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The Impact of E-Government on the Role of the Public Manager

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"Wiring computer networks is an act of skill.

Wiring human networks is an act of leadership."

By Rosabeth Moss Kanter

Abstract:

In recent years, the world has been experiencing enormous advances in Information Technology (IT) as well as an economic growth driven by these new technologies. IT has been recognized as important, sometimes, fundamental, new trend in public administration. One of its effects is on the way public managers and government officials do their work. Nowadays, they have new tools that can leverage the quality and performance of their jobs. Using IT effectively, government officials can easily share their knowledge; focus on relationships with citizens and other kinds of government agencies; deal with complexity and diversity; create innovative public services and react quickly to challenges. To do so, they need to understand the role of IT and to develop new personnel and management skills.

The Impact of E-Government on the Role of the Public Manager

I. Introduction

This paper was written to seek an understanding of the rules of Information Technology (IT) in the Private Sector and to correctly apply them to the Public Management. In the public sphere, the application of IT has been described as E-Government.

One can say that a government agency has the same kind of purpose as a regular company. So using information technology in any organization should be a clear option with few problems. In fact, there is no reason for not using it, but there is a lack of understanding and knowledge about what the great advantages are of using it in the Public Sector and how it can leverage government "business".

There are authors, like Snellen and Van Dock (1998), who have strong convictions that "a) the use and implications of these technologies transcend the mere operational levels of public administration, and that b) the further introduction and use of these technologies need a distinct public administration perspective".

This text will focus on management issues rather than technical ones. Technology is now ubiquitous, but managing it in public or private organizations is considered an enormous challenge and an on-going effort. "Companies that fail to lead when it comes to IT systems also fail to lead in the marketplace" says J. William Gurley (Fortune, April 2, 2001). What this text will try to show is that the

same may happen in governments if there is no clear understanding of this new paradigm and if public managers lack the new skills.

II. The Impact of IT Innovations in the Public Sector

A. The Big Picture of IT

The use of computers in government dates back from the early 1950s. In fact, the government was the first organization to use computers, for military and scientific purposes in the beginning.

Throughout history, the use of computers in organizations has received many names: Data Processing (DP); Information Systems (IS) in United States (US) or Informatics in Europe and Latin America; Management Information Systems (MIS) in US or Informatization in Europe and Latin America; and, more recently, Information Technology (IT) in US or Information and Communication Technologies (ICT) in Europe.

A different way of thinking about the IT evolution is simply dividing the use of computers in organizations Before Internet (BI) and After Internet (AI). Since 1995[1], when the Internet entered the mainstream with the use of the World-Wide-Web and electronic mail, the most commonly used services, there have been numerous references explaining the impacts of Internet on organizations but, more important, on society, economy and politics.

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[1] Most of the references in literature point 1995 as the year when Internet services entered the mainstream in organizations.

Estimates by NUA Internet Surveys Ltd. (http://www.nua.com/surveys/how_many_online/world.html) showing the growth of Internet users worldwide are provided in Figure 1.

Growth of Internet Users		
Year	How Many On-line in World?	% Of World Population On-line
1995	16	0.4%
1996	61	1.5%
1997	74	1.8%
1998	147	3.6%
1999	201	4.8%
2000	407	6.7%
2001	700	11.4%
2007	2,000	29.9%

Source: NUA Internet Surveys

Figure 1

The importance of these figures is that more and more citizens have access to Internet, extending the range of public services in the Internet. In advanced countries, more than half of the population has access to the Internet, but the largest growth of Internet users is in developing countries. One may complain that still only a small percentage of the world's population has access to the Internet and particularly in terms of government efforts toward it. However, it is proven that a larger population may eventually use the Internet for government services when

there is a significant advantage in time, cost or convenience. For example, 13.5 million Brazilian taxpayers, 85% of all, sent their annual tax declaration by the Internet in April 2000 though there were estimates of only 7 million Internet users in Brazil.

Some may argue that when the government supplies Internet services it will benefit only the elite part of the population. However, there are government and non-government organizations worldwide making enormous efforts for people to gain access to the Internet. One good example is the Committee for Democracy in Information Technology (CDI), which is a Brazilian non-governmental, non-profit organization that promotes educational and vocational training programs in Computer Science and Citizenship Schools (http://www.cdi.org.br). In addition to doing pioneering work in bringing information technology to the underprivileged population, CDI promotes citizenship, literacy, ecology, health, human rights and non-violence, through information technology. As time goes on, more and more underprivileged people are having access to Internet.

With that overall view and prior to discussing e-government as a new approach for government efforts toward in new era, it is important to clarify how IT evolved in the Private Sector.

B. History of IT Use in the Private Sector

IT has undergone rapid and fundamental change since it was first introduced in organizations nearly 50 years ago. "Most experts agree that the IT revolution represents the most significant global transformation since the Industrial Revolution beginning in the mid-eighteenth century" says a report called Global

<u>Trends 2015</u> issued in 2000 by the Central Intelligence Agency (CIA) of the US Government.

Although IT has a very short history, it is possible to differentiate eras of computing and its impact on organizations, as Dickson and DeSanctis (2001) have done:

Eras	Computing	Applications	Management	Organization	Key Issues
First Era (1954-1963)	Isolated machines	Scientific and engineering; machine-specific programs	In-house training of technical staff	Unplanned, chaotic	Few concerns; computing is a mystery, scattered and hidden from top management view.
Second Era (1964-1976)	Distributed access to mainframes; compatible product lines	Accounting, inventory, and business transactions	Standardized programming languages, early database technology	Consolidation of control within the data processing function	Rising costs, unmet user expectations.
Third Era (1977-1984)	Midrange computers, easy-to-use interfaces	Commercial and user-developed applications complement internal systems development efforts	Systems development life cycle procedures; distributed IT development	Greater business unit control of IT	Coordination of centralized and business-unit IT efforts
Fourth Era (1985-1996)	Personal computers, local area networks, Internets and Extranets	User-friendly applications, desktop systems (spreadsheets, word processing) followed by groupware and workflow systems	User-driven systems management; everyone is an IT manager; project control techniques.	Federated or free market approach to IT, including centralized, decentralized, and outsourced IT operations	Incompatible systems, integration difficulties, Y2K
Fifth Era (1997 onward)	Personal digital assistants, mobile technology, Internet as primary platform	Electronic commerce systems	Professionalism and team skills are paramount; flexibility is added to project control.	Downsizing of corporate IT, integration of business and IT operations.	Embracing both old (fourth era) and new models of IT management.

Source: Information Technology and the Future Enterprise – Dickson and DeSanctis

Figure 2

The table shows a shift in time from technical issues to management ones. The authors stressed the importance of professionalism and team skills and the research for new business models at each stage in IT's evolution.

Since the advent of the Internet, IT and business have merged to form what is essentially a new era of industry and market dynamics (Applegate, 2001).

This new era has transformed organizations to incorporate the Internet attributes of openness, collaborativeness, and flexibility. In her E-Culture Project at Harvard Business School, Rosabeth Moss Kanter (2001) researches how companies use the Net. The main applications from the most to the least popular are for:

a) Attracting new kinds of customers;

b) Selling to traditional customers;

c) Working with customers;

d) Working with suppliers;

e) Purchasing;

f) Conducting meetings, doing work;

g) Getting employee feedback;

h) Training;

i) Telecommuting;

j) Getting news and information;

k) Advertising.

It is important to note that these popular uses of Internet are designed to meet customer, suppliers and employee information requirements. In fact, as a response to these requirements, corporations have integrated their information systems in new ways. A public web site for customers is called an Internet site, a private site for suppliers is called Extranet, and an internal site is called Intranet.

"Many large companies find barriers to E-business inside their own borders. Large corporations feel the drag of fearful longtime employees, at-each-other's-throats business units, leaders who still don't use computers or get the Internet, and technical-staff pools that are too shallow to support both new Web projects and thousands of existing users. Overall, large companies are more than twice as likely as small ones to bemoan the quality of management and the quantity of employees with Internet skills." What Kanter (2001) found in large private companies can be applied to the Public Sector since government agencies are usually compared to large organizations in general.

So, what is in the way of companies to achieve Internet excellence? In her research project, Kanter (2001) affirms that companies cite various obstacles:

a) Lack of staff with adequate skills

b) Employees who are not comfortable with change

c) Leaders who are not sure how to make choices

d) Conflicts among internal units

e) Managers who fear loss of status

As described above, all of the obstacles fall under the umbrella of management and personnel skills.

C. Public Administration in an Information Age

In June 2000, The Economist magazine published a survey called "Government and the Internet." It defined e-government as the use of new information and communication technologies to provide services and to disclose information to citizens, suppliers and government employees. E-government is

government with no barriers to the society, accessible 7 days a week, 24 hours a day.

As a way to reach its full potential, there are four distinct stages of development of the so-called e-government. In the first stage, public organizations post information about their government functions. In doing so, they are basically establishing a one-way communication. The most common example is having an institutional web page with a description of the services provided by the government organization.

In the second stage, a public entity can not only post but also receive information from citizens having a two-way communication channel. A simple electronic mail (e-mail) function may be implemented to provide a means of receiving suggestions or complaints regarding government services. However, there are other possible interchangeable flows of information between government (G) and citizens (C), the so-called G2C and C2G transactions. Examples of this can be found in Brazil where taxpayers have been able to use the Internet to send their annual tax declaration since 1999 and in the US where more taxpayers are filing their taxes on-line each year.

At the third stage, more complex transactions allow formal and quantifiable exchange of value. Sometimes, transactions may substitute services carried out by public servants, although co-ordination with offline channels are always needed or at least recommended. Examples of these are tax payments, enrollment in public schools, scheduling of medical appointments at public health facilities, and electronic procurement like the so-called electronic public auctions.

The fourth stage allows complex transactions to be done through portals

that integrate the complete range of government services, and provides a path to them that is based on need and function, not on department or agency. Singapore's eCitizen Centre (http://www.ecitizen.gov.sg) and the Brazilian Government Network RedeGoverno (http://www.redegoverno.gov.br) are examples.

The portal of the Brazilian government services integrates 31 different government areas and provides 700 citizens' services. Brazilian government agencies with the largest number of Internet web services are shown on the following graph.
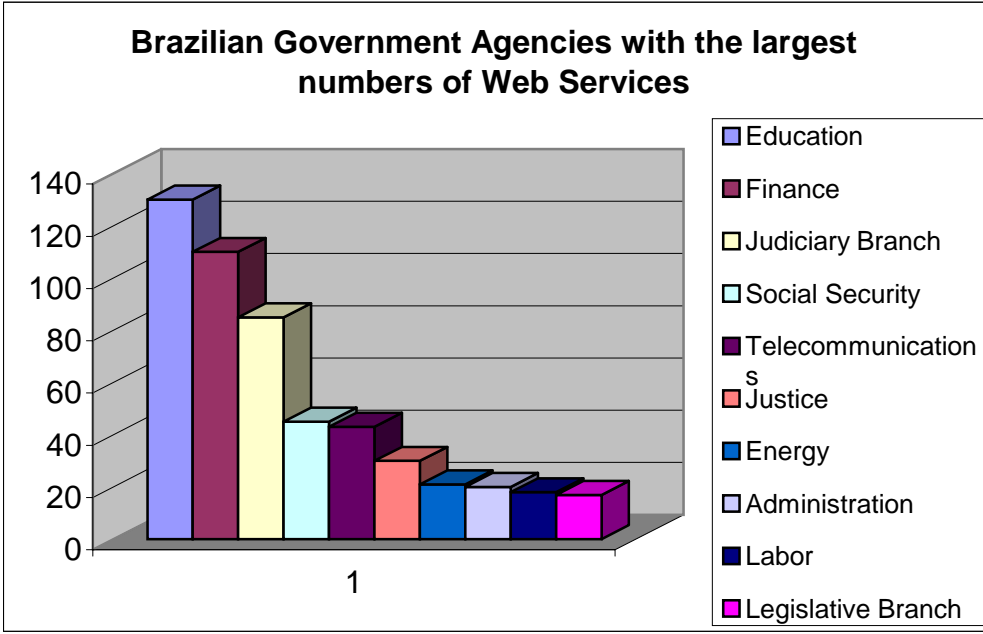
Source: Brazilian Government Network

Figure 3

Using the increasing popularity of this portal, the Brazilian Government launched some on-line polls regarding e-government with interesting results as follows (http://www.redegoverno.gov.br/enquete/anteriores.asp):

a) 41.84% of the *e-citizens*[2] considered e-government as a fundamental initiative for Brazil. This was the highest percentage among the four options (fundamental, important, not so important, no need) of the poll;

b) 43.36% ranked tax payment as the most important Internet service provided by the portal;

c) 66.95% considered e-mail the most used communication channel to the government.

Nowadays, governments are consistently relying on information technology to conduct their business. In reality, the functions of the government deal with an enormous amount of data. This is why government uses informational architectures that satisfy the need for managerial control to an even higher degree than bureaucratic structures do. "Facilitated by IT developments and attracted by IT opportunities, bureaucracies are being replaced by infocracies" (Zuurmond and Snellen, 1997).

D. IT potential

According to <u>The Economist</u> Survey, e-government is popular because public organizations want to offer:

a)   Services that are designed for citizens' needs, and available when and how they want them. This is exactly the idea of a 24x7 government, which is

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[2] *E-citizens* are referenced as the ones who have participated in on-line polls at the Brazilian Government Network site.

reached at the third stage of e-government development as described earlier. One of the objectives is to meet rising expectations of service because of the high levels of business services in the market. Another objective is to reduce complexity when dealing with government;

b)   Lower taxes, as increased efficiency cuts the cost of government. This is sometimes hard to believe in developing countries but this trend is driven by more transparency of government accounting, and through examples from advanced countries like the US;

c)   More transparent ways of doing business with the different functions of government. Government has finally understood that information technology is the cheapest way to be transparent. At the beginning of structuring an IT infrastructure the average cost is high. After that point, marginal costs are low, nearly zero. The marginal cost of any good or service is the expense of producing (or selling) one more item. For the Internet, this is negligible. Once a data file is stored – and a communication network is built – the cost of zapping the file to one more user is trivial;

d)   A two-way street of consultation and collaboration. This is another lesson learned: the importance of establishing relationships. There are internal relationships in the machinery of government; consumer relationships when government acts as a provider of goods and services; citizen relationships; and business relationships when companies do business with public organizations;

e) A new level of accountability for both elected and non-elected officials and more open and responsive politics. This is a consequence of transparency that helps to push e-government initiatives.

In October 3, 2000, the Gartner, one of the leading consulting firms in the world, hosted an "e-Government" Seminar Series in Washington, D.C. Here are some of the key recommendations and statistics cited by the panel:

a) By 2003, more than 60 percent of government agencies in developed countries will allow citizens to conduct some form of electronic remote transaction;

b) Gartner analysts project spending for e-government in US (including federal, state and local) will grow from $1.5 billion in 2000 to more than $6.2 billion by 2005. This expenditure is for e-business-related hardware, software, and internal and external service;

c) According to Gartner, an impending federal workforce-aging crisis is a major reason for pursuing e-government strategies. The average age of the typical federal worker in the US is 47.5 years old and increasing by a half year every 18 months. "That means by 2008, almost half the current federal workforce will be gone," said Gartner research director French Caldwell, "and there's no one to replace them - Generation X was frozen out of public service by downsizing and hiring freezes, and Generation Y doesn't want to work for government." Caldwell added, "If government agencies cling to a traditional view of management, public sector

employees and public service will, by 2008, face an increased risk of becoming obsolete".

E. Examples of effective use of IT

The case of Banco Central do Brasil (BCB)[3] is interesting because investing in information technology has been the strategy it has chosen to face new challenges derived from externalities and from the growing demand in internal knowledge sharing.

In 1996, there was a shortage of employees at BCB due to retirements of more than fifteen hundred employees after a new social security law was issued. At that time, there were six thousand government officials at BCB. After the loss of one quarter of its human capital, BCB increased its investments in IT and has had no need to increase its amount of employees since then.

On February 6, 2001, The Economist published statistics on the number of central bank employees in various countries, as well as a country rank of staff size as a share of population in 2000. BCB appears on the low end of the ranking, showing the least number of employees per 100,000 inhabitants. Now BCB functions with forty-five hundred employees for an estimated population of 170.8 million in 2000. It is headquartered in Brasília (DF), with branch offices in Rio de Janeiro (RJ), São Paulo (SP), and seven other major state capitals, totaling nine branches.

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[3] BCB is the Brazilian central bank authority holding functions much similar to the United States Federal Reserve System.
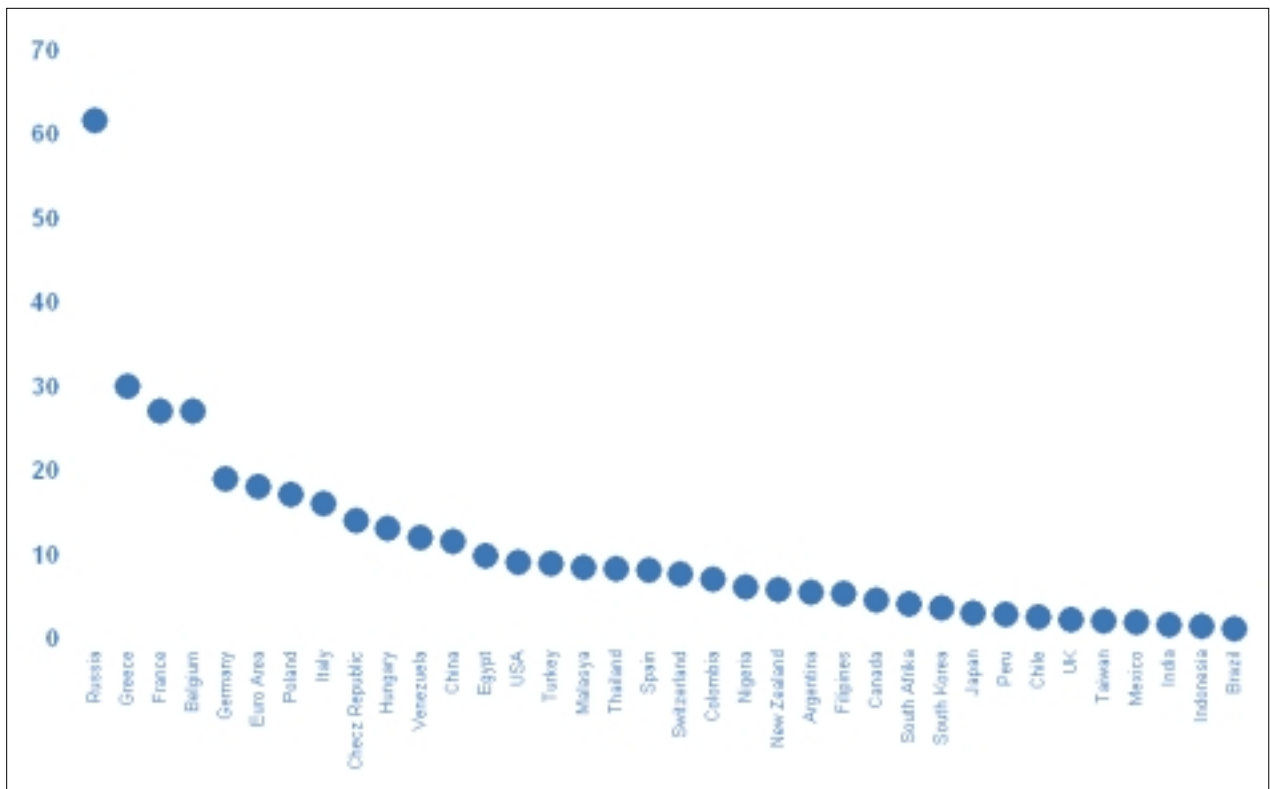
Source: The Economist, February 6, 2001

Figure 4

(a)   Central Banks in Various Countries – Employees per 100,000 Inhabitants

Besides applying IT intensively, there was the creation and diffusion of new internal communities as well as external ones. As an example, a young employee who implemented an e-mail list to discuss internal matters created one of the most prominent internal communities. Currently, after five years, there are more than one thousand employees that participate in this informal community.

Additionally, BCB started to implement a series of actions directed towards the external community. First, it improved its web site (http://www.bcb.gov.br), restructuring it in the sense that each important community (citizens, students, and

economists) had a different and specific web page to start browsing the enormous knowledge base that the site had turned out to be. For example, the citizens have a different frequently asked questions (FAQ) web page than the students.

Next, BCB managers figured out that there was an important community that should not only have access to the web site but also receive accurate and detailed information regarding monetary policy. They are the elite economists responsible for creating analysis, trends and news regarding economics. They are chief economists of banks, editors of financial magazines, analysts from rating companies (as Standard & Poor's), and other government authorities. BCB began to send them a newsletter regarding economic development and national indicators in Brazil.

In another example outside BCB is the Secretary of Logistics and IT of the Ministry of Planning started an electronic government initiative. Since 1999, they have built a site (http://www.governoeletronico.gov.br) and have organized a series of seminars called e-gov. This has resulted in the building of a national community of public IT managers that exchange information and the best practices in government.

III. The IT Function within Public Organizations

To facilitate all these e-government applications, there is a clear need for an IT function within public organizations. An always important, but somewhat forgotten, factor of success is a clear understanding by public managers about the complexity of managing IT infrastructure and the methodology of developing IT projects.

Although there are numerous external service providers (ESPs) in the market and they could be used for outsourcing purposes, the existence of a modern and active IT internal group can help leverage the use of IT if the government organization considers IT as a corporate strategy.

In the past, technology was scarce and the internal IT function area had to have many specialists that were used to develop some software technologies that were not available in the market. Most of these technologies were integrating functions like software for transferring files from a PC (personal computer) to the mainframe.

In the past, the focus of the IT professionals was on technical skills. Although having technical skills is still what differentiates IT professionals from ordinary businessmen, there are currently new pressures over traditional IT organizations driven by:

a)   Market and management changes. The idea that change is a period of transition between two periods of stability is rapidly disappearing. Periods of stability in the business and IT environments are getting shorter. Product life cycles are shrinking, as are the life cycles of the supporting business processes;

b)   Increasing user technology knowledge. The distribution in the use of and control of IT assets throughout the enterprise has evolved together with the user's increasing knowledge of technology. It is continuing to change the way the IT organization is organized. Many end users are frustrated with the unresponsiveness of their IT group and its apparent high

costs, and are only partially aware of the complexity of the environment that the IT group supports. These users increasingly take on IT roles themselves and turn to ESPs as an alternative source of IT services and skills. The result is often an adversarial relationship between IT professionals and nontechnical business users, which inhibits the enterprise's ability to develop an integrated information system. In fact, there should be a balance between users' freedom to choose the technologies they need and the necessary control over IT infrastructures and shared services. The rule of thumb has been to decentralize when there is excessive centralization and to centralize when there are no standards in place. The dilemma ends up being how to do both simultaneously, to centralize and to decentralize IT, as an on-going effort of Strategic Planning;

c)   Effectiveness of enterprise resource planning solutions and competitive services from external providers. The market services put pressures on the internal IT group to transform itself into a business oriented unit with comparable measures of effectiveness;

d)   Increasing complexity of managing IT. Many of the current changes require modifications to the IT infrastructure, putting the IT organization on the critical path to business change. The IT organization is also faced with continual change in the technical environment, which means everything becomes a legacy system and takes on the incumbent problems in less

than two years. Consequently, Chief Information Officers (CIOs), the leader of the IT group, and its managers are faced with the challenge of continuously changing the direction of the IT assets and the IT organization, which supports and produces those assets. Achieving flexibility and managing complexity are key issues.

These pressures are the reasons for a sometimes-difficult time between the so-called business people (line business managers, users of technology) and the so-called computer people (IT professionals). The main complaint is that the IT workers are not sensitive to business needs.

On one side, technology users are usually concerned with deadlines of business projects, the longtime projects, the consequent backlog growth, the rising costs, and the fact that sometimes what is delivered is less than what was planned. On the other side, IT professionals are concerned with security measures, follow-up of methodologies procedures, quality of service and technological update.

In the public sector, besides all these same pressures, budget restrictions and unskilled personnel are two big constraints against the effectiveness of IT projects.

Consequently, much pressure is concentrated on the CIO. All the business units would like him to solve all the problems. So, the CIO needs a well-motivated and trained group of professionals to cope with all these demands.

The in-house skills of the IT professionals are changing according to the following graph by Gartner (1998). It is interesting to note that the level of technical

skills dropped sharply although they tend to stabilize and the business skills keep rising.

Percentage
of In-House
Skills Portfolio
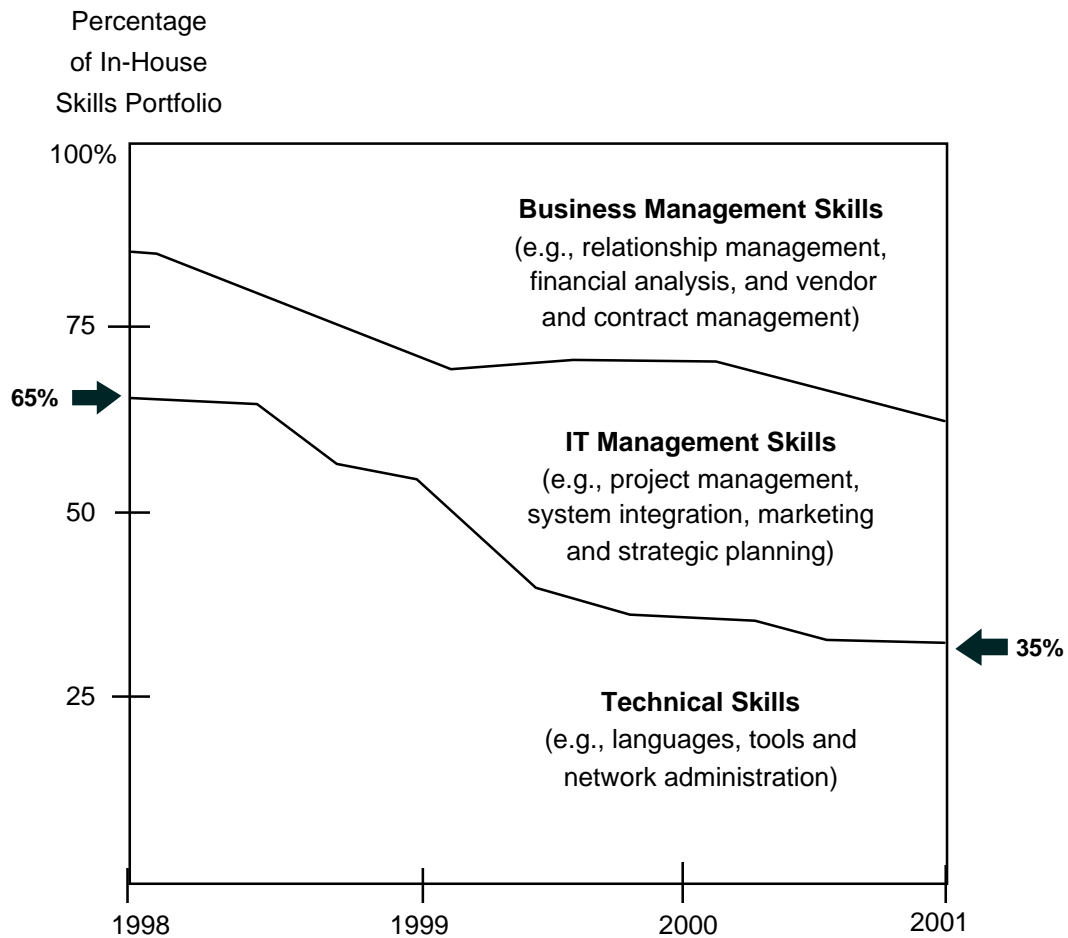
Source: Gartner – The Five Pillars of IT Effectiveness

Figure 5

The integration of IT into business systems requires that the IT organization understands the customer environment, business systems and strategies to a much greater degree than it does today and that it assumes the role of project leader and business analyst. That is why two new roles for the IT professional became very important: the role of relationship managers and project managers.

One of the more pervasive trends in IT organization in the past years has been the increasing use of relationship management to create a link between IT

and business functional management. This role is critical in establishing a meaningful communication and alignment channel between the IT organization and the business. The most important challenges for relationship managers are gaining credibility and developing an awareness of the complexity of managing IT among public managers.

Clearly, the push is on to build a bridge between the IT organization and its internal constituencies. Although many successes have been noted, relationship managers have often become the resources of last resort, as in "that's a relationship problem, so it's the relationship manager's job." That type of thinking creates an impossible task for relationship managers.

Many relationship managers revert to being project managers, either because the external resources hired to carry out the project must be actively managed or because the sponsor uses them that way. Project management differs substantially from relationship management, with each role having a different and important agenda. The former role focuses on a specific project's success; the latter role focuses on fulfilling the business clients' objectives.

The success of relationship managers, who often serve as the public display of IT organizational commitment to customer service, is based on client satisfaction. Unfortunately, only a few relationship managers are granted the authority to carry out that role or the permission to say "no" when appropriate. Although their empathy is strong, their lack of complementary authority and influence undermines their credibility with internal users.

Relationship managers are part of a team of IT professionals, all of whom must come together to run an internal IT service business. User satisfaction, IT

service quality, project management and other business principles are not the sole responsibility of relationship managers, but they are certainly indicators of success. However, too few CIOs drive their IT organizations in that direction, and some CIOs actually find strong, viable relationship managers to be a threat to their "primacy" over IT issues.

To overcome certain instability of the function taken by relationship managers, it is important to have clear definitions of duties. For example, once a relationship manager identifies a need from a business unit, he must conduct a feasibility study to decide whether there is going to be need for a project or not. After that, once approved, a project manager should take over and lead the management of the project, otherwise the relationship manager would have to skip his on-going effort to support the needs of a business unit.

Project managers should be certified to assure the quality of service of the projects they lead. Information technology is now the leading area for a number of professionals certified by the well-known Project Management Institute (http://www.pmi.org).

Qualifications of IT project team members include not only technical and communication skills but also professionalism in every sense of the word: analytic skills, creativity, ethical behavior, commitment, honor, clarity, and so on. Relationship management skills also have high priority.

IV. The Use of IT by the Public Managers

Providing an IT solution assumes that the procedures employed are going to change. Applegate (1998) says that "introducing a new business model into an

existing business community is like introducing a new virus into an existing population of people. Just as our bodies fight to eject the agent that is disrupting the smoothly running status quo, a business community fights to reject a new model".

Usually there are false and true expectations surrounding public managers' minds when considering the application of IT and its consequences. False expectations are common behaviors of public managers and servants that impose problems on the way to success. On the other hand, realistic expectations are important for public managers for their assessment of the IT solutions.

A. False Expectations

Perhaps the most common false expectation is that one can rely on technology to reach success in an IT project. Technology is important but still only one part of the solution. The on-line and the off-line, or the virtual and the physical, worlds coexist and cooperate with each other. In fact, there is the belief that they will always exist. Kanter (2001) observed that the best business models exist not in cyberspace but in corridors and conference rooms "where people gossip and brainstorm and concoct brilliant strategies over a cup of coffee".

Another false expectation is that all the information that comes out from computers is correct. The quality of the data that is input is the most important factor for the quality of information that comes from any information system. The public managers or servants cannot allow themselves to become slaves of the computer. They need to analyze the output before assuming it is correct. An extreme example of this happened in 1979 when French policemen shot a young

man because their database incorrectly identified the vehicle he was driving as 'stolen'. The primary cause of the tragedy was the failure to update the database of vehicle registrations (van den Hoven, 1998).

One false expectation is that procurement is an easy path to have IT solutions developed at government organizations. In reality, sometimes the agency or government department involved deserves blame for poor project management and inflexibility due to excessive detailed specifications. Vendors, on the other hand, also have their share for over-promising and under-bidding. They, in turn, tend to argue that this happens because public servants tend to award contracts on the basis of price rather than value and quality. So procurement is a complex process that needs to be seen as a project, led by a skilled manager.

Another false expectation is when officials are reluctant to ask their colleagues to change their practices and ask IT integration firms to over-customize and thus over-complicate applications. In doing so, the public managers lose the opportunity to really adopt the best practices in the market when enterprise resource planning solutions are deployed.

B. True Expectations

Governments nowadays seek to offer good public services, making the services' processes easy and transparent and thus creating a professional relationship with its customers - the citizens. IT can help to reach these goals. In doing so, governments are also fostering democracy.

It is the Internet's open standards, allowing everyone to connect with everyone else, which is the basis of its power. Almost all the technologies for

making e-government possible are already working for e-business. So, a true consequence is that technology is not a barrier to the introduction of e-government.

However, the public manager must also understand that government is the biggest and most change-resistant business of all. As discussed previously, applying information technology means changing the way things used to be. To really use the power of IT, you have to accept the need of change: organizations, people and attitudes.

A true expectation is that information technology, when correctly applied, can enhance productivity. The use of electronic systems has dramatically reduced not only the time spent over each transaction, but also the number of errors made. So measures of the previous work environment and the new e-environment must exist as a source for comparison.

A true important expectation is that, when deciding the feasibility of a given project, it is hard to calculate a return on investment (ROI). Public managers end up thinking that an IT project usually costs too much. In fact, besides the complexity of applying ROI models to government, there are few public services where there are easy comparisons of IT investment versus return. Internal Revenue Services are the most well known to successfully compare IT investment versus return on tax revenues.

C. New Skills for the Public Managers

The potential for IT in government is unlimited, and public managers play an essential role because they are the ones to hold a committed leadership, a full

understanding of e-business principles and a clear strategy for overcoming the barriers to change.

Except for technical skills, all other qualifications from the IT project team members are expected from public managers. These can be summarized in a big sense as professionalism. To do so, they need to develop analytic skills, creativity, communication skills, ethical behavior, commitment, honor, and clarity.

Although there is no need for technical knowledge, computer literacy is expected and so training is necessary in order to enhance computer skills. Public managers whose idea of using e-mail is to get their assistants to provide printouts are ill equipped to lead the transformation of their agencies into e-government. They do not know the right questions to ask, and lack credibility with employees. The same applies to public servants, in general.

V. Conclusion

"Information acquisition, storage, handling, diffusion and communications are a core function of public administration. Thus ICTs are its core technology and directly related to all aspects of its functioning" (Snellen and van de Donk, 1998). Having said this, it is important to outline that to maximize the use and to effectively apply IT; government officials need to understand the implications IT has on its functioning; besides, public managers need to look inside their organizations and understand what are the off-line changes happening within their community.

There has been a great deal of discussion on how the Internet can become a way to make profits for private companies and to make government more efficient on the public side. What we have learned from the so-called first

generation of the Internet is that the company that tries to live by the online transaction will die by it. Although making profits on-line is difficult and this is not in the interest of government, what companies have learned is that relationships are everything in the online economy (Keen, 2001). What do relationships mean to government? The relationships of citizens to the State, including those intermediated by politicians; the relationship of consumers of public services to the State; and relationships within the bureaucratic machinery of the State, including those between democratic representatives and the organizations of governance, are all, in essence, informational relationships (Bellamy and Taylor, 1998). Communities are built upon developing relationships and IT has proven an effective and cheap way for governments to do so.

Some could say that a public organization is not so much different from a private one in regarding to information technology, but it is important to realize that the purposes and the kinds of clients of each are different. So, if the final objectives and clients are different (for instance, profits versus transparency, customer versus citizen), there are different ways to approach IT. The essential distinction between public and private administration lies in the degree of 'publicness' that attaches to the administrative system, as it connects to and serves the policy (Taylor, 1998)

The potential for managerial gains, both in efficiency and quality, is great in public administration. Public managers should focus on:

a) Improving knowledge sharing as information reveals more about services, consumers and citizens;

b) Developing internal and external human networks (communities);

c) Reducing of risks due to decision making through information systems;

d)   Measuring the reduction in costs of provision of services and the increase in the satisfaction of consumers and citizens regarding the outputs of services.

In recent years, the world has been experiencing enormous advances in Information Technology (IT) as well as rapid economic growth driven by these new technologies. Although IT has been recognized as an important, sometimes, fundamental, new trend in public administration, there is a lack of understanding of its need. So, to foster the use of IT in improving relationships is a co-responsibility of business and IT Managers. There is no project that can rely only on IT professionals or only on public managers. They need to work together, communicate intensively and share their knowledge. In order to manage complexity they need to share responsibilities.

Thoughtful governments are looking at the Internet not as threat, but as a potential positive tool to engage the citizenry in the business of governing.

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