-Cohen Act oversight objectives will supersede traditional processes as Congress will expect the GAO and the President will expect the OMB to serve as a "watchdog" over the agencies' IT practices. It is Hoenig's job to insure that the $26 billion annually spent on government IT is spent wisely. The OMB is charged with overseeing the implementation of the Clinger-Cohen Act [22].

Agency support from the OMB and the GAO is promising, although historically, agencies fear outside scrutiny. Hoenig is working hard to bridge the gap among federal agencies, the administration, and Congress through continuing education and supportive councils to garner additional support for CIOs. Hoenig, embracing the GAO's best practices report, organized a 20 member Executive Council Information Management and Technology (ECIMT) to serve as an independent and impartial IT advisory board [23]. The ECIMT, consisting of state and federal CIOs, academic experts, consultants, and corporate directors, will offer expert advice to Congress and federal administrators on how best to prioritize 1998 IT budgets and strategies. ECIMT initially met with several

congressional members in November 1997 to focus on key issues, including IT management practices. The ECIMT will reconvene each fall to assess progress and tackle new IT challenges. According to Hoenig, the federal sector "needs independent, quality advice on how to bring government into the information age" [24]. ECIMT has the potential to support agencies' information systems needs by establishing an ongoing dialog with Congress and to educate and promote "best practices" and "lessons learned." In addressing the lack of continuity in election years, the continuing role of ECIMT is to build good interagency relations, mutual respect, and be committed to a common goal of sound IT practices [25].

Ensuring that a CIO has a power base as a major participant in agency management is a concern of those who recognize the shortcomings of practices prior to the Clinger-Cohen Act. Previously, the majority of agencies and departments had an Information Resource Management (IRM) official as their top information person. They were essentially "techies" who held the philosophy of "IT for IT's sake" [26]. Embarking on expensive undertakings of doubtful value to the organization's mission, money would be continually invested to avoid criticism. Unfortunately, they were far removed from the agency's strategic decision making and the program offices that they were to serve. There was little or no access to senior agency officials [27]. The IRM "techies" basically operated on their own with little contact or support in making multi-million dollar decisions. Part of IT's checkered past was the oversight responsibility that the General Services Administration (GSA) exercised. IT requirements had grown into a bureaucratic nightmare that led to delayed schedules, obsolete applications, and old

technology in government agencies. Consequently, agencies worked hard to circumvent GSA regulations and oversight. This contributed to quick and poorly planned projects that often failed [28].

As a solution, the Clinger-Cohen Act states that federal CIOs will report to and work directly with agency directors, thus empowering them to be responsible for the IT capital expenditures being carefully planned, executed, and evaluated. Unlike the prior IRM view, the CIO does not have a direct stake in the project and can provide a more objective oversight of agency IT plans. The CIO, as contrasted with the isolated IRM official, is raised to a highly visible executive level and is expected to ask the hard questions: "What is the plan? Why is it needed? Can it be outsourced? Has the process been looked at and reengineered? How can we judge success? How does it complement the agency's basic mission?" [29]. The CIO will also be responsible for buying IT systems following a prepared business plan, proven "best practices."

The documented waste, failure of IT systems, and the resultant Clinger-Cohen Act inspired an interest in how E. O. 13011 mandated agencies and non-mandated agencies were reacting to the 1996 Clinger-Cohen Act. In the CIO field studies that were conducted in the fall of 1997, various levels of agency responses were received. Four CIOs were willing and able to communicate information about their CIO position, the agency's mission, and reaction to the Clinger-Cohen Act. The other four agencies provided a minimum of data.

FIELD STUDIES

METHODOLOGY

In September 1997, the author made informal contacts by e-mail with eight federal agencies to determine if E. O. 13011-mandated agencies were complying with the Clinger-Cohen Act and if non-mandated agencies were following "best practices" by instituting a CIO. E-mail was used in this field study to contact the agencies, as it is a useful medium to communicate at a distance. The eight agencies were selected by the quota sampling method on the basis of examining the *United States Government Manual* over a period of six years, choosing an equal combination of agencies that had / had not migrated from an IRM official to a CIO [30].

Four of those contacted were major independent agencies and required by the Clinger-Cohen Act (out of 28) to implement a CIO as an IT management advisor to the agency head. The National Aeronautics and Space Administration (NASA), the Nuclear Regulatory Commission (NRC), the National Science Foundation (NSF), and the Office of Personnel Management (OPM) were all approached regarding their reactions to the Clinger-Cohen Act. The other four contacted, also by email, were independent agencies and not mandated to hire a CIO to manage agency IT. The agencies included in the study were, the United States Information Agency (USIA), the United States Post Office (USPS), the Railroad Retirement Board (RRB), and the National Endowment for the Humanities (NEH).

The first e-mails were sent to the individuals who were listed in the *United States Government Manual* as the current, head "information officials." There were various

titles other than CIO, such as, “Vice President, Information Systems,” “Associate Director for Information,” “Director, Information Management,” and others. Four mandated and four non-mandated agencies were chosen by the quota sampling method to be included in the study. The sampling was determined on the basis of whether the agency had yet migrated to a CIO initiative (according to the *United States Government Manual (USGM)*) or had not migrated, (again, according to *USGM)*, to a CIO position. Two agencies from the mandated and two from the non-mandated agencies were chosen on the basis of having a CIO position (four total). The other four agencies were chosen because they had an "information official" that was not labeled as a CIO. It was noted that *USGM* contained outdated information when "information officials" responded with an incongruent position title. The basic question posed to the “information official” listed in *USGM* was, “Did the agency’s ‘information official’s’ title migrate to a CIO position in response to the Clinger-Cohen Act? If not, why has it not migrated from an IRM position to the title of CIO?” The initial, eight inquiries all asked for basically the same information, but were individually tailored to the title of the “information official’s” position and the type of agency (mandated or non-mandated). The author stated to the surveyed individuals that the information requested was for a research project.

The second round of questions were distributed in November, approximately two months after the initial exploration of agency IRM migration to the updated position of a CIO. Further questions were designed to reveal an understanding of how each agency CIO / IRM official perceived and reacted to the new IT mandate, whether the agency had created a formal mission statement, and perceived that potential financial benefits had

accrued from the new IT paradigm. The four agency CIOs from NASA, NRC, USIA, and USPS were willing and able to answer the following queries when asked:

- What is your job description as a CIO in your agency?
- How long have you been with the agency?
- Is the implementation of the Clinger-Cohen Act working well in your agency?
- How are the members of your agency feeling about the change in IT tactics?
- Have employees left the agency in the last year because of changes incurred under the Clinger-Cohen Act?
- Do you have your own mission statement?
- Have you realized any savings in the last year from the mandated practice of IT oversight?

RESULTS

Of the four mandated agencies surveyed, officials from the four mandated agencies responded with varying amounts of information. One agency never replied. Among the executive agencies (NASA, NSF, NRC, and OPM), only the CIOs at NASA and NRC responded and even expanded with detailed information on all questions. The CIO at OPM never e-mailed a response [31] and a staff member (he or she never personalized the message) at NSF replied for the CIO [32]. A second e-mail to NSF CIO Massaro requesting further information in November 1997, communication failed to yield any further response [33]. (See Table 1)

INSERT TABLE 1 HERE

NASA

The Director of NASA IRM, Ali S. Montasser, replied to the questions about his position and the effect of the Clinger-Cohen Act. He reported that the Clinger-Cohen Act was the motivation that created five NASA CIO positions. NASA acted to create the CIO positions in early 1995, well before the passage of the Clinger-Cohen Act. Each of the four lines of business (Earth Sciences, Space Sciences, Aeronautics, and Space Flight) at NASA has a CIO and there is an overall NASA CIO officer. The NASA CIO position was carved out of the Director of NASA's IRM position.

Montasser assumed the Earth Sciences CIO position in February 1995. He then assumed the position of Director, NASA IRM in February 1997, after his predecessor had retired. Montasser and the NASA CIO share the responsibilities instituted by the Clinger-Cohen Act. IT is not new to Montasser. He has been a computer scientist and was with the World Bank for 12 years as their Principal Information Officer. He then joined NASA (December 1994) in the Earth Sciences Enterprise as the Headquarters Program Manager of the Earth Observing System Data Information System (EOSDIS) and CIO before becoming NASA's Director of IRM [34].

NRC

NRC's CIO, Anthony Galante, also responded by citing the Clinger-Cohen Act as the guiding force for the agency's migration towards a CIO. In February 1997, Galante (as was Montasser) was placed at the senior management level of the organization, reporting directly to the Chair of the Commission. The new CIO office includes the

previous IRM organization and information-related functions from other sectors. While still working out details of the new arrangement, NRC has transferred the existing IRM organization, intact, to the CIO. Upon completion of the reorganization of the Office of CIO, the Director's position of IRM will be eliminated [35].

NSF

An NSF staff member reported that the agency's Office of IRM is not the traditional type of IRM office found in other federal agencies. The title was selected because the office is responsible for the management of information and various other agency resources including personnel, facilities and the information infrastructure. NSF established its current policy in 1991 to provide a greater emphasis on the role of IT in improving agency operations. In November 1996, Linda Massaro was appointed NSF's first CIO, but the agency did not consider changing the name of the office, as the responsibilities encompassed more than IT and IRM functions [36].

NEH

Regardless of the Clinger-Cohen Act's directive to comply with hiring a CIO, some independent / government corporation federal agencies that were not mandated have chosen to do so. Of the four agencies contacted, (USIA, USPS, RRB, and NEH) USIA and the USPS were the only two agencies that had an experienced CIO. As a follow-up, additional information about their agency's reaction to the Clinger-Cohen Act was obtained. The RRB was in the process of hiring a CIO, and Brett Bobley at NEH had just been hired in August 1997 and did not know what impact the Clinger-Cohen Act had on the NEH's IT position and title [37].

USIA

The USIA's CIO and assistant to the Director, Joseph Bruns, has been with the agency for 15 years and has worked in three of the agency's four bureaus. Consequently, he is very knowledgeable about his organization. The CIO position was created in response to the Clinger-Cohen Act and the USIA chose to institute it as a non-operational function that does not include actually running the agencies' IT activities [38].

USPS

Richard Weirich, the USPS's Vice President of Information Systems, reported that when Marvin Runyon reorganized the Postal Service in 1992, he chose a title for each department, which is where it stands today. Weirich considers himself a CIO, operates in that mode, and has not found a need to switch his title to CIO. He has been with the USPS for 24 years [39].

RRB

The RRB was in the process of hiring a CIO. Charlene Kukla, the Director of Personnel responded to the initial question. The agency was determined to establish a CIO position in response to the Clinger-Cohen Act. The responsibilities of the RRB's CIO were envisioned to include overall security, records retention, and disaster recovery [40].

In summary, seven out of the eight agencies contacted, responded affirmatively that their agency had incorporated a CIO post motivated by the Clinger-Cohen Act of 1996. Four of the respondents were knowledgeable and willing to discuss their position and two agencies were in transition and unable to provide detailed information. (See

Table 2)

INSERT TABLE 2 HERE

FOLLOW-UP QUERIES

In responding to follow-up queries, agency CIOs from NASA and USIA were most accommodating, and elaborated on the questions, providing interesting perceptions. NRC's CIO and his Special Assistant replied with abbreviated responses. The USPS CIO was not willing to answer questions that delved deeper into his organization. Such withholding of data raises questions about agency information-dissemination practices, such as, why is information withheld or how thoroughly does an agency respond to a citizen's request for information? (See Tables 3 and 4)

NASA

Montasser, Director of IRM for NASA, in coordination and partnership with the NASA CIO, has created a new division, NASA Information Systems (NIS) to replace the old IRM organization. He only funds the implementation of information systems that enable re-engineered business processes or new processes, provides guidance, generates, interprets and keeps policies in order, and closely tracks return on investment (ROI). The "whats" and "whys" happen at NASA headquarters from where he operates, while the "hows" are developed at the 10 NASA field centers. The IT commitments are both centralized and decentralized. Part of Montasser's responsibilities is to participate in NASA's own matrix of CIOs to maximize NASA's resources, consolidate and streamline, build partnerships, and share lessons learned [41].

The execution of the Clinger-Cohen Act within NASA has had its personnel

difficulties. Government employees are paying lip-service to new regulations; it is difficult to get agency initiatives in line with the mandate. Montasser finds that initiatives and management must originate from the top down. In 1994, foresight in management of the new IT infrastructure instigated a major downsizing trend at NASA Headquarters from 1750 to 950 employees. Many senior executives retired early or left on their own accord in response to the expected agency changes resulting from the Clinger-Cohen Act [42].

Montasser's NIS mission is to provide the agency with an internal consulting role in optimizing investment strategies for new and existing information systems. NIS' mission statement is an important document and is ranked high by Congress, as it outlines business case analysis methodologies that maximize existing resources, eliminates redundancies, reduces costs, and adds value. Steps taken to employ business case analysis are:

- An agency presents a potential information resource.
- A cost benefit analysis is completed.
- The agency continues on its current IT path, but looks at 5-6 alternatives.
- The assessment of prior research is completed.
- The agency makes a decision on the best return of investment, making sure not to roadblock a chosen architecture or lose flexibility.

Montasser's agency-wide vision enables effective mission and business functions to reduce investment risks, to increase return on investments, and to provide pertinent information. He believes it is essential to increase the currency of knowledge to lead

NASA successfully into the 21st century [43].

NRC

NRC's CIO, Galante, currently seems to be focused on reorganizing his office in conjunction with the agency's Labor-Management Partnership Committee. The concentration is on not disrupting personnel and agency order too many times prior to the final reorganization that is being planned, partnered, and implemented as a result of the newly created CIO position. The NRC is concerned about the continual movement of staff around to numerous reporting lines over a period of several months, as it creates havoc while attempting to accomplish agency objectives [44].

Agency staff have generally been cooperative, but leadership is required. NRC members will be given extensive IT training in 1998, assisting them in understanding the value of using a business-like approach to managing government IT and personnel. No NRC employees are known to have left because of the implementation of the Clinger-Cohen Act [45].

The NRC has a mission statement, but the CIO organization does not have a formal statement. The CIO is expected to support the information management and IT requirements to facilitate programs [46].

Resource savings are projected for the future. Some budgetary influence was exerted in fiscal years 1997 and 1998. The first major opportunity to influence information resource decisions was in the preparation of the 1999 fiscal year budget [47].

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USIA

Bruns' CIO position at USIA is non-operational as it is not responsible for actually managing the IT function. There is an official who has the operational and supervisory role over the resources, tactical planning, and day-to-day IT operations.

Both centralized and decentralized functions and resources are employed as in other large organizations. Bruns' role is to direct strategic planning and provide executive level oversight of IT projects by taking an objective stance and raising the "hard questions." He warns that excessive oversight can lead to a replication of the bureaucratic red-tape of the old GSA model, blocking everything. He views the goal of the CIO as an individual responsibility encouraging a better and quicker process to analyze IT systems [48].

According to Bruns, the new system is basically working well. He has a very good working relationship with the head of IT and they can disagree amicably. Also being the assistant to the Director gives organizational proximity for easy access, and if need be, he could be "tough." Employees have only left routinely, and not as a result of the Clinger-Cohen Act. Personnel are generally cooperative, some even enthusiastic, but leadership is always required [49]. The CIO's office has both an agency mission statement and a strategic IRM plan. The agency also has a forward looking "think piece" USIA 2000 [50].

Bruns' largest monetary accomplishment was in the form of loss avoidance. A sizeable problem to address in 1997 was to determine whether or not to continue investing in a new state-of-the-art comprehensive financial management system (FMS)

being developed by USAID. Its purpose was to integrate accounting, budgeting, automated personnel management systems, as well as integrating the general ledger. At the time it was started, there were no commercial systems that even remotely had the capability of USAID's technology. The system required certification by the GAO. After investing $11million, out of which $6 million was recoverable, and hiring consultants to assess the situation, all concluded that the best choice was to walk away from the project [51].

Other dilemmas that Bruns has faced as a CIO are his agency's worldwide system configuration, standards and training, broadband two-way telecommunications that are unclassified and open, WWW policy, security (a major problem), and setting priorities for new applications, system upgrades, or replacement [52].

USPS

To Weirich, his position at USPS entails taking responsibility for directing the Postal Service to identify and realize opportunities offered by IT. He is seeking better ways to serve customers, support employees in their work, and to improve operating performance. He believes that this is his "key role as a corporate officer" [53]. Operating the networks, the computers, and building and maintaining the various systems are tasks the USPS Information Systems perform to support these objectives, but they are not considered goals in themselves. Financial savings or cost reductions at USPS are not being targeted; increased value for postal customers and postal managers are the priority [54].

The questions pertaining to the effect of the Clinger-Cohen Act on agency IT

policies, mission statement, and personnel were minimally answered by USPS's CIO. Weirich maintained that employee turnover was low and that his office had a mission statement. Further details and elaboration were requested, but were not received [55].

INSERT TABLE 4 HERE

SUMMARY OF FINDINGS

These field studies point out that agency CIOs vary greatly in their willingness to share and elaborate on the internal workings of their organizations and government-wide IT issues. One half (four out of eight) were willing or able to participate in the research; and only two of eight were expansive in their replies. Drawn primarily from the four federal agency CIOs willing to engage in an e-mail dialog about the Clinger-Cohen Act's effect on their organization, the following was discovered:

- At least two CIOs facilitate fundamental best practices in their agencies.
- Four stressed the importance of executive leadership and supporting personnel.
- Four work hard to implement efficiently and effectively an IT paradigm for their agencies, ultimately to benefit the consumer and the taxpayer.
- One agency had employees leave due to the Clinger-Cohen Act reorganization guidelines.
- Four have at least an agency mission statement to support, three have their own IT vision statements.
- Three have realized either cost avoidance or resource savings and look to the future to save more. One agency is not targeting financial savings.

CONCLUSION

The Clinger-Cohen Act lays out an uncharted and idealistic course for massive, slow moving, national government organizations to conform and comprehend. It is a more educational approach, as agencies and CIOs are expected to research their present and future IT systems moreover, by managing them in a more business-like fashion and reporting to the agency director. Furthermore, the Clinger-Cohen Act promotes and expects a high level of personal communication between the CIO, the agency head, and among organized councils to share "best practices" and "lessons learned." Educational and training opportunities are expected to be utilized and are offered by the CIO Council [56].

Congress, GAO, and OMB plan on "watch dogging" agency IT plans and exercising oversight on expenditures. The pervasive waste in government IT spending and inexcusably poor consumer-service systems are likely to have funding implications in the future [57].

The new federal IT paradigm is active and whether or not an agency has been Clinger-Cohen Act mandated or not, the congressional and administrative focus will be on the performance of agency IT systems and their CIOs [58]. Of the eight agencies contacted in the study, one half (four) of the organizations were known to be complying with or accommodating to the Clinger Cohen Act's guidelines. Two CIOs were enthusiastically stretching beyond. Four agencies that did not bother to reply or only minimally responded do not appear to be adhering to the Clinger-Cohen Act imposed customer ethic of increased and improved service. One agency CIO's gate-keeping

of information that should be public knowledge creates an information barrier to the customer. Hiring CIOs with questionable qualifications or knowledge in their field to fulfill the Clinger-Cohen Act's job description, as in one agency, will not serve government or the consumer.

The Clinger-Cohen Act establishes a positive approach and direction towards increasing the quality, ease of accessibility, and accuracy of government information dissemination while saving money through enhanced IT management. Top-notch CIOs will provide mentoring possibilities to lagging agencies through interactions within the CIO councils and through the mutual reinforcement of common objectives [59]. Congressional involvement and understanding should improve through the GAO and Executive Council on Information Management and Technology's sharing of "best practices" and extended communications with the private sector.

RECOMMENDATIONS FOR FUTURE STUDIES

Considering that government change can be slow, a field study conducted within 16 months of major legislation and Executive Order may be premature in providing a definitive trend in the transition of CIOs within federal agencies. Periodic assessment of agency CIOs and effects upon the agency deserve researchers' attentions.

Further study is needed. Future studies of agency CIOs, both mandated and non-mandated should include a focus on particular differences among them. This survey of selected agencies did not take into consideration the perspectives of agency customers, employees, "watch dog" agencies, or members of Congress. How does this newly mandated office of agency CIO affect the dissemination of government information to

libraries? Conducting interviews with GAO's Christopher Hoenig or the OMB would present different perspectives of agency compliance and success through the eyes of these "watch dog" organizations. Assessing productivity and financial savings as perceived through congressional members is another avenue for critiquing and evaluating the new federal IT managers and the rippling effects of implementing federal agency CIO positions [60].

NOTES

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Table 1

AGENCY NAME, TYPE OF AGENCY, and WHO RESPONDED TO THE INITIAL E-MAILS REGARDING THE IMPLEMENTATION OF THE CLINGER-COHEN ACT

Agency Name	Agency Type	Responding Agency Official
	Mandated	
National Air and Space Administration (NASA)	Independent Agency	Ali Montasser
Nuclear Regulatory Commission (NRC)	Independent Agency	Anthony Galante
National Science Foundation (NSF)	Independent Agency	Staff Member
Office of Personnel Management (OPM)	Independent Agency	No Response
	Non-mandated	
United States Information Agency (USIA)	Independent Agency	Joseph Bruns
United States Post Office (USPS)	Independent Agency	Richard Weirich
Railroad Retirement Board (RRB)	Independent Agency	Charlene Kukla
National Endowment for the Humanities (NEH)	Independent Agency	Brett Bobley

Table 2

AGENCIES	RESPONSES TO THE FIRST INQUIRY ON THE IMPACT OF THE CLINGER-COHEN ACT: "Did the agency's 'information official's' title migrate to a CIO position in response to the Clinger-Cohen Act? If not, why has it not migrated from an IRM position to the title of CIO?"
Mandated	
NASA	The Clinger-Cohen Act was the motivation that created five CIO positions.
NRC	The Clinger-Cohen Act was the guiding force for migrating towards agency CIOs.
NSF	The first CIO was appointed in 1996 (after Clinger-Cohen Act). The title was selected because of the plethora of duties including the management of information
OPM	No response.
Non-mandated	
USIA	The CIO position was created in response to the Clinger-Cohen Act.
USPS	The Vice President of Information systems considers himself a CIO, as he operates in that mode.
RRB	The agency established the CIO position in response to the Clinger-Cohen Act.
NEH	The newly appointed CIO did not know what impact the Clinger-Cohen Act had on his CIO position and title.

Table 3

SECOND SET OF QUESTIONS AND ANSWERS FROM E-MAILS REGARDING THE IMPACT OF THE CLINGER-COHEN ACT

MANDATED AGENCIES	NASA	NRC
What is the job description as a CIO in your agency?	Funding and implementation of information systems. Provide guidance, keep policies in order and closely monitor returns on investments. Participation in maximizing NASA's resources, building partnerships and sharing lessons learned are also included.	Currently focused on reorganizing the office with the Labor-Management Partnership Committee. The agency is concentrating on not disrupting personnel and agency order too many times as a result of the newly created CIO position.
How long have you been with your current agency?	3 years	8.5 months
Is the implementation of the Clinger-Cohen Act working well? How do agency members feel about the change in IT tactics?	Personnel difficulties. Employees paying lip-service to new regulations. Action and management must originate from 'top down.'	Agency staff is generally cooperative-leadership is required. Employees will be given extensive training in 1998 to understand the value of a business-like approach to managing IT.
Have employees left the agency in the last year because of changes incurred under the Clinger-Cohen Act?	Foresight in new IT infrastructure instigated a major downsizing, 1750 to 950 employees. Many senior executives retired early or left on own accord.	No known employees are known to have left because of the implementation of the Clinger-Cohen Act.
Do you have your own mission statement?	Yes-it provides an internal consulting role to optimize investment strategies for information systems. The most important document as it outlines business case methodologies.	The CIO is expected to buttress NRC's mission by supporting information management and IT requirements.
Have you realized any savings in the last year from the mandated practice of IT oversight?	No, but the vision is to reduce investment risks, increase return on investments and to increase the currency of knowledge to lead NASA into the 21st century.	Resource savings are projected for the future. The first major opportunity to influence information resource decisions was in 1999's fiscal year budget.

Table 4

SECOND SET OF QUESTIONS AND ANSWERS FROM E-MAILS REGARDING THE IMPACT OF THE CLINGER-COHEN ACT

NON-MANDATED AGENCIES	USIA	USPS
What is the job description as a CIO in your agency?	To direct strategic planning and provide oversight of IT projects with a critical view. Encourages a more efficient process to analyze IT systems.	Taking responsibility for identifying and realizing opportunities offered by IT. Increased value for postal customers and managers are a priority.
How long have you been with your current agency?	15 years	24 years
Is the implementation of the Clinger-Cohen Act working well? How do agency members feel about the change in IT tactics?	Personnel are generally cooperative-leadership is always required. Some employees are enthusiastic regarding the change.	Even though requested, no information was provided. (author comment)
Have employees left the agency in the last year because of changes incurred under the Clinger-Cohen Act?	Employees have only left routinely-not on account of the Clinger-Cohen Act.	Employee turnover is low.
Do you have your own mission statement?	Yes, the CIO office has an agency mission statement and strategic IRM plan. They also have a progressive "think piece," USIA 2000.	Yes. Even though requested, no more information was provided. (author comment)
Have you realized any savings in the last year from the mandated practice of IT oversight?	Largest monetary accomplishment was in the form of loss avoidance by discontinuing a faulty, comprehensive management system.	Financial savings or cost reductions are not being targeted.