THE COMPETENCIES OF THE CIO. A 2016 ANLYSIS OF THE UNITED STATES OF AMERICA FEDERAL CIO COUNCIL MEMBERS' BACKGROUND

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The main goal of this paper is to present the competencies of the Chief Information Officer (CIO), taking into consideration not only the evolution in the area of information and communication technology (ICT), but also, the permanently growing recognition of its role during the latest decades in the public and private sectors (doubtless with the same evolution pace, and with an important advantage for the latter). An analysis based on the background of the 2016 membership of the USA Federal CIO Council is intended to depict a clearer image about how the technological knowledge is coupled with the CIO business roles and responsibilities, in order to ensure, in a timely manner, qualitative governmental services for the USA citizens.

Key words: *CIO, Chief Information Officer, CIO competencies, USA CIO Council, USA CIO Council member.*

1. INTRODUCTION

The latest evolutions in the area of ICT have forced the private managers, but, more importantly, the governmental authorities, to overcome the challenges of managing complexity brought by the important transformation processes and evolution steps that allow them to achieve their final goal, more efficiently and in a shorter time. All benefits associated with technological improvements have permitted the enlargement of cooperation between private and public sectors and in the benefit of citizens.

Computers and information technology have been used by governments for more than 50 years to automate activities. However, even if IT is not new, the arrival of the Internet has enhanced communications and enabled the digital supply of government services. Reforms in many areas of government have been facilitated by digital technologies such as: Internet access through computers – desktop, laptop and palmtop – mobile phones, information kiosks and digital television. Through these modern technologies, E-Government (defined by the Organization for Economic Co-operation and Development

as 'the use of information and communication technologies [ICT], and particularly the Internet, as a tool to achieve better government') is widely perceived to be fundamental to reform, modernization and improvement in the public sector [1].

The official role of CIO was present in organizations in the early 1980s, its appearance being mainly the result of the necessity to cope with information technology (IT) revolution. At that moment, with an increasing amount of time and money invested in information technology systems, executives had a growing awareness of their competitors using IT to gain competitive advantages and recognizing the need to become directly involved in the management of the new technology [2].

The private organizations have become more rapidly aware about the importance of the CIO in their structures, and experienced earlier the benefits of the executive officer responsible with information technology for internal processes and for delivering products or services to the people. Moreover, while private sector experienced the success of the implementation of the CIO, in the public sector, it was at a formative level. The governments were still trying to identify the problems, opportunities and challenges of such positions, using information and communication technology as an essential tool in driving the modernization of public administration claimed by the sustainable development of our society.

Later on, as a direct consequence of the dependence of governments on ICT, the role of CIO has become more consistent for internal management, delivery of services to citizens and meeting the demands of the permanently growing digital environment.

Today, when ICT is viewed as an essential tool for driving the modernization processes of public administration in order to get a sustainable development of our society, effective CIOs must take care methodically of organization activity, by applying different formulas of success and by combining technical knowledge with businesses knowledge, in order to generate positive results.

After exploring the evolution and the competencies of the CIO, this paper will outline the main features of USA Federal CIO Council, initially from a normative framework perspective and then from the perspective of its 2016 membership background.

2. THE ROLE OF THE CIO

2.1. What is the CIO?

Broadly defined, the CIO is responsible for ensuring that the organization's information and

technologies investments are on the same line with strategic business objectives. To this effect, the CIO position has emerged as the key executive for information assets, operations, and policy, but also as a responsible person for the effective oversight of organization's architecture and support, and for more modern features like internal network implementation, software development, and information management.

Even though the initial role of the CIO was a technological one, calling for a background in the information and communication technology (ICT) domain, the CIO responsibilities have been stretched out beyond its traditional role to include strong business background with important functions, both at tactical and strategic level within organization.

Synnott and Gruber first coined the CIO term in 1981 by defining it as the "senior executive responsible for establishing corporate information policy, standards and management control over all information resources" [3]. This was the first time when CIO was viewed not only as a technical expert, but also as a manager. From that moment, the specialty literature generally agreed to define the term of CIO based on its already mentioned identified attributions or by describing what he/she should do, while other authors have supported the importance of the CIO with additional attributes.

The further studies, whatever how expressed their findings, the authors advocate generally that, even though the CIO profile will always be associated with technological issues, it must be seen firstly as a management executive.

2.2. The CIO in the public sector

The type of area (private or public) to whom one particular organization belongs is another fundamental point of reference in defining and understanding the importance of the CIO. There are various points of view of the specialty authors regarding the similarities and differences between the two sectors and, in order to better understand the CIO issues, it is necessary not only to comprehend public sectors' components but also to realize how it evolved differently over time.

On one hand, the private sector is made up of all size of organizations that belong to an individual or to a group of entrepreneurs, commonly referred as shareholders, are funded by the customers purchasing goods or services, and their ability to perform, operate and succeed are constrained or imposed by market forces. On the other hand, the public-sector departments, agencies and authorities are owned and funded collectively by the members of the governmental

and local communities, while the control is subject to the imposition of political forces (such as change of political party leadership).

Even if both sectors have the same function in terms of management (organizational purpose, developing objectives, planning, managing human resources, controlling the organization's performance), the differences are more prominent in relation to time perspectives, performance measurement, media relations, authority, legal and personal constraints. The internal characteristics of public agencies are viewed as distinctive in three main ways [5]:

- more bureaucracy: more formal procedures for decision making, and are less flexible and more risk-averse than their private sector counterparts;
- more red tape: an unnecessary and counter-productive obsession with rules rather than results, and with processes instead of outcomes (often regarded as a pathological side-effect of bureaucracy);
- lower managerial autonomy: managers in public organizations have less freedom to react as they see fit to the circumstances that they face, and public managers' discretion on personnel issues is especially low because rules on hiring, firing and promotion are inflexible.

The CIO roles and responsibilities in the public sector are evolving fast due to the increasing role of ICT for government processes and electronic services for citizens, emphasizing the importance of the CIO this sector, beyond that granted within the private sector.

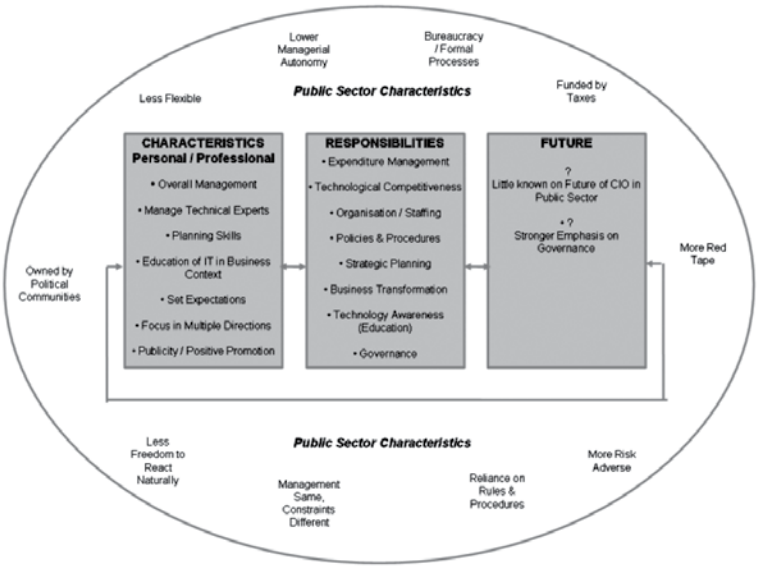

Fig. no. 1. Adapted model of the CIO in the public sector [6]

Based on the above-mentioned premises, a debate on the multidimensional and complex characteristics of both sectors should not impede the thought that the CIO positions in the public sector have been greatly outdistanced by the private sector's ones, due to the restrictions in which it operates and the future of the position **(Figure 1).** Nevertheless, the greater part of the available information about CIOs in the public sector is related to actual issues, being mainly about how they are key players in the reinvention process of governments or about how they struggle to implement the new technological era's instruments in order to better cope with the citizens' requirements.

The main reason for successfully raising the IT function to the top management level was that public sector leadership understood that technology is a strategic tool to improve processes in an exponential way, eliminating internal problems and re-work, and adding value, based on new social demands, global competition, tax crises, political competition, development of new technologies, demand for local government services. In some cases, there were four additional motivations for the creation of the CIO position:

- the globalization context;
- a change in paradigms and ways of thinking about IT;
- a customer-centric approach;
- business pressures related to efficiency and effectiveness of government procedures and services.

The functions of the CIO were gradually changing from purely operational to more strategic in nature. Structurally, the old IT department was replaced with a new CIO office at the executive level with new objectives:

- continuity and long-term vision;
- continuous improvement while focusing on the main business processes;
- establishing a technological vision for Executive Level Managers and Officials;
- cultural change (to introduce important changes in behavior and influence the expectations of individuals across the local government and to reduce individual resistance to technology and organizational change);
- IT training and development.

However, in order to better understand the impact of the transformation process, we have to mention some of the important challenges that the CIOs should face, mostly at the organization level, but also at the individuals level:

- staff deficiencies such as unmotivated personnel, lack of training, resistance to change, and low educational levels;

- mid-level public managers lack a vision about technology;
- lack of human and financial resources;
- absence of an adequate legal and regulatory framework (privacy of personal data, security, electronic signatures, electronic invoices, etc.);
- no collaborative and technological culture among government agencies;
- significant economic, social, educational, and digital divides among individuals and organizations.

3. THE COMPETENCIES OF THE CIO

3.1. The competencies of the CIO

In the specialty literature, the competencies of the CIO are greatly based on the information provided by private companies, mainly due to the recognition of its role in this sector. However, more and more internet-recorded examples around the globe worth mentioning when we speak about models of success in the implementation process of the CIO position within the public sector.

Many authors, from both private and public sectors, have tackled the competencies of the CIO, by describing what he/she should do or by looking at the relevant trends in the area, (like business environment, rapidly changing technology and increasingly IT demands for domestic/ governmental users).

The preliminary ideas to define a CIO model occurred in the early '80s, with the goal to meet the challenges of the information systems function in the coming years. Based on the fact that the information management function has expanded incredibly, and with an even greater development in the near future, the public sector leadership initiated an extensive process to search and to develop a CIO model that should offer authority, by encompassing requisite personal and managerial attributes that CIOs must have [4]:

- considerable political, organizational and communication skills;
- involvement in, understanding of and experience in the overall management of the business;
- understanding of and the ability to manage technological experts;
- development of the appropriate human resource management skills;
- planning skills with particular emphasis on strategic planning and the management of change;
- increasingly sensitivity to the human, organizational and social impacts of the new technology, and the ability to proactively plan;
- having the skills to be a manager of managers.

These features indicate that the CIO is seen firstly as a management executive or business generalist and

secondly as a technological expert. Other authors advocate that the following qualities are ideal for a CIO profile [7]:

- honesty, integrity, sincerity, openness;
- business perspective, motivation, language;
- communicator,educator,motivator, leader, politician, relationship builder;
- continuously informed on developments in IT, able to interpret their significance to the business;
- change oriented team player, catalyst to business thinking.

Another description of the CIO is that of 'chameleon' with regard to their attributes and required skills [8]. Four specific characteristics are identified as attributes of the chameleon and, in the same time, they express the required roles for the CIO:

- the ability to change is the ability to adapt to a constantly changing environment;
- the ability to see in multiple directions is reflected by the ability to envision the organization in a holistic manner;
- the ability to strike fast when required means the ability to remain ahead of the game on technological development;
- the ability to hang on when the going gets tough is the ability to endure the tough times when unrealistic expectations and failures occur.

We can define for these characteristics some skills that the CIO must own, with straight significance on the CIO position in a particular organization leadership (**Table 1**).

Table 1. The CIO skills and expertise

Managerial skills and expertise	Technical skills and expertise
Strategic Planning	IT Acquisition
Financial Planning	Database Design and Management
Human Resource Management	Telecommunications
Communication	System Analysis
Project Management	Information Service Management
Leadership	Application Development

The CIO is evolving together with the evolution of our modern society. It evolves from a technology leader to a critical transformer of organizations, which implies new skills, experiences and competencies. Of course, the fundamental skills, like basic technical knowledge, are still considered to be a set of entry-level requirements for any CIO.

The new CIO (CIO 2.0) requires additional leadership skills, which

will define the future success in running an organization that is moving from an infrastructure and technology focus to another one that uses a process approach to offer agility and to respond rapidly to an increasingly fast-changing business environment. In the judgment of some authors [12], a balanced combination between:

- innovation (technology);
- coaching (listening, motivating and developing a high-impact IT organization);
- management skills required in the new leadership role.

will enable an effective CIO. In order to support this idea, they mention some concrete leadership skills considered critical for a modern CIO:

- customer focus;
- total quality and performance management;
- organization and priority management;

Fig. no. 2: Development complexity of leadership skills

- motivating others;
- interpersonal communication.

Based on some long-term observations, they have discovered that the development effort required for each of the skills is not equal (Figure 2). Whereas a skill like customer focus is something that can be acquired fairly quickly, learning effective interpersonal communication is something that will take a lot more time before a person become fully skilled in that area. It may even be argued that both motivating others and interpersonal skills are so critical to the role of new CIO and take such an effort to develop that they should be prerequisites. This would mean that these skills are integrated into the pre-screening of candidates and are tested during the assessment.

From the discussion of the attributes and skills of the CIO it is apparent that the CIO, to successfully integrate with the organizations executive team, cannot purely be a technology expert, but must also have

sufficient managerial skills. It is via the managerial skills that the CIO can effectively exploit the information and communication technology (ICT) within an organization and gain credibility for further investments.

Looking at the public sector characteristics, we can determine that the CIO role is permanently changing in concordance with the citizens' demands to have an improved access to tailored public services, greater accountability and transparency, and, at the same time, increased confidence in how governments handle their personal data and greater efficiency in services delivery. Due to the fact that legislation, politics and resources place very different demands on the public sector, there is a continuously need to create a function similar with that from the private sector, whose role should be to fulfill the requisite knowledge and competence in the needed domains of public sector.

A contemporary example of government modernization and transformation process around the world is the e-Government initiatives that are usually led by a CIO or an individual in a similar position. The role of CIOs in local governments is becoming increasingly important and more research about their actions and impacts is needed, not only from an academic perspective, but also for practical purposes. Currently, e-Government initiatives require a high degree of specialization and knowledge about citizens' needs and government procedures. A strong CIO, with well-defined responsibilities, would help to make better decisions about the use of IT in government agencies. However, there are also important challenges and problems that CIOs face when performing their daily jobs. These challenges are not only related to technology, but also to the context in which their organization is embedded. Organizational, institutional, political, and other factors greatly affect the CIO's capacity to implement e-Government initiatives.

CIOs must have a broad skill set in order to be successful in their role as leaders of e-Government initiatives. The CIO is responsible for the ICT infrastructure, but application development and technical support responsibilities will be decentralized to lower levels like divisions and departments. He must have a people orientation and have to utilize communication, education, standards, and other indirect controls to perform the role of integrator and gatekeeper for new technologies. A review of the literature on CIO leadership reveals that communication with the people is important because it creates commitment across all stakeholders. The CIO must become an integral member of the top management team and have the corporate-wide responsibility for the information resources policy and strategy.

3.2. The CIO competencies: the USA approach

In their efforts to establish clearly the role of the CIOs, within the framework of a powerful legislative system, USA authorities issued in 1996 an official document (known as the Clinger-Cohen Information Technology Management Reform Act) that is defining a baseline of information resources management (IRM) knowledge requirements and duties at the level of US Federal Government.

The provisions of this act reflect that the CIOs, no matter if they are in civilian or military domain, shall have the appropriate qualifications to perform their duties, such as [9]:

- to have information resources management duties (primary duty);
- to monitor the performance of IT programs of the agency, evaluate the performance of those programs on the basis of the applicable performance measurements, and advise the head of the agency regarding whether to continue, modify, or terminate a program or project;
- as part of the strategic planning and performance evaluation process required:
  - to assess the requirements established for agency personnel regarding knowledge and skill in information resources management and the adequacy of such requirements for facilitating the achievement of the performance goals established for information resources management;
  - to assess the extent to which the positions and personnel at the executive level of the agency and the positions and personnel at management level of the agency below the executive level meet those requirements;
  - to develop strategies and specific plans for hiring, training, and professional development, in order to rectify any deficiency in meeting those requirements;
  - to report to the head of the agency on the progress made in improving information resources management capability.

The core body of the CIO competencies and their adequate learning objectives is periodically up-dated by the Federal Government, in order to ensure that critical knowledge areas affecting information resources management are captured. Significantly important is that the document is revised by considering the newest developing strategies and policies, continuous changes in technology, and other evolving IT/ cybersecurity mission requirements.

The latest version of the above mentioned document [10] is

encompassing a core body of 12 competency areas identified by the US Federal CIO Council as fundamental to the effective management of federal technology resources:

- Policy and Organization;
- Leadership and Human Capital Management;
- Process and Change Management;
- Information Resources Strategy and Planning;
- IT Performance Assessment: Models and Methods;
- IT Project and Program Management;
- Capital Planning and Investment Control;
- Acquisition;
- E-Government (Information and Knowledge Management);
- Cybersecurity/Information Assurance;
- Enterprise Architecture;
- Technology Management and Assessment.

Each of the 12 competency areas has several subordinate competencies (see Annex A) and all subordinate competencies have associated learning objectives. The learning objectives form the foundation for curriculum development by the educational institutions offering approved programs under the CIO University Consortium umbrella. The objectives identify key concepts and capabilities to be taught and can also be used as a professional development guideline for both individuals and organizations. Each individual's professional development roadmap can be achieved through a variety of methods, including formalized academic programs, mentoring, on-the-job training, professional details, and prior experiential assignments.

It is not expected than any one individual would master all management activities contained within these competencies. Areas of concentration would reflect individual job requirements, as well as personal development interests. Additionally, specific technical expertise outside the scope of these competencies may be required based on actual job roles. Federal Chief Information Officers should ensure that the knowledge, skills and abilities represented in each competency in this document are resident within their organization for overall staff productivity.

It is worth to mention that individual learning objectives have been mapped to the Office of Personnel Management's Executive Core Qualifications (where applicable), and attainment of these qualifications is required for entry to the Senior Executive Service. The mapping is provided to support multi-purpose leadership development for IT management and executive positions.

One important element to underline in the learning area is that the USA National Defense University CIO Program [11] is the recognized

leader in graduate education for Federal leaders and agency personnel. It directly aligns with the Federal CIO Council-defined CIO competencies and addresses the Clinger-Cohen Act and other relevant legislation mandates as well as the current administration's interpretations and implementations of these legislative actions. According to their main goal, the successful CIO graduates will be able to:

- lead within and across federal organizational boundaries by leveraging information, information technology, human, and financial resources to link critical decisions regarding resources, people, processes, and technologies to mission performance and information assurance;
- balance continuity and change in the development, implementation, and evaluation of government information resources and management strategies and policies while meeting legislative and executive mandates;
- build viable networks across defense, federal, global, and private sector partners;
- commit to lifelong learning and leadership development of self and others;
- communicate at the strategic level demonstrating command of the topic, logical organization, compelling argument, and excellence in English grammar and syntax.

Based on the elements presented in this chapter, we can conclude that the main development in the role of the new CIO is the shift from a traditional technology-centric role to a business-centric and innovation role. The skills and technical competencies that characterized the CIO of the past are still essential, but are no longer sufficient to fulfill all expectations of this function moving forward.

4. A 2016 ANALYSIS OF THE UNITED STATES OF AMERICA FEDERAL CIO COUNCIL MEMBERS' BACKGROUND

4.1. The Federal CIO Council

Initially established in 1996 as "information technology architecture", by Executive Order 13011, Federal Information Technology Management Reform Act (also known as the Clinger-Cohen Act), the Federal CIO Council was codified into law by Congress in the E-Government Act of 2002. It serves as the principal interagency forum to improve agency practices related to the design, acquisition, development, modernization, sustainment, use, sharing and performance of Federal Government Information Technology [13][14].

In accordance with what it is mentioned in its charter, "the CIO Council aspires to promote a bright and prosperous future for the United States through the

strategic use of Federal Information Technology" [15]. Also, it seeks to improve government performance, effectiveness and efficiency, by protecting and defending resources, by proposing new ways to achieve the government's goals with a better use of enabling technology in order to more effectually bring government services to the USA citizens.

The CIO Council is one element of an interagency support structure established to achieve Information Resource Management (IRM) objectives delineated in, but not limited to, the E-Government Act of 2002, and other related federal or governmental official documents like: Federal Information Security Management Act FISMA-2002), Government Paperwork Elimination Act (GPEA-1998), Paperwork Reduction Act (PRA-1995), Government Performance and Results Act (GPRA-1993).

Correlating its legal framework with other related documents or studies from the specialty literature, we can conclude that the CIO Council is a strong source of knowledge and experience. It is continuously providing an important forum for governmental agencies to align their on-going activities and projects, and to work on new initiatives in order to better shape the future, by performing particular functions, directly, or through assistance for other structures, such as:

- develop recommendations for government IT management policies and requirements;
- establish government-wide priorities on IT policy and monitor their implementation and develop recommendations on IT standards;
- share experiences, lessons learned, ideas, best practices, and innovative approaches related to IT management and promote common management performance measures for agencies information resources management;
- identify, develop, and coordinate multi-agency projects and other innovative initiatives in order to reduce duplicative IT investments and drive the efficient use of IT resources across agencies;
- promote collaboration and community building among Federal Agency CIOs for purposes of sharing best practices, transferring knowledge and developing a unified approach for addressing Federal IT challenges;
- promote the development and use of common management performance measures for agencies information resources management;
- assess and address the hiring, training, classification, and professional development needs of government employees in areas related to IT management.

In accordance with its legal framework, the leadership positions within CIO Council are the following:

- the Chairperson of the CIO Council is the Deputy Director for Management for the Office of Management and Budget (OMB);
- the Director of the CIO Council is the Administrator, Office of E-Government and Information Technology, Office of Management and Budget;
- the Vice-Chairperson of the Council is elected by the Council from its membership.

The CIO Council leadership is responsible for:

- promoting the Council activities and status within the Federal IT community;
- convening the Council on a regular basis and presiding over Council meetings;
- acting as an advocate and elevating issues to the appropriate levels on behalf of the Federal CIO community;
- participating as leaders of the broader Federal IT community to help foster cross-agency collaboration and shared solutions above and beyond agency silos.

The membership of the Council comprises the CIOs, Deputy CIOs and Chief Technology Officers (CTOs) from the Federal executive departments, agencies and offices, as well as additional liaisons and ex officio members.

The Council has a number of standing committees where CIOs and their staffs can work on important issues and initiatives. The governance structure has been designed to provide maximum flexibility to create committees as requirements and priorities change. The Council supports and conducts ongoing information exchange with a number of self-organizing Communities of Practice (CoPs) which address important IT topics and issues. The 2016 committees are focused on Innovation, Cybersecurity and Workforce, and the IT topics and issues include the Privacy and Accessibility. By working within a structure that combines formal committees, short-term, agile working groups and communities of knowledge experts, the Council ensures that the most relevant and pressing Federal IT topics are addressed across the Federal CIO community.

4.2. The Federal CIO Council members' background

The main purpose of this part is to establish a possible career roadmap for a CIO model or, at least to draw some concrete conclusions with regard to the background of the members of the USA Federal CIO Council. In order to tackle this topic, I have analyzed all the available information found within members' CVs posted on the official website of

the Council [13]. With the purpose to establish the main elements to trigger the findings, I have selected firstly few indicators that could permit to draw several conclusions, and to establish, where possible, some patterns or trends. Chiefly, these indicators are related to the areas of expertise, from educational and professional perspectives. Nevertheless, their portfolios (in terms of money and people) and years of experience in some particular fields, and their awarded distinctions and titles represent other useful pieces of information that should add value to this analysis.

In order to accomplish my goal, I have analyzed the main details from members' CVs. The available information was valuable for my effort to establish the trends or for drawing some conclusions, even though, the complexity and variety of the educational system coupled with the diversity of the professional positions, sometimes, hampered the process.

When this study was handed, the Federal CIO Council was encompassing 33 members. However, during the initial stages of my research, were registered 43 persons on the Council official website. Looking again at the CIO Council membership, I have realized that the difference is represented by the Deputy CIOs that, with two exceptions, were eliminated from the Council website (and possible from Council itself) although the legal framework permits their participation. The two Deputy CIOs remaining in the Council serve for the Office of Management and Budget, the agency that legally nominate the Chairperson of the Council, and for the Department of Homeland Security, the institution to whom is belonging the elected Vice-Chairperson of the Council. Most probably, the decision to keep these Deputy CIOs within the Council membership has the role to give the Council's leaders the necessary room for their assumed-by-law duties outside of the CIO community, while their original agencies are to be represented inside the CIO Council committees. Beyond that, the process to depict the conclusions was impeded slightly by the few missing CVs.

After exploring the CVs content, I could easily conclude that all members have graduated a diversity of university studies, by earning different degrees within various specialties. The percentages related to the foremost domains in which they have earned their bachelor's degrees are the following:

- 45% in technical domains (e.g. engineering, computer science, physics, chemistry);
- 25% in business or public administration;
- 14% in military domain;
- 16% in others (e.g. law, history, political sciences).

For the superior level of their educational path, the Council's members choose to apply for a master's degree in different domains, as follows:

- 48% in technical domains (e.g. engineering, IT management, research technology);
- 43% in business or public administration;
- 9% in others (e.g. law).

What is interesting to notice here, based on a trend analysis coupled with the reflection of these numbers, is that 52% of the members have continued their careers at the higher educational level, within their initial specialty (28% - technical, 20% - administration, 4% - others). On the other hand, the rest of them (approximately 20-23% from each of them) and those members that possessed different other backgrounds have decided to improve their knowledge and skills by obtaining a master's degree in the other key domain for a modern CIO background, but with an increase number in favor of business administration domain. Correlating all this facts, we can conclude that even though the necessity of expertise in the technical domain has been considered important, the interest to earn a degree in business or public administration increasingly affected their decisions to follow the higher education levels.

Different types of other certifications detained by Council's members represent additional significant elements related to their educational background at which we have to look at. As an example, almost half of them hold a project management certificate, while others are leading to the idea of the multidisciplinary characteristics of their personal background. Moreover, many of them mention in their CVs the IRM certificates and the CIO certificates earned from the US National Defense University.

The discussion about Council's members experience is very provocative and implies many correlations. As a general fact, all of them have a professional experience of at least 20 years, with extensive experience in technological and/or managerial domains. With just few exceptions, their careers touched both the private and the public sectors that clearly have contributed enormously to their future professional development. Prior to be part of the US governmental agencies, more that 80% of them have worked in private universities or prominent multinational companies such as: Microsoft, HP, Dell, Lockheed Martin, Boeing, GMC, Ford Walt Disney, PricewaterhouseCoopers, Ernst&Young. Within these high-level companies, they were serving as project managers or executive leaders (CEO – Chief Executive Officer, CIO – Chief Information Officer, CTO – Chief Technical Officer),

fact which demonstrates that many of them come from the high-level leadership. As a general aspect, almost all CIOs were responsible within their previous workplaces to give directions for day-to-day operations but, also to provide strategic guidance, oversight and management for IT investments programs of their agency. As a result, in time, they shaped their personal profile with powerful strategic leadership competencies and with some backgrounds firmly founded on delivering business value with technology.

Tracking their positions in time, I can say that, probably, after working in the private sector, for many of them it was like a new challenge to do performance in the public sector, a more rigid, but more demanding one. Moreover, they had to shift from one very competitive environment, represented by the private sector, towards one that requires a high level of coordination and inter-agencies cooperation under the US governmental umbrella. Most probably, their extensive corporate experience and their prior notable successes prevent them to fail in their new assignments whereas the level of competition is somehow diminished, but the requirements for a smooth governmental function are leading.

Equally important for their careers was to continuously value the opportunities to broaden their area of expertise thru developing multidisciplinary competencies in other interconnected domains: enterprise architecture, strategic planning, investment control, budget and acquisitions, financial management, contracts and procurements, information operations, knowledge management, information sharing, information security, human resources management etc. Many of them are very keen to mention their personal competencies and to ensure that they were consistent with their former positions and achievements.

Another significant common element results from the analysis of their personal path after joining the governmental system. For at least half of them, once becoming part of the public system, and after serving at ”lower” levels (CTO, Deputy CIO, Associate CIO, director, chief etc.) within a certain structure, they were promoted to the upper organizational levels or into another governmental agency, in order to keep them inside the system and to further value their knowledge and experience. As an example, I want to mention the situation of one remarkable CIO with his first governmental commitment within the Department of Homeland Security (DHS), while his initially workplace was in a private company. Currently, he is working for the Department of Energy, but after

joining the DHS, he served for the White House.

The next particular conclusion is related to the fact that some of the members were pioneers in different moments of their careers. Here, I have to mention the first CIO of the Department of Homeland Security, the first CIO of the state of Hawaii and the one who implemented the first National Call Centre to provide emergency financial assistance during a natural disaster.

Even though the above-mentioned information reflects the main characteristics of the CIOs, I would like to present another important indicator that, in my view, clearly underline the magnitude of their responsibility. Apart from having pivotal roles in their agencies, some of them are responsible to oversee impressive budgets that could rich 17 billion (Air Force CIO) with a huge number of personnel and assets in their portfolio. In these conditions, it is true that the complexity of the CIO role can appear overwhelming, and it is difficult to balance the operational, daily activities and the strategic component of the CIO role. Depending on the size and complexity of the organization, we can suppose that in their structure, it may be necessary to appoint a Deputy CIO or a Chief Technology Officer (CTO) to take care of the more operational aspects. This can give the CIO time to work on the strategic and coaching part of the role and add value by managing the key business stakeholders.

As a last outcome of my analysis, I would like to mention that for the remarkable results during their professional career and as proofs of their performance, some members of the Council have been awarded over time by the US president and other different governmental agencies, or by professional publications, prestigious companies and international associations. They were also included in federal or international CIOs tops that prove, once again, the social appreciation of their abilities to be visionary executive leaders with global experience. Taking into consideration that one important feature of the CIO is to motivate people, I consider that this recognition of their professional achievements is an important element that encourage them to continue with energy and effort to find the best solutions to support their organizational future developments.

5. CONCLUSIONS

Because most businesses are so heavily dependent upon IT, a CIO is forced to work in a very modern and demanding environment. Due to the expansion of the CIO's traditional role, the job of a CIO has become more stressful, more business-oriented, and less hands-on.

The duties of today's CIOs require a set of particular skills that includes both a strong business background

and a core technical background. However, a CIO is not (or should not be) the lead engineer or programmer. The CIO is the business executive, charged with mapping ICT initiatives to the goal of the organization. To accomplish this, a CIO must be a positive leader, an effective communicator (skilled in both listening and speaking), a persuasive negotiator, and a customer-orientated individual.

The importance of ICT in government modernization and transformation is recognized by the governmental and political leaders. This makes the CIO one of the important pillar in public administration transformation plans that concurrently offer the opportunity for CIOs to redefine their role in order to fulfill these higher expectations.

The USA Federal CIO Council is focused on understanding the nature of this ever-changing environment and harnessing the combined expertise that exists across the federal government to evaluate and implement new technologies. As a consequence, USA is building and maintaining a leadership position for nation and citizens in the current information age in order to transform the federal government to one that is citizen-centered, results-oriented, and market-based, and to improve government's performance, efficiency, and effectiveness.

After analyzing the CVs of CIO Council members, I can conclude that all of them have demonstrated strong abilities to build and sustain relationships between public and private sectors stakeholders, by leading innovative projects and inter-agency initiatives. Acting as change agents in modernization and transformation of governmental agencies, they all have the ability to manage large-scale projects and to implement technologies and business strategies, in order to serve better the interests of US citizens.

Looking back at all the above-mentioned considerations, I can conclude that the US system regarding CIOs role within governmental agencies is very well regulated, starting from the federal legal framework and finishing with the educational programs that should allow them to achieve the core competencies required to perform such a complex and demanding duty. This kind of approach could be an example for every one that intends to have solid investments in the future of their organization, community or nation.

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