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Study of Information Technology (IT) impacts on Public Administration Performance: Survey of Haitian Information Systems, case of a developing country.

A Doctoral Thesis Presented to
The School of Science and Engineering
In Partial Fulfillment of the Requirements
For the Degree of PhD in Information Systems

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Abstract

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PART I: INTRODUCTION

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1. Introduction

1.1 Background of the research

In the last decade, much research in information systems (Llopis, 2000) has presented information technology as the fastest and most efficient way for an organization to go towards performance and efficiency. The 21st century was claimed as the digital revolution era. At the opening session of the first World Summit of Information Society (WSIS 2003), the Secretary-General of the United Nations, Kofi Annan, stated (UN-ICT-TF, 2005) "We are going through a historic transformation in the way we live, learn, work, communicate and do business (...) Technology has produced the information age." Such terms like *information age, information society and knowledge society*[1] are often used to describe the deep-seated impact of the ICT on our lives. Experts argue today that we are living a new industrial revolution more fundamental than the former. Tapscott and Caston (1994:395) point out "The companies which will not be aware of this new era and will not know how to clear themselves a road during the period of transition will be vulnerable and quickly old-fashioned".

In the mid 1980's, technology has played a major role in the development of business in the world. Almost all business sectors have leaned on technology to get into the competition in order to survive. Information systems have been the key step towards efficiency when automating different tasks in the companies, presumably to help reduce margin error and realize larger savings. In the mid 1990's, the Internet brought a new breath in the market when extending the frontiers of the globalization, challenging time and space; therefore, having a profound impact on the way the world conducts economic and business practices.

[1] Information age, information society, knowledge society are frequently used interchangeably referring to a society in which the creation, distribution, diffusion, use, and manipulation of information is a significant economic, political, and cultural activity.

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The **electronic commerce**[2] explosion stemmed from the new mindset laid by the Internet that is the customer-oriented business. The transformation that occurred in the last twenty years in the private sector has automatically and profoundly influenced the public administration with regard to customer service and information technology in business management. Consequently, many reforms undertaken by governments in the world imply somehow technology – organizational or sophisticated, if it is not technology-centered. While some countries like United Kingdom and United states have been leading ideological reform[3], other countries like New Zealand, Netherlands and Sweden have followed a practical path when engaging the same reform; adversely affecting developing nations that have pursued this trend mainly because of severe economic crisis or simply for the requirements of international lending organizations [4] (Kamarck, 2003) took the stampede lately and hardly. Nonetheless the pressure of the post-modern society characterized by a global economy mainly dominated by technology ignores which nation is rich or poor; therefore, each government has to do its' part to satisfy their citizens, despite limited resources, and at the same time integrate this global economy at the dawn of the 1990s.

As the post-modern public sector reform was offered up only on it's bright side, if not imposed by lending organizations in the case of developing nations, the "public sector reform preachers" - lending organizations[5], were in many cases,

[2] Le commerce électronique ou e-commerce désigne l'échange de biens et de services entre deux entités sur les réseaux informatiques, notamment Internet. Il représente un marché de 10 milliards d'euros de Chiffre d'Affaire.

[3] With Margaret Thatcher who came to office in Great Britain in 1979 and Ronald Reagan in 1980 in United States both running their campaign against the old bureaucracy in place.

[4] The World Bank, the International Monetary Fund (IMF), the Inter-American Development Bank (IADB) and the Organization for Economic Cooperation and Development (OECD)
for Economic Cooperation and Development

[5] World Bank and International Monetary Fund

impelling to enforce the reforms undertaken by rich nations upon developing countries without focusing on the social, cultural environment and the resources (human and capital resources) in place to successfully pilot the reforms. As a result the acceptation of the term “performance” is most likely a “political construct” having a different definition for the leaders of those nations. On the other hand the social impact and eventual dysfunctions was neglected when considering information technology as a technical solution while the acquisition of such technologies are exceptionally pricey. As well, the virtual environment set by the use of technology was not controlled. However years of implementation of information systems in a **“lack of theoretical framework”** environment has set grounds for uncertainties and doubts relating to the impact of technology on public management performance, especially in developing countries.

1.2 Problem’s definition

The factor to consider technology: Mainly information and communication technology in public management as a means toward performance. This raises many questions when considering closely the ***virtual environment*** created by information technology, which is very complex due to the human-factor concept and the **polysemic character of information** that is the core of any information systems. Also ***if we consider each country with its own socio-cultural reality and the root causes of the reforms undertaken, the performance concept as well as the technology, which is viewed differently.*** How do developing nations see performance relating to technology? Can public sector of developing nations reach performance by the use of information technology? In fact, is it rational to correlate performance to information technology? In what level can we really measure the performance achieved by an organization? What sorts of impacts are truly driven by the use of technology in public administration? How to improve the positive impacts such as performance and efficiency in public administration?

1.3 Scope of the research

Our research seeks to answer the above questions by analyzing the different scholarships and literature (see literature review) over performance concepts and information systems with regard to public administration. Two key concepts must be considered in order to prop up this research:

1. The concept of performance will be approached on two sides. The performance of the technology used and the performance of the public organizations (administration) using the technology, but first a basic knowledge on public management reform is vital.

2. The information technology concept, which has not a well-defined theory. This concept will automatically drive to study the virtual organization concept and certainly the information systems theory.

To outline the impact caused by the use of technology in public administration, we will consider two schools of thought: These are the positive impact and negative impact proponents. Thereby, the entire above-questions in the definition problem section should lead to the answer of the following questions which both constitute the main posit of the research: **What are the economic and social impacts of the information technologies on public administration performance in developing countries? How to evaluate performance in the context of public organization using information technology and how to improve the performance of the public managers using the information technology to perform administration tasks?**

However the main hypothesis which leads our research is as follows: **The utilization of information technology in public administration has positive as well negative impacts on public sector performance, but those impacts**

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must not be viewed as a pure result of information technology when considering the complex "techno-politico-social environment" in which evolve both public managers and the technology.

1.4 Chapter summary

In addition to the introduction and the conclusion, the research is divided in two major parts the theoretical analysis component and the empirical analysis both allotted in 6 chapters:

-) Synthesize the chapters here

1. **Theoretical body:**
    1. The public management in the context of the IT era
    2. Information technology
        a. Information
        b. Virtual environment
        c. Information systems and e-government systems
        d. The challenges of IS in public management
    3. The performance concept
    4. Impacts of the ICT on performance and evaluation of impacts
    5. How to improve the impacts
    6. **Empirical body**:
        a. The case of Haitian public management

1.5 Literature review

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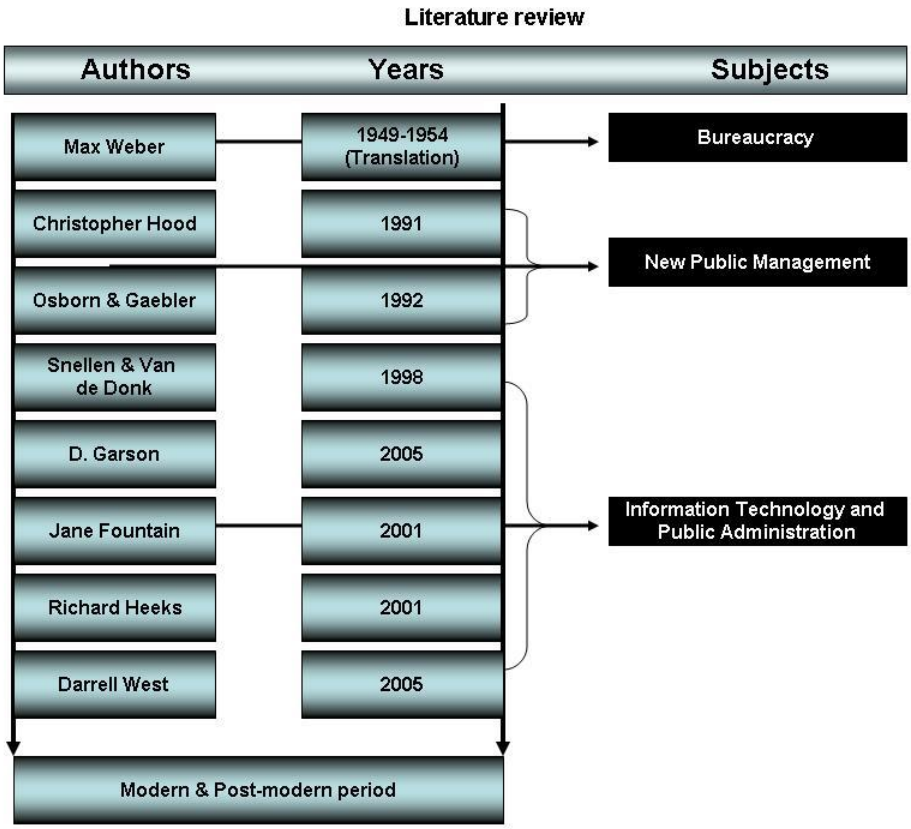

Figure 0.1 Literature review

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PART II: THEORETICAL STUDY SECTION

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Chapter 1: The public administration from 20th to 21st century

"Many acute observers argue that ascendancy of one trend over another owes more to rhetorical devices and selective emphasis from this corpus of conflicting ideas, together with an inherent cyclical dynamic in professional fields" argues Hood (1994). This observation may explain why each new movement fails practitioners of every field in ___ succeeding deterministic thought, which always leads to a distorted view of a phenomenon (Not sure if this is the thought you want). Due to concerns like corruption, waste and incompetence, there have arisen several movements in public management fields in order to solve "radically" these deficiencies. We may identify principally two successive major trends: Bureaucracy and the Post-Bureaucracy which includes: Progressive public administration, new public administration and today networked administration or e-government. Then what is public administration? What do we learn from those successive movements? What is the impact of technology on each of these public sector movements? May we consider e-government as the completed form of the old thought in a new technological environment?

1.1. The public administration

The Public Administration is a field of social science and a discipline, which is generally described as the marriage of public policy and public good. This term is often referred to "government" and bureaucracy. Yet the cross-disciplinary and intertwined character of the public administration makes it useless to be summed up to one definition (Stillman and Stillman, 2000[6]). Accordingly, Mosher (1956)[7] posits, "It is best that it (Public Administration) not be defined. It is more an area of interest than a discipline, more a focus than a separate science ... It is necessarily cross-disciplinary. The overlapping and vague boundaries should be

[6] Richard J. Stillman, Richard Joseph Stillman, Public Administration: Concepts and Cases, 2000.
[7] Frederick C. Mosher, Research in Public Administration. (Public Administration Review, 16 summer 1956) p. 177

viewed as a resource, even though they are irritating to some with orderly minds". Parker, the most skeptical scholar regarding Public Administration, asserts "There is really no such subject as 'Public Administration', no science or art can be identified by this title, least of all any single skill or coherent intellectual discipline. The term has no relation to the world of systematic thought... It does not, in itself, offer any promising opportunity to widen or make more precise any single aspect of scientific knowledge[8] ". Dwight Waldo, more considerate, mentioned the identity crisis of the public administration field. Nonetheless the public administration is traditionally defined as the power of law (Rosembloom, 1998), which refers to regulations for administrative processes, and constitutional law for civil rights matters. Over the year law and regulations themselves do not suffice to maintain satisfactory condition for quality public sector performance. True they furnish grounds for healthy organization and constructive outcomes, but do not account for its effectiveness and efficiency (Vigoda, 2002[9]). Let us review basic scholar definition over the past decade in order to comprehend the contour of the Public Administration.

Public Administration is the production of goods and services designed to serve the needs of citizen-consumers. Dimock and Fox (1983)[10].

We suggest a new conceptual framework that emphasizes the perception of public administration as design, with attendant emphasis on participative decision-making and learning, purpose and action, innovation, imagination and creativity, and social interaction and "co production". Jong S. Jun[11]

[8] Robert S. Parker, The end of PA. Public Administration, 34 (June 1965), p. 99

[9] Eran Vigoda-Gadot, Eran Vigoda, Public Administration: An Interdisciplinary Critical Analysis 2002

[10] Marshal Dimock, Gladys Dimock and Douglas Fox, Public Administration 5th edition, 1983

[11] Jong S. Jun, Public Administration, 1986

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In ordinary usage, PA is a generic expression for the entire bundle of activities that are involved in the establishment and implementation of public policies. Cole Blease Graham, Jr, and Steven W. Hays[12]

Public Administration is a cooperative group effort in a public setting; it covers all three branches (executive, legislative, and judicial) and their interrelationships. Public Administration has an important role in the formulation of public policy, and is thus part of political process. It is different in significant ways from private administration. Public Administration is closely associated with numerous private groups and individuals in providing services to the community. Felix A. Nigro and Lloyd G. Nigro[13]*.*

Public Administration is centrally concerned with the organization of government policies and programs as well as the behavior of officials (usually non-elected) formally responsible for their conduct. Charles H. Levine, B. Guy Peters, and Frank J. Thompson[14]*.*

The practice of Public Administration involves the dynamic reconciliation of various in government's efforts to manage public policies and programs. Melvin J. Dubnick and Barbara S. Romzek[15]*.*

Public Administration may be defined as all processes, organizations, and individuals (the latter acting in official positions and roles) associated with carrying out laws and other rules adopted or issued by legislatures, executives, and courts. George J. Gordon and Michael E. Milakovich[16]*.*

[12] Managing the Public Organization, 1986

[13] Modern PA seventh Edition, 1989

[14] Public Administration: Challenges, Choices, Consequences, 1990

[15] American Public Administration: Politics and the management of expectations, 1991

[16] Public Administration in America, 1995

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Public administration is the use of managerial, political, and legal theories and processes to fulfill legislative, executive, and judicial governmental mandates for the provision of regulatory and service functions for the society as a whole or for some segment of it. David H. Rosembloom and Deborah D. Goldman[17]

Traditionally, public administration is thought of as the accomplishing side of government. It is supposed to comprise all those activities involved in carrying out the policies of elected officials and some activities associated with the development of those policies. Public Administration is ... all that comes after last campaign promise and election-night cheer. Grover Startling[18]*.*

Without ignoring the definitions above, the expression *"public administration" in this research will refer to administrative system which is aimed to implement public policy and to manage (in broader sense) public good in a cooperative (Simon, Thompson and Smithburg, 1991*[19]*) environment*. Those administrative tasks make information and communication a real concern for government, for the function of Public Administration is eminently related to information and communication. Belamy and Taylor (1998) talk about 'information polity', other

[17] Public Administration: Understanding Management, Politics and Law in the Public Sector fourth edition 1997

[18] Managing the public sector fifth edition, 1997

[19] Simon, Thompson and Smithburg define Administration as cooperative group behavior. Used in narrower sense to refer to those patterns of behavior that are common to many kinds of cooperating groups and that do not depend upon either the specific goals toward which they are cooperation or the specific technological methods used to reach these goals. The most important is not the methods chosen to undertaken a cooperative task but how the method was chosen (law and procedures). They argue that "the activity undertaken calls for a type of organization which is a formal one - a planned system of cooperative effort in which each participant has a recognized role to play and duties or tasks to perform". Public Administration By Herbert Alexander Simon, Victor Alexander Thompson, Donald W. Smithburg 1991.

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authors refer to government as 'information broker (Add foot note)'. Snellen (1998) stated "Public Administration is the pre-eminent 'test-bed of efficacy of the digital age' for it manages information in the narrower largely internal sense, as well as managing information within the broader demands of the polity. Its tentacular handling information and communications issues, across the spread of its 'domain', is central or its raison d'être". This section of the research will particularly focus on the informational and communicational aspect of the public sector[20], as well on the behavioral facets in order to pinpoint later the complex social environment in which public administrators performing public services and how information technology may be used in an effort to reach performance.

1.2.1. The different trends in Public Management

The Anglo-Saxon's management scholarships carved out two main movements: bureaucratic management and post bureaucratic management. The latter encompasses the progressive public administration, the new public management and the collaborative networked-government or today electronic government. These trends have arisen to meet specific politico-social concerns, and they build themselves upon each other and always keep an initial thought. Let us examine the trends identified above and how technology was employed in public management.

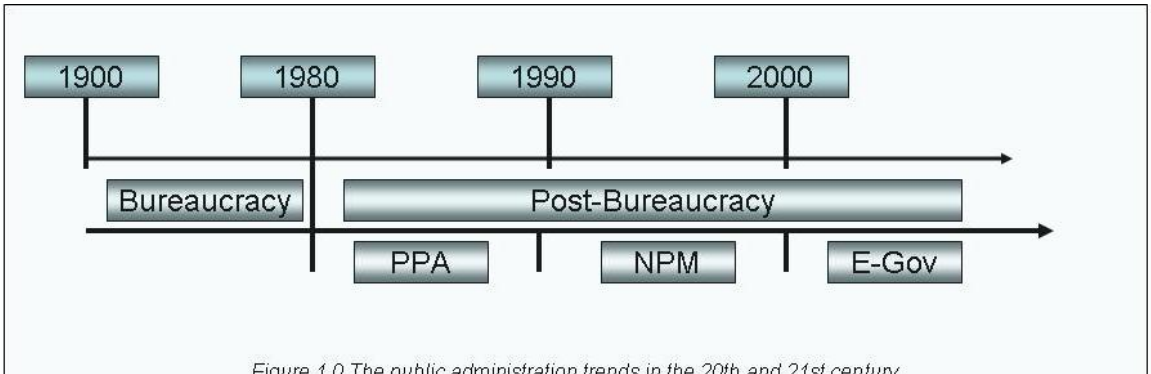

Figure 1.0 The public administration trends in the 20th and 21st century

[20] Though we will avoid the one-sided-approach to resume the Public Administration as "public information and communication administrative system

1.2.2. Bureaucracy Management

According to Max Weber[21], bureaucracy refers to a strategy for administrative modernization, a method to ensure the efficiency and rationality of administrative action in western society during the second half of the nineteenth century. This new type of organization promotes a leadership and authority originated with a rational framework dominated by rules, laws and regulations but not with traditional or charismatic powers. Weber alleged that bureaucracy was guided by the objectives of efficiency, calculability and predictability. Consequently ***the main evaluative goal of bureaucracy should be maximizing efficiency*** according to him.

But he recognized the tendency of bureaucracy to impose excessive controls on employees and warned that it could turn into an end to itself when becoming more powerful than society. In fact today, the word "bureaucracy" has a negative sense given that the burdensome rules and the excessive State domination and control. Has the Weberian modernization failed or is ___ its application that has failed? Was it designed to meet specific needs of the heyday bureaucratic? A large number of studies accuse bureaucracy of corruption, misuse of power, concentration of power, political interference, low creativity and managerial frustrations (page 3 of "Using the lens of Max Weber's theory of bureaucracy" paper). But let's consider the following important criticisms of bureaucracy in order to grasp the potential flaws of the Weberian bureaucracy:

Ludwig (1944) states, "This word is always applied with an opprobrious connotation. They always imply a disparaging criticism of persons, institutions, or

[21] Max Weber was a German political economist and sociologist who is considered as one of the founders of the modern study of sociology and public administration. Max Weber has probably been one of the most influential users of the word in its social science sense, though this word

procedures. Nobody doubts that bureaucracy is thoroughly bad and that it should not exist in a perfect world".

Goulner (1954) discovered that the "govern by rules" Weberian culture encourages members of bureaucratic organizations to follow the minimum possible rules in order to get along with the structure.

Merton (1957) pointed out the same critic did by Weber concerning an excess adherence to rules and regulations which could prevent the organization from achieving her goals. Let alone the application of particular rules in unsuitable situations could result dysfunctional endings. Merton called this imperfection the "goal displacement tendency".

Burns and Stalker (1961) found that highly bureaucratic structures were indisposed to change. The rigid atmosphere of control, efficiency and predictability conditions the organizational members and stops them from embracing new ideas and as a result not being able to innovate.

Kilcullen (1996) proposed that bureaucratic management means management under the realm of the law and the budget. "This management type is bound to comply with detailed rules and regulations fixed by the authority of a superior body. The task of the bureaucrat is to perform what these rules and regulations order him to do. His discretion to act according to his own best conviction is seriously restricted by them."

Recent theorists (Add foot note) warned that former Weberian tenants misread and altered the Weber view that has asserted that a formal rationality is not necessarily optimal for efficiency. But the basic problems engendered by the

was an English word before his works. He is well-known for his study of bureaucratization of society, thus many aspects of modern public administration go to his credit.

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Second World War and the recession period created a solid ground for success to bureaucratic systems; thus it should provide security for unemployment and retirement, stability after the recession and basic sense of fairness and equity (Osborne & Gaebler, 1992). But this slower-pace, hand labor workforce and mass-market society model will be demised to a rapid changing global world. The need for new footings was foreseen.

If the public management has been searching for (words deleted do you mean that you have deleted some words or some words are missing) other trends as indicated below, it is worth noting that the negative connotation acquired by the bureaucracy stems from formal organizations, which have departed from the Weberian thought, though some inherent imperfections are being addressed by others following public management movements. ***Nevertheless efficiency will remain a principal goal of any forthcoming tendencies. The bureaucracy was actually designed to meet basic needs of its heyday but the progressive changes of the society will require progressive thoughts.***

1.2.2.1. The technology factor in the bureaucracy's era

One of the main hurdles that confronted the public administration is the undercapitalization; thereby the scarce capital available is often used to meet constant priorities such as national security (Radin, Hildreth and Miller, 1998). Due to expensiveness, technological factors were always demised by the human capital factor in order to meet ends of performance. According to Hoover (1992) "Using existing staff to fill internal consulting position has been quite successful when those staffs are properly prepared for the task. Existing employees bring their experience and knowledge of the organizations and the operating procedures. They may be known by others within this organization and particularly by those with whom they will have to work to perform successfully their assigned tasks. They will not be seen as outsiders by existing managers

and employees." Therefore non-sophisticated technologies like trucks, telephones and other materials and equipments were used to improve organization (Radin, Hildreth and Miller, 1998). At this time cost-effective and efficiency, i.e. performance, was not contingent to technology but to human labor and workforce. Three reasons for that: lacks of diffusion of the technology, public administrators were not technology-educated and third the low paced-society was not requiring the technological factors as a key tool for performance and effectiveness. Nonetheless we must note that bureaucracy was considered by Weber as a "technology" which should help to modernize public organization. The ideal society of the 20th century would be an organization society according to him.

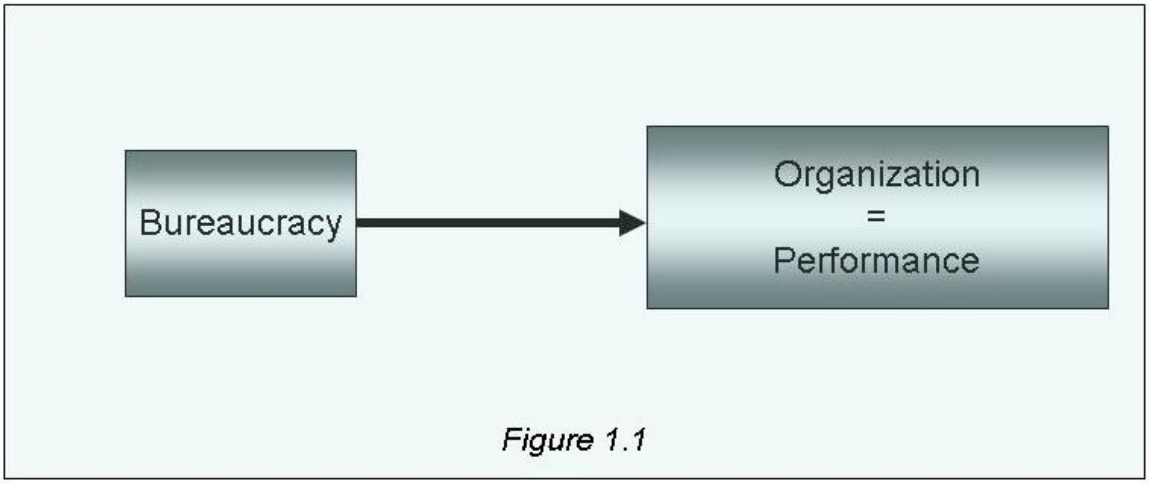

Figure 1.1

1.2.3 The post bureaucratic

Barzelay and Armajani in their book *Breaking Through Bureaucracy* (1992) enlightens a bureaucratic reform vision as observed in the US in the 90s. They argue that this bureaucratic paradigm though triggers important improvement over waste, disorder and patronage, has become obsolete and inefficient. The authors contend that this new paradigm foresees the emergence of the post-bureaucratic period. This new conception stresses the delivery of value to customers, as opposed to the control of costs and the struggle for efficiency, the

diminished of economies of scale and the increasing relevance of flexibility and value delivery. This conceptual framework proposed by Barzelay and Armajani is in clashes to other theoretic propositions of other theorists noted Dubnik (1994) regarding post-bureaucratic tenets. Hence he classifies the post-bureaucratic theories in three categories: minimal state, deregulating government, and reinventing government. In this research we resume the elements of this classification in the New Public Management movement following an intensive use of sophisticated technology in the post-modern period.

1.2.3.1. Progressive public administration (PPA)

In 1980's came the progressive public administration, the predecessor of new public management move. The progressive public administration fosters democratic accountability in order to limit corruption; waste and incompetence (Karl, 1963) resulted by the bureaucracy management. The PPA is based on two thoughts: firstly, keep the public sector sharply distinct from the private sector in terms of continuity, ethos, and methods of doing business, organizational design, people, rewards and career structure. Secondly, maintain buffers against political and managerial discretion by means of an elaborate structure of procedural rules designed to prevent favoritism and corruption (Hood, 1995).

The credits of the progressive movement go to Theodore Roosevelt, Woodrow Wilson and Louis Brandeis at the end of 1800s and debut of 1900s who have tried to transform the public management in America (Osborne & Gaebler, 1993). As a result we had:

- The formation of civil service systems with written exams, lockstep pay scales, and protection from arbitrary hiring or dismissal to prevent the use of government jobs as patronage.

- The independent public authorities to keep major construction projects - like bridges and tunnels - out of reach politicians.

- The splitting up of management functions and creating separately elected clerks, judges' even sheriffs.

- The creation of city managers profession who could run the bureaucracy in an efficient and businesslike manner in order to keep the administration untainted by the influence of politicians.

The progressive movement was aimed to cure bureaucracies from corruptions, arbitraries and protect the public interest. By doing this, another problem was created: more rules and procedures were developed to control all the processes; consequently the outcomes or results were neglected (Osborne & Gaebler, 1993). This situation had systematically reinforced the bureaucracy by elaborating more procedures to struggle with corruption and encourage trust but the efficiency in term of output was ignored.

1.2.3.2. New Public Administration (NPA)

Very soon the progressive public administration became the New Public Management[22] with the same zeal and determination but in new techno-socio-political environment. The NPA move took the private sector management as a model in terms of outcomes and management skills. Now procedures or processes are no more the actual issues. The vertical hierarchy cedes its place to horizontal authority (decentralization) in order to give more power to disaggregated department of public administration in the objective to reach efficiency and results by a new type of control (Hood, 1995). Based on the private sector model, citizens are seen much like customers. The NPM move

[22] In this research New Public Management and New Public Administration are interchangeable.

would be the dominant modernization process, which has led to major reforms in many OECD and developing countries.

The new public management is defined as a new paradigm, which aimed to promote a performance-oriented culture in a less centralized public administration (OECD, 1996). The NPA is characterized by a closer focus on outcomes, a decentralized management environments, a greater focus on efficiency and productivity, and a responsive administration.

This OECD statement posits well these tenets:

"This fundamental change in outlook has engaged all Member countries in a difficult process of cultural change: Instead of thinking in terms of due process and rigid frameworks for service provision, institutions and individuals are encouraged to focus more on improving the results of public interventions, including exploring alternatives to direct public provision" (OECD, 1996).

Holmes and Shand (1995)[23] use the following definition:

"A more strategic or results-oriented (efficiency, effectiveness and service quality) approach to decision-making";

"The replacement of highly centralized hierarchical organizational structures with decentralized management environments where decisions on resource allocation and service delivery are taken closer to the point of delivery, where greater relevant information is available and which provide scope for feedback from clients and other interest groups";

[23] (Holmes and Shand, Management Reform; "Some Practitioner Perspectives on the Past Ten Years" Governance, October, 1995, p. 551)

"Flexibility to explore alternatives to direct public provision which might provide more cost effective policy outcomes";

"Focusing attention on the matching of authority and responsibility as a key to improving performance, including through such mechanisms as explicit performance contracting;

The creation of competitive environments within and between public sector organizations";

"The strengthening of strategic capacities at the centre to "steer" government to respond to external changes and diverse interests quickly, flexibly and at least cost";

"Greater accountability and transparency through requirements to report on results and their full costs"; and

"Service-wide budgeting and management systems to support and encourage these changes."

Hyden (1992 and 2000), Bratton & van de Walle, (1992) noted a governance abuse tendency in developing country which result to: personalized nature of rule in which key political actors exercise unlimited power; systemic clientelism; misuse of State resources and institutionalized corruption; opaque government; breakdown of the public realm; lack of delegation of power and withdrawal of the masses from governance. These pathologies required critical cure, therefore lending organizations intervened in early 1990's with *good governance* programs, which mainly emphasize the NPM tenets dominating the different reforms initiated in 1980's in OECD countries. According to the World Bank, good

governance consists of a public service that is efficient, a judicial system that is reliable, and an administration that is accountable to the public. Then the Bretton Woods institution elaborates on four elements of good governance (World Bank, 1989, 1992), which was the nostrum for developing nations in order to achieve performance and efficiency:

1. Public sector management emphasizing the need for effective financial and human resource management through improved budgeting, accounting and reporting, and rooting out inefficiency particularly in public enterprises;

2. Accountability in public services, including effective accounting, auditing and decentralization, and generally making public officials responsible for their actions and responsive to consumers;

3. A predictable legal framework with rules known in advance; a reliable and independent judiciary and law enforcement mechanisms; and

4. Availability of information and transparency in order to enhance policy analysis, promote public debate and reduce the risk of corruption.

Obviously the World Bank has mixed up different reforms experienced by developed nations in order to outline an ‘NPMlike’ agenda enhancing the following watchwords in mid 1990’s:

- Decentralization[24] to lower state control in order to be more responsive and allowing the community's interests to be represented in government decision-making structures,
- Privatization, which refers to the transfer of control and responsibilities for government functions and services to the private sector – private voluntary organizations or private enterprises.

- Contracting-out [25] to realize cost savings from inefficient public bureaucracies that are more intent on satisfying the wishes of producer groups than of consumers.

This scheme constitutes the sinequanon conditions for developing nations to have access to international lending funds to overcome economic crisis while endeavoring to be more effective and efficient in public service delivery. Consequently the good governance reform proposed by the World Bank should be the shortcut to draw those countries on applying worldwide movement that is the NPM. Nonetheless the pressure of the post-modern society characterized by a global economy mainly dominated by technology ignores which nation is rich or poor, so each government has to do their part to satisfy their citizens whether with limited resources and at the same time integrate this global economy at the dawn of the 1990s.

[24] Decentralization can be defined as the transfer of authority or responsibility for decision making, planning, management, or resource allocation from the central government to its field units, district administrative units, local government, regional or functional authorities, semi-autonomous public authorities, parastatal organizations, private entities and non-governmental private voluntary organizations.

[25] Refers to the out-sourcing or buying in of goods and services from external sources instead of providing such services in-house. It is a method of privatization that is increasing in popularity due to the emphasis on efficiency and service delivery.

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If bureaucracy was a theoretical framework proposed by Weber, the progressive movement was a pragmatic framework argued by administrators with bold awareness pertaining to relevant changes started in local rather than national governments. Among others[26], Osborne and Gaebler in their book *Reinventing Government (1992)* produced a popular agenda for high-performance government in United-States (1993). However the NPA move was later formally addressed and embraced by academe and schools. The Minnowbrook Conferences (1968, 1988) held by Dwight Waldo was the momentum in the formation of the identity of the NPA movement in United States. At this conference they argued for drastic changes, for a new public administration; an administration based on relevance, participation, change, values, and social equity (Radin, Hildreth and Miller, 1998). Never before, had the government been under such pressure to change the administration[27]. These changes were aimed to deal with a new social environment. A global marketplace with competitive pressure on national economy, an "information society in which people have access to information almost as quickly as their leaders do, a Knowledge based-society where educated people demand more autonomy, a niche market where customers accustomed to high quality and extensive choice" were going to change radically the society, as well the public administration (Osborne and Gaebler, 1992).

1.2.3.2.1 The technology factor in the NPA period

The assumption of the NPA was spurred on by many changes in the society: the explosion of the society that makes it more difficult to satisfy its needs, the industrialization of the technology, the explosion of PC, and its diffusion by the

[26] Christopher Hood has the same impact on the English government in 1991

[27] Consequently, the former President Clinton (United States) in 1993 initiated a new strategic reform named "reinventing government". The Clinton regime endeavored to end the unresponsive hierarchical model and top down bureaucracy for a new public sector both less expensive and more efficient.

private sector. But the effective use by the private sector to improve its performance would draw serious attention. Thus the adoption of the technology as the way toward performance is followed. ---) Add more details

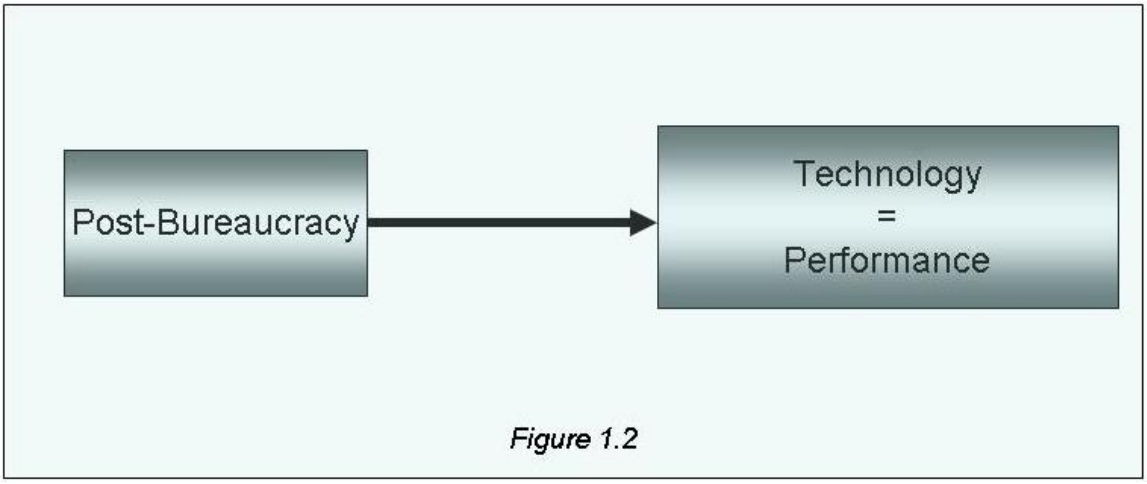

Figure 1.2

1.2.4 The links between the public management trends

In the above-mentioned trends (Bureaucracy, Post-Bureaucracy), _____ Information technologies were mainly used to provide technical support for the work of the administration. However in the NPM period the technology was over-emphasized and the focus was on problems, which could be solved by technical means (Traunmuller, 1999; Schuppan/Reichard, 2002).

The figure (1) below shows clearly that the differences between the trends stemmed from the social and political conjuncture that is less considerable (Hood, 1994). There is a permanent connection between them, which is the “Rules or Procedures.” However, dependent on social and political circumstances, other elements are stressed more than in the former trend. The bureaucracy for example, supports centralization of the public administration by erecting rigid rules and this was the new way to modernize the public management. The PPA endorses accountability while maintaining the centralization thought. The NPM also encourages accountability but aims to unburden the public administration by

decentralization and focuses on results and outcomes. Now the e-government, as we will see later, advocates technological modernization while being citizen oriented and vertical-controlled. Hence the modernization in e-government regime does not have the same meaning as in the bureaucracy. The e-government modernization is by information technology instead by rules whilst authors alert professionals not to "digitalize" the administration but reengineer the administrative processes (Fountain, 2001); we will talk more about it later.

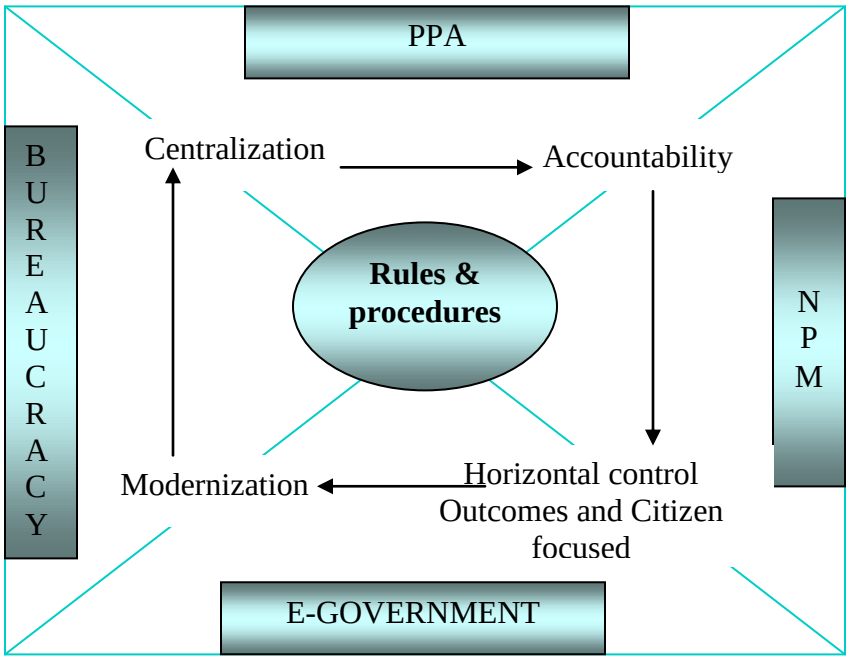

Figure 1.3 the links between the public management trends

The second figure beneath illustrates the degree of technology employment in the different trends studied here. The bureaucracy used organizational technology (telephone, trucks, and other existent ordinary technologies) to strengthen the administration, while the New Public Management deployed information systems and other communication technologies to reach outcomes and turn the administration into a citizen-focused organization.

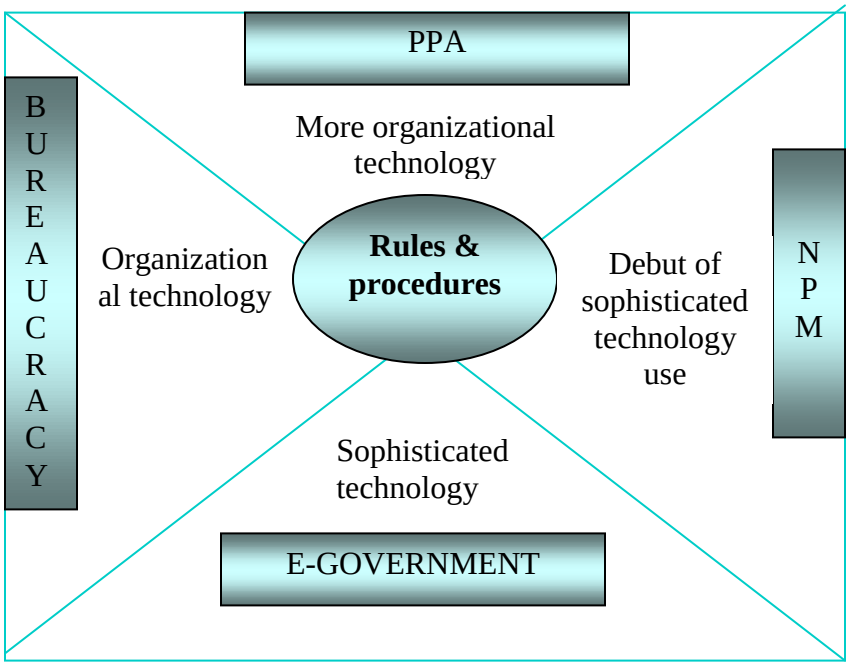

Figure 1.4 the level of technology in public management trends

The 3rd figure shows how information technology was viewed with regard to performance. As stated above, the bureaucracy leaned toward rules and workforce to achieve performance, though New Public Management and Network government are technology centered in the struggle for performance.

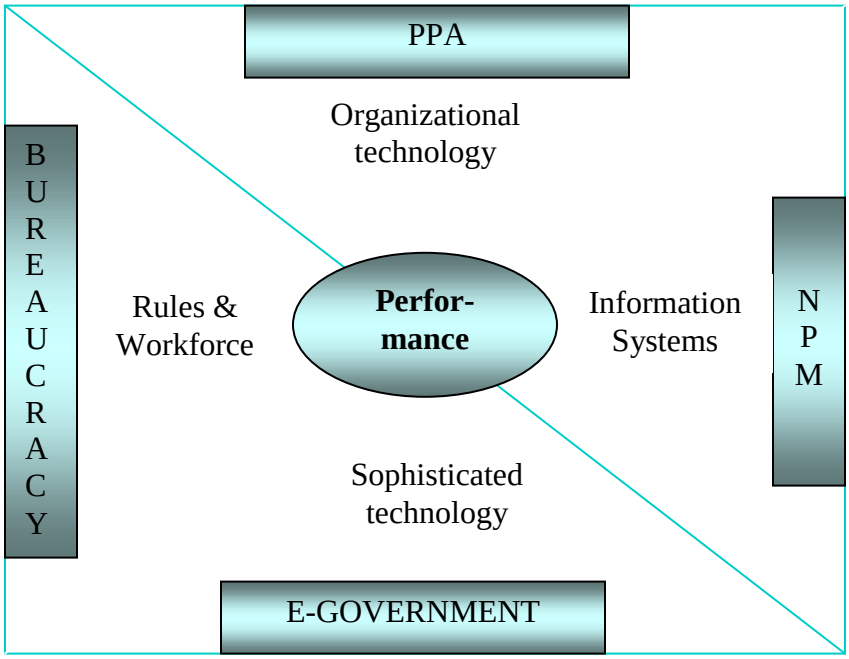

Figure 1.5 Technology and performance

Today, given that the ubiquity and the power of the information technologies, some scholars predict that the time to reinvent the public administration is rung. Other researchers argue that information technology has the capacity to lead to the desperate 'radical' administrative reform (Fountain, 2002), which was never being achieved by the former trends[28]. As indicated by Fountain, "Technology is a catalyst for social, economic, and political change at the levels of the individual, group, organization and institution". This one-sided, narrow, staunch approach from a deterministic and utopian view of IT ____ ignores many vital factors that lead to the desired change or transformation.

[28] Even after many transformational reforms undertaken by some OECD countries like US, many citizens are still complaining of the burdensome bureaucracy of the public sector.

1.2.5. The nature of public management reform

Administrative reform implies radical and dramatic change if not incremental– low or higher level of change (Kraemer, 2003). The different trends studied above are describing the several reforms taken on by governments during the past 20 years. Can we identify the forces, which spur on a reform? How can we understand the process of reform in a developing country?

One of the authors addressing eloquently the administrative reform in the context of the post-bureaucratic period is Bouckaert (2004); in his book *Public Management Reform* he pointed out the main forces that have driven reforms in countries and how these forces can determine the success of reforms. According to him, the socio-economy (which includes the global economic forces, the socio-demographic change and the socio-economic policies) and the political system (comprising the new management ideas, the pressure from citizens and the ideas of political parties) are both two principal forces that form a decision making process-fostering changes in the administrative system (see figure below). Considering this framework, we could conclude that socio-economic forces particularly the global economy which alleviated effects fostered by lending organizations compel developing nations to embrace new management ideas in condition of international loans. As a result the decision making process overlooks the citizens' desiderata and the national political ideas. The incapability of government in these countries to meet basic needs do not leave them any alternatives but the Bretton Woods agenda and the population while never experiencing a customer-oriented approach initiated by a strong private sector is unable to exercise pressure for better public services. This sad reality constitutes a real threat for successful reforms in developing nations.

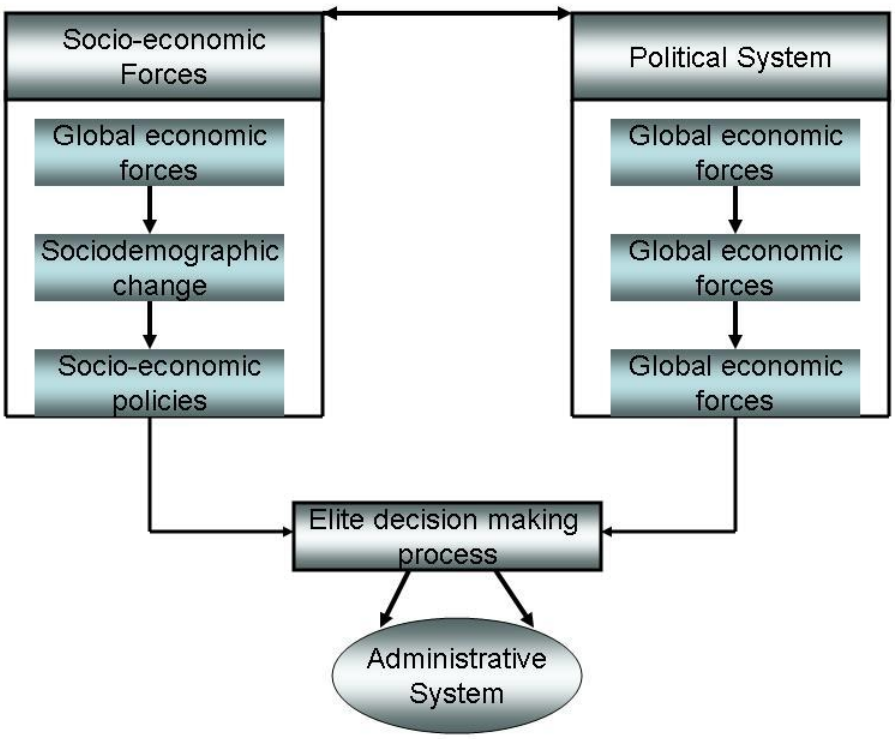

Figure 1.6 Model of public reform (adapted from Bouckaret)

1.2.6. Conclusion

At this stage we have learned that from 19th to 21st century our society has experienced two main public administration periods: the bureaucracy and the post-bureaucracy (New Public Administration and the e-government). Yet we will read that they both respond to a social context and technological environment. From a low paced-society to global and rapid changing society, new footsteps were required. Although in bureaucracy era workforce was the key factor to reach performance, NPA promotes experts and technology to achieve performance and nowadays e-government argues that sophisticated information and communication technologies are vital to attaining performance (see Fig. 2). The trends studied above describe the wave of reforms carried out by many countries in the last 20 years, although we learned that developing countries

present a particularity when the forces driven their reforms are not spurred on by their political system but mainly by lending organizations on behalf of economic crisis in order to guaranty international loans. These so-called reforms in developing nations are culminating very often to a performance according to an organizational framework from these institutional organizations and due to lack of local resources and education the use of information technology during the process is often not sustainable. Is it rational then to consider performance a corollary of information technology? We will later study whether technology has a significant (positive/negative) impact on public administration, ___ what impact they have and how to improve the positive ones? At this step of the research it is very important to study what “Information Technology” is and how performance can be achieved with it, while focusing on the case of developing nations.

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Chapter 2: Information Technology (IT)

2.1. Information

Simon (1983) posits that in the post-industrial age the issue for management will not be production organization but processing information. This statement makes it clear that information would be an important issue in our today world. So what is “Information” in the context of management and computer science? The literature reveals different meanings and even counter-meanings of information. However let us start frankly by saying that until now information has not a precise theory that could lead to a meaningful assertion (Goguen, 1997). If Bowker (1994), Haraway (1991) and Agre (1995) consider information as a myth, Schiller (1994) views it as “commodity” in the post-industrial society. Petit Robert dictionary defines information as a « useful » data on something or someone whom we carry in the knowledge of a person or a public. If information improves the knowledge of person on a subject, the level of utility of the information depends on his perception, which depends on his environment.

According to Rigaud (1979) the meaning of information implies four components: ***absence of uncertainty, freedom of choice, preservation of the organization and evolution by exchange.*** Thus information confers opportunities and constraint. Zardet (1986) stated, “Any message, new or repeated, emitted by an internal or external actor to the company or to its environment is information”. But Davis (1987) argues “A set of data transformed under significant shape for the person who receives it, having a real value for its decisions and his actions”. Consequently we cannot sum up information as mere “message”, but “data” is more appropriate when taking into account the richness of the information technology and communication used in enterprises to transmit sound, video, pictures and text.

2.1.1. The value of information

Can we assign a value to information? For Shanon (1949) the importance of transmitted information depends on its quantitative objective contents. The more an event appears as improbable, the more the information concerning this event becomes important, so defining the quality of information as its level of relevance. In his meaning theory of the information, Mc Kay (1969) establishes that the information is what forms or transforms the representation, so positioning in a systematic vision. He demonstrates that the treatment of a set of data allows to create the information, and thus to reduce the uncertainty of the decision-maker.

What do we learn from the above-mentioned authors? **Information is an interpretation of a configuration of signs or data for which members of an organization are accountable.** Outside the organization, which is the context, the set of data or signs would have any significance. **Information will have a value when it is configured in a context or environment where members of this environment will be able to give an interpretation** which is the meaning and its value.

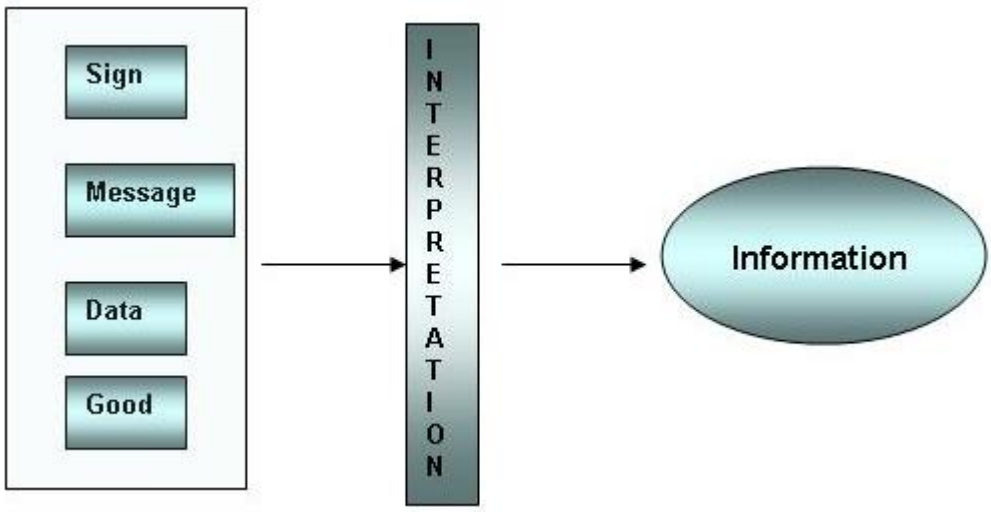

Figure 2.0

2.1.2. Information as a good

Shapiro & Varian (1999) define information as a good and a particular product. According to them, Information has several unique characteristics, which render it difficult to valuate. Information is an unusual good in many aspects - production, distribution, cost, and consumption. Information is both an end product and an instrument or input into the production of other goods, decisions and information. It is expensive to produce and cheap to reproduce (Bates 1989; Shapiro and Varian 1999). In fact, distribution is accomplished mainly by reproduction or copying. Different media can distribute the same content, and the price is often derived from the medium rather than from the value delivered by the content itself. In point of fact, people consume information both by sharing and by purchasing, while most other goods are consumed via purchasing only. The cost of information can be either direct or indirect. The quest for the value of information is further complicated by the fact that information is an experience good, meaning that its value is revealed only after consumption (Shapiro and Varian 1999; Van Alstyne 1999).

Much research has been done in order to set a calculation method to information (Repos, 1995), however we consensually accept two approaches: the *exchange value* and the *utility value*. As a result, the value of information depends on its usage value, though it has not an absolute value.

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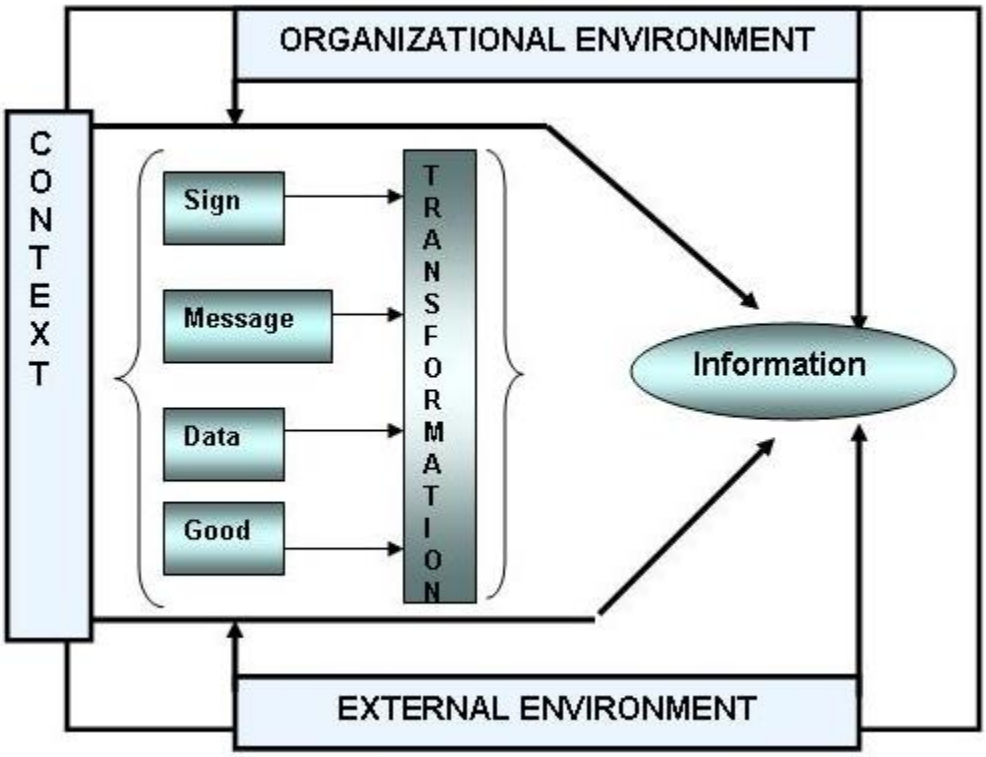

Figure 2.1 Information concept

The figure 2.1 summarizes the different items assigned to information in a particular context in a certain environment (internal and external) transforming or configuring the data (sign, message, good, etc) in order having a meaning and a value for the actors exchanging within and through the organization.

In this research the term information will refer to management context, we intend by the word information *"A set of new or repeated data, emitted by an internal or external actor, to the organization or to its environment, allowing her to modify her vision of the environment to make a decision. As a result information is considered as major resource for a strategic purpose in an organizational environment".*

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2.1.3. The information system concepts

Before defining information system, since we have already described "Information", it might help to define "System." The understanding of "System" is a set of elements, which interact between them by exchanging internal and external information with the support of communications. (BOUZE, 1983).

Literature does not provide a unique definition of the information system concept, definitions are numerous and different. Le Moigne (1990), for instance, defines the information system as an interface between the production system and the pilot system. Lesca and Lesca (1995) emphasize that the information system connects organization, technology and humans with the objective to treat the information with regard to the goals of the enterprise. The authors stress the idea of a *dedication of the information system as a tool to the service of the organization and of its goals*. On the other hand Earl (1989) and Courbon (1993) define *four functions of the information system: seizing, memorizing, treating and communicating*. Reix (1995) completes this definition by adding that the objective of the information system is to treat information to offer a more relevant representation of the reality, to reduce the limited rationality (Davis, 1987) and award two types of objectives to information system: Supplying the management (information piloting system) with information and treating the information to realize activities of the company (information production system). As a result, Reix (1995) defines the system information as set of organized resources: material, software, staff, data, and procedures allowing acquiring, treating, storing, communicating information through the organization.

2.1.4. How we perceive information system today

Today this expression refers mostly to computer tools, the technical core of the system. Regarding technological progress, information system inevitably means computer support. Indeed, the appearance of the Information system concept is

not without link with the headways of the technology in information integrators systems (i.e. architectures client / server, Intranet, internet, distributed data bases). Additionally, this definition also includes elements outside the computer tool such as the users, the suppliers and the various sources of information, networks and communication protocols, etc., for without these elements, the Information system would not be dynamic. More importantly, in an information system, information is above all digital whether it is text, sound, images or video. It can be structured (a database) or amorphous (set of files stored in hard disk).

According to Reix's definition, we name information system in this research "*A computer based system in which an articulated set of resources like human, technologies, rules and procedures permits to acquire, to store, to treat and to distribute information in the aim to help people or a group of people in decision making process.*"

2.1.5. Characteristics of information system (IS)

Every information system is characterized by the following elements (Leitzelman & Dou, 1998) within an organization:

- A source of information, in which is the original information,
- A user who asks question,
- An interrogation module which interprets the question of the user, looks for the information and restores the results,
- A network and communication protocol, which allows the connection between the elements of the system.

In accordance with Quinio (1997) an information system may be:

a) Dynamic when being organized around a set of resources (technical, organizational and human).

b) An open system, which interacts with the upper-system of the organization. The system of information appears as a sub-system and is defined as a system, which treats the information in agreement with the objectives of the organization.

c) Active and adaptive: As sub-system of the organization system, the information system is organized, but must also be adaptive. Regarding the objectives of the organization, the information system is opened to the environment and interacts with it.

d) Controlled and evaluated when being "piloted" to organize it's functioning, insure its development and the necessary corrections. The use of information technology is crucial at this step.

2.1.6. Typology of information system (IS)

Zardet (1986) suggests three kinds of information system:

1. **Stimulating type**: The information system works without major break, it starts with the process of acquiring, passing by the treatment and the circulation of information to get at the process of decision-making. It is the most complete system because it leads to decision-making process and stimulates a decisive action (Voyant, 1997).

2. **Transformational type**: The second allows not only the circulation of information but its understanding and its transformation (interpretation)

in the environmental context of the organization by appealing to the cognitive capacity of the user.

3. **Basic informational type**: The last one is the basic type, which allows the acquisition, the treatment, the circulation and the reception of the information. This type does not stimulate any decisive action and in turn engender any economic product for the organization.

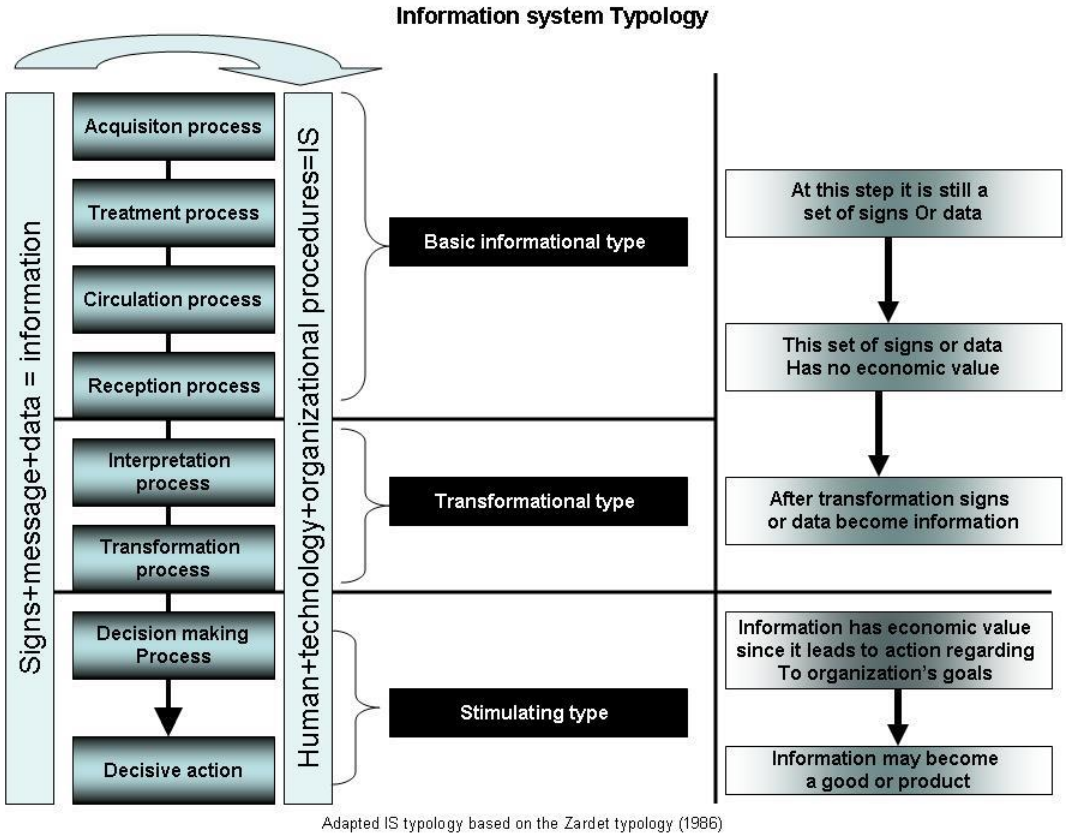

Figure 2.2 Typology of Information System

2.1.7. Information in a decision making process

According to H. A. Simon (1960) we define decision-making process as "identification and resolution of problems faced by organization". But the information generated by a system is encountering the limited rationality of the

user (human) because of its cognitive character, which is going beyond organizational procedures. As a result researchers establish that information does not automatically lead to rational decision (Emery & Trist, 1995; Le Moigne, 1973, 1979; Gorry & Scott-Morton, 1971; Boland & Hirschheim, 1987; Felman & March, 1991; Silver, 1991; Boland, 1994).

As studied above, its polysemic nature subjects information to a variety of interpretation that will make the result of decision based on certain information a pure contingent. Bourre & Darson (1993) observe that information systems are under-utilized if we consider it as the principal step to decision. The intuition of human beings always drives him to select information not regarding the organization's procedures but according to his preferences (Crozier & Friedberg, 1977). If information is important for the decision maker the question is what "information" do we talk about?

2.1.8. The value of information system (IS)

Therefore, how must we consider an information system in an organization? Regarding the ambiguity which characterizes the connection between information and decision, it would not be *rational* to think that an information system whatsoever could provide relevant and absolute information to a decision maker (Ackoff, 1967; Le Moigne, 1974, 1986; Marmuse, 1992; Bartoli & Le Moigne, 1996). The numerous factors involved in the process and the complex environment of the organization virtualized by an information system and the above-mentioned issues make it a pure hazard. An information system, whether it is a database or electronic government system, is useful when being adaptive to its environment thus to the needs of the decision maker. This will guaranty to a certain degree the causation of the information to the result of decision.

2.2. E-government Systems

2.2.1 What is e-government?

E-government which is an information system refers to the use of information technologies such as intranet, extranet, internet and other networking systems to establish a perfect availability of information and deliver electronic services to citizen and businesses (public) in order to transform the relations with these ___ and between/within its different agencies and organizations (WorldBanks; Howard, 2001; Backus, 2001). E-government is a client-oriented (according to NPM trend) or citizen-oriented approach toward efficiency and effectiveness. This definition may be considered simple minded when transposing the approach of the private sector (ecommerce) of the use of IT within the public administration without any critical observation – later we will discuss the flaws of the e-government idea.

2.2.2. The stages of e-government

According to researchers and scholars, e-government may evolve from simple Internet presence to fully integrated government systems. So the use of the technologies and its dynamic trait condemn any IT system and organization IT based to change and grow. In this paper we will not question the stages; we will simply indicate them as listed by researchers (Gartner, 2000). But it is worth noting that the stages hereunder are not necessarily mutually exclusive or progressive, the determining factor will be the problem tackled by public managers and the needs of the citizens.

2.2.2.1. Informational stage

At this stage government and public sector organizations have a simple presence on the web via static web sites through which government provides static information about agencies and services provided to citizen and business. We may consider this phase as the “digital brochure” of the agencies with relevant information available on the web that could save time for citizens and businesses. Listed below is information that may be put online in the first phase:

- Information on services and administrative processes
- Performance indicators;
- Environmental indicators;
- Auditors results;
- Management reports;
- Released notes;
- Geographic, demographic and economic data;
- Etc

2.2.2.2. Interactive stage

The second phase is adding interaction on the former by rendering possible two-way communication between public managers and the public (citizen & business) (internal and external communication level).

Hence, the public could :

- Address directly the public managers on specific issue within different levels of ___ public administration;
- Public can use search engine to find desired information;
- Public can download forms then complete before sending the hard paper form to the administration;
- Public may participate in electronic forum concerning social and political debates;
- Etc.

2.2.2.3. Transactional stage

This stage provides an alternative to the public (citizen & business) not only to download and complete forms but to pay online. This stage completes its predecessor by offering the public the opportunity to be served online without any displacement; now a virtual organization is established. This stage is often called e-services phase. Most of countries' e-government initiatives are still at this stage

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preparing transition for the fourth stage by adopting new rules or adapting former rules in order to transform the organizational processes.

2.2.2.4. Transformational stage

This stage should be the favorite of the proponents of the e-government reform, for this phase leads to fully integrated services. Citizens have access through a single portal to all services and pay their bill online. Now government undertakes institutional and administrative reforms to transform its business processes. This stage is considered as the most complex and expensive in e-government evolution. But the return on investment expected, the transparence and the good governance promoted make it worthwhile.

According to empirical studies, these stages are applied in the context of different government administrative levels: local, state and national. However local e-government initiatives are still at their stammering phase.

2.2.3 Type of e-government

As e-government definition implies, the use of technology is to transform relationships of government with citizen and business. We identify three types of e-government:

1. Government to Citizen (GtoC) when government provides information and delivers service on line to citizen.
2. Government to Business (GtoB) when government does the same toward business (Business here may include NGOs).
3. GtoG when information technology is used to improve communication and information management among agencies and internal partners (like employees).

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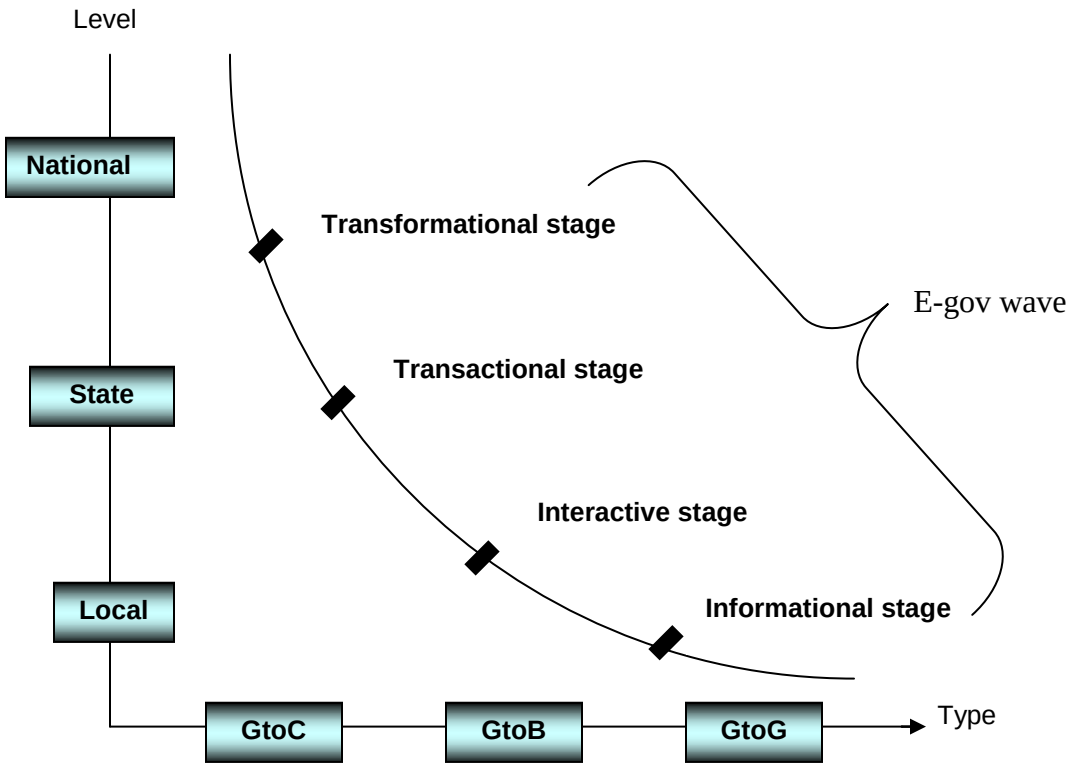

Figure 2.3 E-government type, stage and level

2.2.4. The promise of E-government

E-government promises to change the delivery of public services and the broader interaction between the public and government. Governance on the regime of e-government is promised to be global to solve public service challenge (Pierre, 2000). E-government should lead to "openness, participation, accountability, effectiveness and coherence" (According the good governance definition of the European Commission). The e-government should provide new services, improve efficiency, enhance ___ citizen participation, strengthen the global information infrastructure (Bohman, 2001) and increase trust of the public through transparence. At the end we should have a responsive administration with new organizational culture, i.e. staff focused on performance and services

focused on customers' needs. This framework should lead to whole range of administrative projects including e-democracy, e-voting, e-justice, e-education, e-healthcare, e-agriculture, and "e-etc".

2.2.5. The Achilles' heel of the e-government thought

As suggested by cyber-culture definition (See virtual organization chapter 3), science fiction was a great contribution to all "cyber-thing" or "e-thing" scholarships. As a result most of literary relating to the subject reflects a dual distortion of the reality: utopia and dystopia. The utopian school is futuristic and blinded optimistic. For its proponent e-government and IT in general will "reinvent the public administration", will "revitalize the politics", will "allow for subversive or alternative forms and uses of technology", will "enable humans to explore new forms of consciousness", and will "be part of the heralding-in of a new age" (Ken Hillis 34).

The utopian deterministic thinking goes back to Plato's Republic where evils are no more until the Thomas Jefferson's magic Nature. Many literary authors place Internet and technology on the same pedestal where religious place faith in Christ. Technology is seen as universal savior who will free public administration from incompetence, from corruption, from inefficiency, and as a way toward a perfect and "ideal" administration within a perfect society (Barlow, 1996).

The reality is that any balance study regarding technology requires seeing the technology in a social environment not the society in a technological environment. The reductionism and essentialist patterns of the techno-futurism lying in the early scholarships reveal astonishing thinking flaws after two decades of the information technology evolution.

A close look to Internet technologies may somehow turn the dream to a nightmare. If we consider the arguments of dystopian scholars, technology can be seen as a "digitalization" of incompetence, inefficiency and burdensome rules

what have been reproached to the bureaucratic administration trend. Also the potentiality of IT may vastly increase opportunities for surveillance and regulation of staff, which could necessarily lead to an inegaliterian system. Given that NPM was transposing managerial process of the private sector in the public sector gives a narrow view on e-government as a result some researchers have seen e-government as the "governmentalization of e-business" or implementation of e-business in public sector. This view may alter the way to measure e-government performance since government is not pursuing profits as the private sector.

The principal imperfection of e-government philosophy is that it should cause the reform or the so-called radical change. Empirical studies advocate that information technology has been used most often to reinforce existing organizational deficiencies (Attawell and Rule, 1986; Danziger, et al., 1982; Dutton, et al., 1987; Kraemer and King, 1979; Laudon, 1974; Perry and Kraemer, 1979; King and Kraemer, 1998; Holden, 2003). Fountain (2002), while being considered as a proponent of the utopian e-government thought, recognized that "even the most innovative uses of IT typically work at the surface of operations and boundary-spanning processes are accepted because they leave the deep structure of political relationships intact."

We have an administrative reform when the administrative processes and rules are changed dramatically. Could e-government change rule or bring univocally new rules in organizational process of public administration? In other terms will e-government shape public administration? Mackenzie and Wacjman (1985) propose the adverse thought: "Technology does not develop according to an inner technical logic but is instead a social product, patterned by the conditions of its creation and use" (Williams and Edge, 1986: 866). Fountain (2001) concluded that an "enacted technology is an outcome of the mutual interaction between technical and organizational/institutional factors". ***In social-technical analysis it would be simplistic to state that e-government causes reform or reshapes***

administration, we would then fail to acknowledge the complexity of organizational, political and social factors that shape the adoption, design and use of any IT project.

2.2.6. Will e-government and information systems keep their promise?

E-government and information systems promise solutions to public organization without changing business processes and rules. We cannot have radical change or reform within an organization without affecting its business processes. The spur-of-the-moment of the techno-futurism movement displays narrow approach that hides the complex social and political environment of an e-government implementation. We know that action in organization is achieved around rules, which will create a system in which the organization will grow and evolve (Vanberg, 1994). Researchers establish two rule system mechanisms, problem solution guiding and behavior-control (Gil-Garcia and Martinez-Moyano, 2005).

Problem solution guiding is the scenario for public managers to establish rules and procedures in order to ensure the well being of the ongoing process. This mechanism compels the public managers to focus on how the initiative is undertaken with regard of the established rules and the results expected. If this system claims performance at the end of the tunnel, the needs of the public could not be better understood without their participation (citizen, business and NOGs, etc), since the problems identified by e-government are not only technical, but also mainly social and political. As a consequence the public should be necessarily involved in the process that is behavior-control mechanism. Initially designed by public managers, e-government initiatives in time will be subjected to citizen (and public in general) control and they will indicate the designer what they expect from the e-government system designed, what services they want and what level of technological sophistication they can tolerate (La Porte et al. 2001; Ho, 2002; Gil-Garcia, 2005). Consequently the public will redesign the rules designed originally by the e-government managers, thus we conclude that

the social and political environment has a continuous influence on the system design and vice versa.

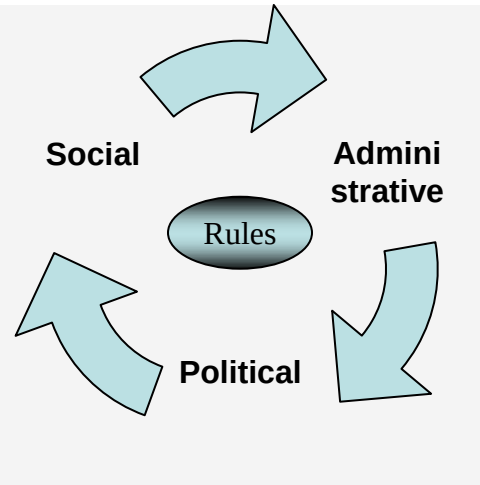

Figure 2.4 How rules are established in e-government regime

The figure above demonstrates that e-government initiatives are establishing rules under influence of political and social environment though the political realm delegated the administrative process. However many failures in implementation of e-government system reveal weakness or an absence of political will. And as described below, the participation of the public in the process will systematically reshape the rules primarily designed.

2.3. Conclusion

E-government as an information system is considered as a solution to reach openness, participation, accountability, effectiveness and coherence. The technology itself without any business process transformation will be just a "digitalization" of the former organization. Deception again will fall upon the proponents of e-government. This transformation will not be achieved because of the complex environment of the evolution of e-government by virtualization. The destiny of any information system is not really at the hand of the technology. The political vision of the government (political), the empowerment of the citizen and

business (social), the business process reform (administrative) are crucial factors that determine the success of an e-government implementation.

At this stage of our research we must consider three things that impede the causation of information system relating to results of a decision making as effect: First, the *absence of ontological trait of information* which is the output of an information system that makes it difficult to link a set of “exact information” to a decision. Second, the *limited rationality of human being* inclines him to select information not regarding the organization rules but to his inclination. And third the complex environment of a virtual organization (with an information system) requires a decision maker to *go beyond the information generated by his system*. The global approach evaluation, the more open approach and less restrictive and limited, is the rational one that can lead to certain results. But before we address information system issues regarding performance and productivity, let us see now the complex environment created by the virtualization of an organization.

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Chapter 3: The virtual Organization

3.1 Virtual organisation concept

The literature of management is bundled of “new forms” of organization theories. Queerly these “new forms” stem from business practices, which are dated since the beginning of humanity. Recently the intensive use of information technologies (IT) brings too many challenges and changes within/through organizations that scholars write a great deal of papers on new forms of organization generated by IT. Nowadays the real debate relating to new forms of business is summed up to virtual organization. What is virtual organization? Is virtual organization a new organization form or a new organizational process? What is the driven force of the virtual organization? Considering the management literature of the last decade, what have been changed in the virtual organization concept?

Often virtual organization is used to describe new organizational business forms that emerge with the application of information and communication infrastructures such as information system. According to Fisher (1998) & Hoefling (2001) virtual organization stands for a task, project or permanent organization which is decentralized and independent of any spatial connection. Considering the different relevant definition of the VO in management literature, the effort to better understand the subject and changes brought through the last years will pay off. Our analysis below is not taking into account all definitions coined by authors regarding virtual organization since 1990, but the chosen definitions can actually help grasp the characteristics of VO as a result figuring out what implies a virtual organization.

> *“The enterprises involved keep their legal and economic independence. Lawyers have very different opinions of the body corporate of virtual organizations. But it is a common rule that virtual organizations are no joint ventures. They are may be called corporations of civil society”*

(Gesellschaft Bugerlichen Rechts, §§ 705).

"The purpose of virtual organization is the optimal use of opportunities which derive from the market and/or from resources". (Weber & Walsh 1994)

"The Virtual organization is a cooperation of enterprises. Members of Virtual Organization can be great trusts as well as small one-person firms. It is imaginable that a self-employed consultant becomes a member of virtual organization and of a multinational corporation at the same time. This means that virtual organization will be decomposed when the object is accomplished. In most cases virtual organization will only exist for a short time. If there are no other advantageous organizational alternatives to produce a special out-put, virtual organization are also imaginable for a long-term period". (Arnold & Hartling 1995).

"The use of information and communication technologies is a constitutional feature of virtual organizations (Mertens 1994). Sometimes IT is called an "enabler" of virtual organizations". (Suomi/Luukinen & Al 1996)

"(…) Groups of agile manufacturing enterprises." S. L. Goldman & R. N Nagel (1993)

« Par l'utilisation intégrée d'ordinateurs et de technologies de communications, les entreprises seront de moins en moins définies par des murs concrets ou par un espace physique, mais par des réseaux de collaboration reliant des centaines, des milliers et mêmes des dizaines de milliers de personnes ensemble. » S. Bleeker (1994)

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"Virtual Organization refers to a temporary or permanent collection of geographically dispersed individuals, groups, organizational units – which do or belong to the same organization –or entire organizations that depend electronic linking in order to complete the production process." B. Travica (1997)

"We define the virtual organization as a temporary, flexible arrangement of dispersed components, contributed my multiple organizations and linked together with information technologies." D. Robey & al.,(1998, p. 277)

"A Virtual Organization is primarily characterized as being a network of independent geographically dispersed organization with a partial mission overlap. (…) Further, a Virtual Organization is secondarily characterized by a single identity with loyalty being shared among the partners and the co-operation based on trust and information technology." R. Bultje & J. Van Vijk (1998, p. 16)

"(…) I define a Virtual Organization as any institutionalized form of the ability to provide its products and services more time and location independent than its competitors." P. Sieber (1998, p. 258)

"Virtual organizations are electronically networked organizations that transcend conventional organizational boundaries, with linkages witch may exist both within and between organizations." J. Burn (1998, p. 3)

3.2. Characteristics of virtual Organization

What do we learn from those descriptions? We note that distance work via information technologies is the ontological trait of the virtual organization in order to coordinate economic activities. The organizational process is not restrained by

space and time. Members of the virtual team or virtual organization may never meet face to face or do not have to (Drexler & Sibbet, 1988; Hofstede et *al.*, 1997; Favier & Coat, 1997; Knoll & Jarvenpaa, 1995; Jones & Bowie, 1998). The virtual organization has an appearance of classical organization but it certainly is not. Besides the fact that geographic space of work is no more, brick and mortar are not either principal characteristics of the organization. Thus we can define Virtual Organization as:

- A network of people or organizations, which are independent.
- Those people and organizations are realizing a common project or common economic activity.
- The communication and information processes are hold through information technologies.
- The organization does not depend on time and space to be made up.

The figure below points out the principal characteristics of the virtual organization concept.

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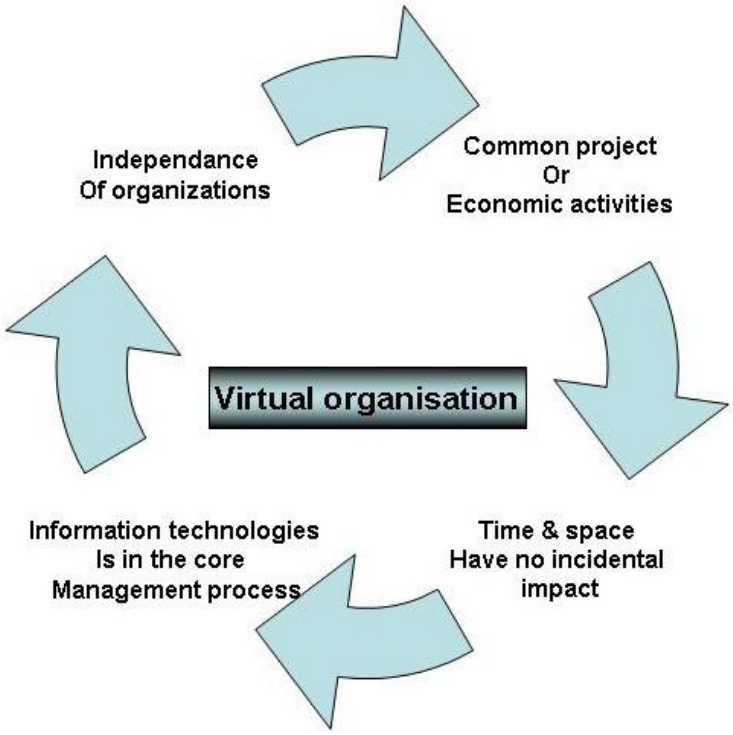

Figure 3.0 Characteristics of Virtual organization

Therefore what can motivate a group of people and organization to create a virtual organization? One of the theoretical approaches to explain the formation of organization is transaction cost approach (Williamson 1985; Schmidt, R. H 1992). A cooperation which aims to produce a certain output (like goods and services) “has to choose a specific form of coordination from a continuum of various coordination possibilities” (Arbeitpapiere, 1996). The right choice should be based on the efficient type of coordination for each type of production process. For this reason minimizing the transaction-cost are the main criteria for choosing between the different coordination forms (Arbeitpapiere, 1996). The use of information technologies not only transforms the organizational process, but due to the absence of geographic barriers and time, it becomes largely feasible to minimize the transaction cost of enterprises cooperation as of the possibility of unlimited communication.

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3.3. Typology of virtual Organization

According to Mowshowith (1994) the virtualization may be taken at different levels. Venkatraman (1995) and Saaksjarvi suggest several stratums in the process:

- **Individual level or sub-intraorganizational** is regarding local tasks involving a group of people in a distinct organization via distance communication process.

- **Organizational level** when information technologies are used to coordinate the activities of the organization as integration.

- **And interoganizational level** is the last layer where numerous organizations utilize the information technologies to coordinate an economic activity (see the picture below).

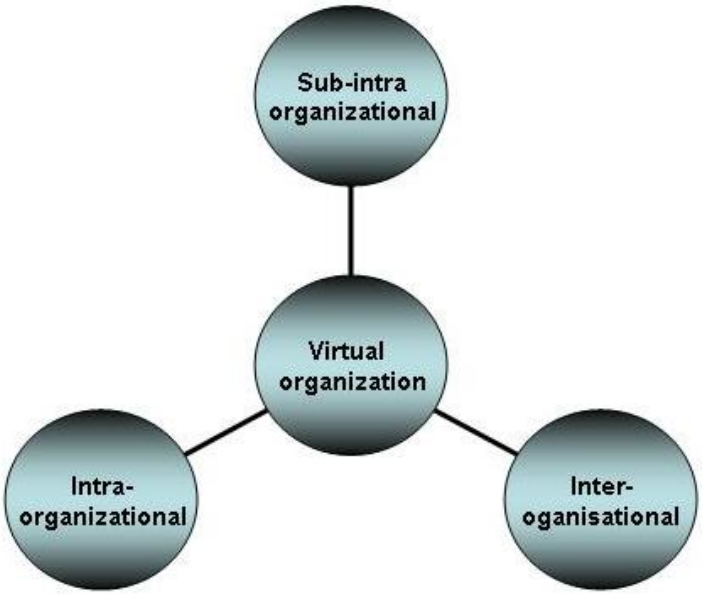

Figure 3.1 Typology of virtual organization

The virtualization process of an organization may result a:

- **Virtual team**, which is the simplest form of a VO, is a local team using information technologies to coordinate their connectivity and share their knowledge at lower cost.

- **Virtual project** can involve several people or organizations in the realization of certain task, which are a beginning and designated end.

- **Temporarily virtual organization** is likening a virtual project involving several organizations in a designated period of time.

- **Permanent virtual organization** is created when there is no designated period in their cooperation.

The table below depicts the typology of virtual organization (Palmer, J & Speoer, C:, 1997, 2001)

	Virtual Teams	**Virtual Projects**	**Temporaux Virtual Organisations**	**Permanent Virtual Organisations**
Range of Involvement	Internal to an organizational function or departmental unit	Across functions and organizations	Across organizations	Across organizations
Membership	Small, local	Indeterminate	Typically larger	Typically smaller, but scaleable
Mission	Teams on specific, ongoing tasks	Multiple organizational representatives working on specific projects	Multiple functions responding to a market opportunity	All functions and full functionality as a working organization
Length of project	Membership varies, but form is permanent	Temporary	Temporary	Permanent
Uses of IT	Connectivity, sharing embedded knowledge (e-mail, groupware)	Repository of shared data (databases, groupware)	Shared infrastructure (groupware, WANs, remote	Channel for marketing and distribution, replacing physical

			computing)	infrastructure (Web, Intranet)

Table 3.0 Palmer, J & Speoer, C:, (1997, 2001)

3.4. Revisiting the concept

Far from the idea to consider the virtual organization as new form of organization inferred by the intense use of information technology, we should see virtual organization as an explicit or implicit transformation business process. Technology (an information system) which is the core of Virtual Organization must be viewed as intermediary platform and not as the virtual organization itself (March & Simon 1979; Le Moigne 1984; Avenier 1999; Vidal 2000). Henceforth it would be simplistic to regard Virtual Organization as a network of actors intermediated by a communication technology platform in the perspective to decrease transaction cost in the coordination of an economic activity. The flexibility of the Virtual Organization provides (no time and space constraint, independence of actors) an exploration role in order to understand its environment and adapt itself regarding changes. Though the rational goal of the Virtual Organization is to exploit (exploitation) opportunities to deliver an output, exploration is an ontological factor associated to its flexibility character (March, 1991).

When created a Virtual Organization must pursue two strategic goals:

> **Exploitation**: Utilization of ICT to coordinate economic activities between organizations in order to reduce cost and increase productivity and profit. A univocal view may result that organizations see only their management routine without being able to comprehend changes in their environment and find their way to adaptation.

Exploration: the members of the network must be ready to modify their perception regarding the evolution of their economic activities. As a result new knowledge will come up, and the VO will preserve its flexibility, which is very crucial to survive in a turmoil environment.

It would be a snare as well to consider univocally the technology without seeing the human factor aspects. Should this organization create a whole virtual relationship between partners? As the technological platform is an intermediary, how information should be interpreted?

The polysemiotic trait of information may result discordance in a virtual network (Le Moigne, 1990). The definition of a sign or “information” is depending on the environment, the context and the actors. Thus information can suggest a variety of perceptions and interpretations what remove any ontological character to “information”. Consequently a virtual environment is very complex to deal with when bearing in mind the cognitive factor of human behavior.

3.5. The risks of virtual organization

Beyond a formal contract that inoculates trust in a relationship in regard of a Virtual Organization. The absence of physical space (face to face meeting) requires informal factors to perpetuate the relationship. Besides professional norms and quality standard procedures, informal factors like reputation (Callon & Licoppe, 2000) and recommendation are a must to ensure trust. Lorenz (1999) advocates that implicit engagement is more crucial than writing contract for virtual organization. He named implicit engagement as “moral contract”.

As we can see trust is the most important success factor in the case of virtual organization since physical contacts and other traditional ways to build trust is somehow avoided. Accordingly, Handy (1995) recommends physical contact to build and maintain trust for the reason that coordination of virtual organization will

be a failure if the unpersonalization process is not taken into account (Meissonier, 2000).

Control is another key issue of Virtual Organization when we consider the limited physical contact and the independence of actors suggest by virtual organization theory. In a virtual environment, traditional ways to identify individuals and their locations are inefficient. If technology taxonomically engenders this challenge, technological applications offer new possibilities to control the organizations. Trust must be associated with control to lower risk in such environment.

3.6. Conclusion

The virtual organization was being viewed in the technology lens that had shadowed the complexity of the subject. We have seen in this section that information technology, including information and e-government system is an intermediate platform between the actors of the network, and this intermediary must be completed with other traditional Medias in order to establish trust and control in virtual environment. The scholar and journalists always focus on virtual forms like portal and e-government models. The productivity and transaction cost was stressed as the main goal of virtual organization. Actually virtual organization mainly is an organization process where economic exploitation is entwined with an exploration perspective in order to remain flexible due to changes in market environment.

At this stage of our research, we must consider three things that impede the causation of information system relating to results of a decision making as effect: First, the *absence of ontological trait of information* which is the output of an information system that makes it difficult to link a set of “exact information” to a decision. Second, the *limited rationality of humans* inclines him to select information not regarding the organization’s rules but to his own inclination. And third the complex environment of a virtual organization (with an information

system) requires a decision maker to *go beyond the information generated by his system*. The global approach evaluation, the more open approach and less restrictive and limited, is the rational one that can lead to certain results. How do we consider the virtualization of an organization by implementing an information system regarding the performance and productivity? If the link between the IS and performance is established relating the profitability there would be several intangible elements which cannot be evaluated and this fact could make the results hypothetic. In this context how do we view performance and productivity of an information system? How should we see the evaluation of the "non-evaluable" elements in a virtual environment?

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Chapter 4: Study of Performance and impacts of information systems

4.1 Performance concepts

Performance is another concept that has not an explicit definition. But in management it refers to realization of goals, to evaluation of objectives, to evaluation of outputs obtained, to relation between objectives, means and results or inputs and outputs (Bouquin, 1991; Bartoli, 1997). Also performance may be studied regarding a person or a group executing a task, an organization or group of organizations and a project. However performance is often described as a correlation between efficacy and efficiency.

The ***efficacy*** can be defined as the link between the objectives set and the results reached by the organization when limited to the strategic goals as the referential for the actors of the organization (Zardet, 1986). The efficacy is thus measured by correlating the outputs to the objectives set in the organization. In information systems, it is a question of measuring in which point the system reaches the defined objectives. The efficiency is usually often refers to quality concept.

The ***efficiency*** is measured by correlating the outputs to the means used to produce them. It is the measure more objective and easier to obtain that the efficacy. The efficiency is usually associated to the productivity, or the profitability and profit (Bartoli, 1997).

A diagram here

The design of a performance measure depends on several factors: the purpose of the measure, the entity or organization whose quality is being measured, the dimension of quality being measured, and the nature of measure used for the assessment, and who will use the measure. Nonetheless the measure used, the purpose of the measure and the entity that is setting the measure indicators are

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very influential when it comes to translate the reports on performance assessment; then it is vital to identify the purpose of a measure (Ogden & Davis 1999), the measure itself and the entity which will be measured in order to find the adequacy of efficacy and efficiency of an organization (Fig. # PMP).

Purpose: Performance measurement has four main purposes.

- The easiest purpose is to describe what a program is accomplishing and whether results are being achieved regarding some goals and objectives

- The next one, which is more difficult, is to measure an improvement in outcomes caused by some modification of ___ actions or applications in process—as in a quality improvement program.

- The third purpose is to compare the quality of service being delivered by different entities such as different organizations in comparison, while taking into account the goals of each group and the populations they serve which will affect the outcomes.

- A fourth purpose that needs to be considered is that civil society may want to promote a measure simply to stimulate better service and accountability from public sector.

Entity being measured. : The design of a measure also can be affected by the entity being measured. A measure that is proven for one entity may not work for another.

Dimension of quality: A third important factor is the dimension of quality that is being assessed. The main dimensions are coverage, access, choice of provider, service, etc. Each of these requires different methods.

Type of measure: Most of the measures used to compare the quality of service delivered by various strategies or plans are based on populations. “Population-based” measures begin with a group of people who are candidates for some intervention and calculate the proportion who have a particular outcome. In this context, the “outcome” could be the performance of the intervention. The first case is called a “process measure,” because it measures some aspect of the process of care that was performed.

Intended audience: This factor affects the appropriate level of detail and the clinical sophistication required to understand what a change or difference in a measure means.

Now we can define the performance measure as a generic term encompassing the quantitative basis by which objectives are established and performance are assessed and gauged. Performance measures include performance objectives and criteria, performance indicators, and any other means that evaluate the success in achieving a specified goal. As an important element of Total Quality Management concept, performance measure helps to understand, manage, and improve what our organization does and how well it is doing. However the purpose of the process will influence any single factor in the process, the responsible parties, the data chosen and therefore the outcomes report and the corrective actions to improve performance. The diagram below shows the performance measurement process in an organization.

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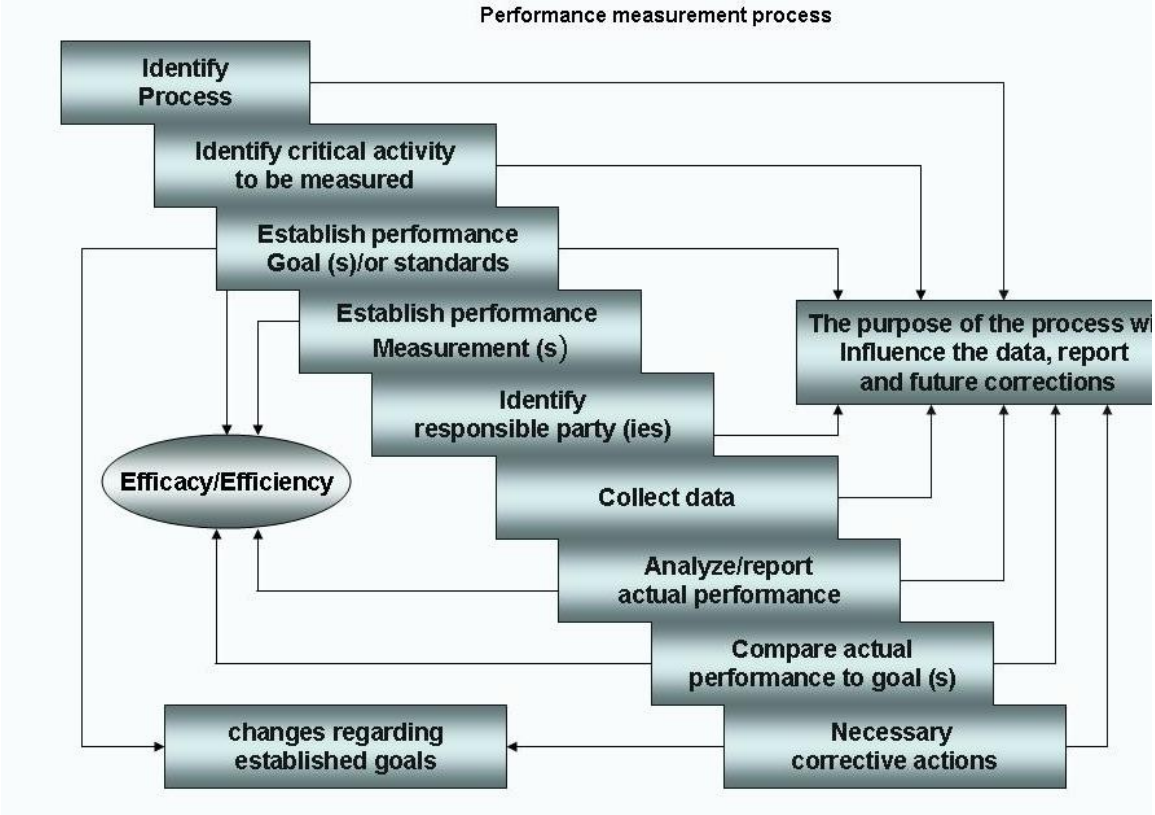

Figure 4.0

4.2. The performance paradox

The New Public Management reforms undertaken in most western and some developing states imparts a steering role to government while contracting the operation and administration to public agencies and third party [29]. This trend gave room to a strong assessment wave as governments wish the administration contracted operates efficiently; thus the increased interest to performance measurement (PM) in the public sector coincides with the rise of new public management reform in the last two decades. Consequently, Fountain (2001) argues that a strong belief rather simplistic in the measurability of performance arose in the public sector. Since the performance indicators and other

[29] Osborne and Gaebler see the government as a steering function than rowing (see Steering than rowing chapter in their book (1992)

management evaluation techniques were adopted from private sector, the special characteristics of the public sector should result some unintended consequences (Leeuw, 2000; OECD, 1996)

In this context, Schawrz wrote (in presse): "*There is a desire to supply managers, policymakers, legislators and the general public with evaluative information that is perceived to be reliable, valid and credible, Evaluative information that lacks these characteristics stands little chance of enhancing transparency, accountability and democratic governance. Yet, mechanisms for assessing the "quality" of evaluative information conjure up perverse images of what has been termed and audit society characterized by increasing layers of inspection, audit, evaluation and assessment. The audit society expends a huge amount of resources in assurance activities whose most immediate consequences is to increase bureaucratization".*

The public sector performance measurement contains different examples of unintended consequences. Bouckaert and Balk (1991) mentioned a dozen diseases of public productivity measurement resulted from wrong assumptions underlying measurement, measurement errors, and problems concerning the content, position and amount of measures. Smith (1995) warned that performance indicators could inhibit innovation and lead to ossification, which will become a major obstacle to the public organization. The principal side effects pointed by Smith is the "tunnel vision" effect, he defines it as "an emphasis on phenomena that are quantified in the performance measurements scheme at the expense of unquantified aspects of performance". The measure fixation or the sub optimization result is another harmful effect when "narrow local managers' objectives are emphasized at the expense of the objectives of the organization as a whole" which lead to the "tunnel vision" effect. Schmidtlein (1999) pointed out the lack of theoretical support when noticing that very few studies have been carried out on the effectiveness of performance budgeting although most states

authorities are using it. It's worth noting that these side effects are in contradiction with the philosophical thought of the new public sector reform idea, which promotes entrepreneurial public agent and autonomy in public administration.

Finally, Meyer & Gupta (1994) identified *the performance paradox, which refers to a fragile relationship between performance indicators and performance itself*. It imports to note that this paradox is relating to the reports on performance, what should make us especially precautious regarding the data selected for the reports and the one who set the performance indicators reported. As a result the performance could be overrepresented or underrepresented; the conclusion is that indicators do provide inaccurate report on performance. The authors aforementioned revealed four processes resulting to deteriorating performance indicators.

1. The positive learning, when performance improvement is reached, indicators lose their sensitivity in detecting bad performance.

2. The perverse learning, when organizations and individuals have learned which aspects of performance are measured in order to use that information to manipulate their assessment results.

3. Selection, when replacing poor performers with better performers consequently reducing differences in performance.

4. Suppression, when differences in performance are ignored.

Several causes of the paradox may be found:

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- A lack of performance indicators makes it difficult to obtain accurate report on performance (Meyer & Gupta, 1994),

- The elusiveness of policy objectives (Wilson, 1989) which produces conflict between managers and politicians in regards of goals and objectives (McGuire, 2001),

- The nonquantifiable of policy goals which makes it difficult to measure performance, and

- An extensive use of performance indicators often drives to the perverse learning effects.

What do we learn from the performance paradox? ***The performance concept is so controversial that it will never bring a satisfying answer to the matter of impacts measurement whether it is technology or another factor***. But as we do not have another concept to even ersatz the performance measurement, the dilemma is that we are compelled to use it. However it is important to trace the side effects and take them into account in order to deliver more or less an accurate report on performance of an organization. Given that our study is about information technology impacts on performance, it is essential to give our attention to the performance of the technology itself.

4.3. Performance and information systems (IS)

Now the most critical questions pertaining to our research are these: can technology really improve organization performance? What sort of impacts of technology may we identify in public management? Many empirical studies on economy-wide and aggregated industry level [(Jonscher (1983), Baily & Gordon (1988), Roach (1989b), Siegel & Griliches(1992), Oliner & Sichel (1994), Jorgenseon & Stiroh (1995)] from 80's to mid 90's found little evidence that ICT

significantly increased productivity in national economy. Robert Solow (1987) expressed in an unequivocal phrase the disappointment in ICT recorded in many articles in this period: “you can see computer age everywhere but in the productivity statistics”. This statement is proved by the observation of Roach (1987) that shows the amount of computing power in the service industry was growing dramatically over 1970’s and 1980’s while the US economy in the same period has substantially slowed down. Then many articles put on spotlight the non-significant impact of ICT on productivity. Paradoxically it was impossible to prove the opposite. This is what information systems literature called the productivity paradox; nevertheless other researchers like Floyd and Woodrige (1990) claimed a triangular link between strategy, the ICT and the performance of an organization.

4.4. Is there productivity paradox or lack of scientific methodology?

The works of Brynjolfsson (1994, 1995, 1996, & 1998) mainly on firm level have significantly contributed to shed light on the so-called productivity paradox. He examined four approaches that explain the paradox:

1. The mismeasurement, when outputs and inputs of information-using industries are not properly measured by conventional approaches. The same factor that generates the performance paradox[30].

2. Lags, when time lags in the pay-offs of information technology make analysis of current costs versus current benefits misleading. According to a survey of Nolan & Norton (1998), it takes five years for ICT investments to pay-off, thus the benefits reported must be distributed through the years of use, learning and adaptation (see table of organizational performance over time).

3. Redistribution, when information technology is especially likely to be used in redistributive activities among firms, making it privately beneficial without adding to total output.

4. Mismanagement, when the lack of explicit measures of the value of information makes it particularly vulnerable to misapplication and over consumption by managers.

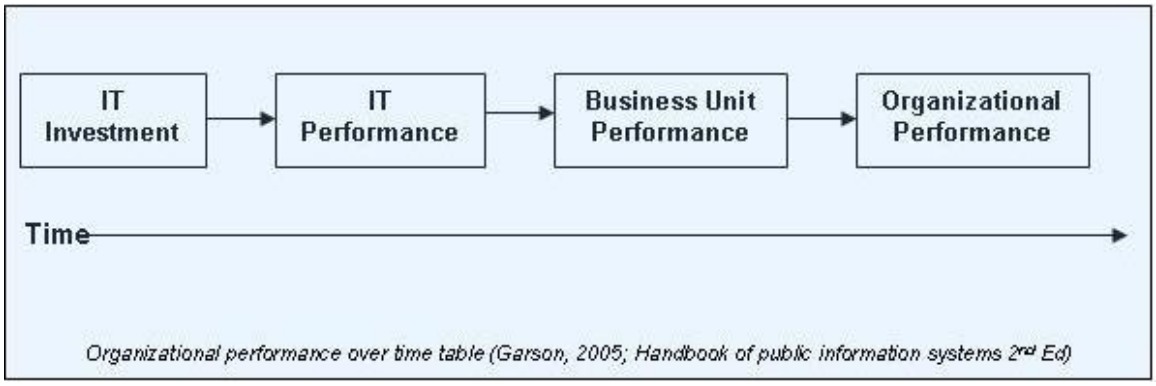

Figure 4.1

Brynjolfsson & Yang (1996) argue that improving the data and measurement techniques, taking into account the potential lags in the impact of IT and making adjustments and finding better theoretical models to address the mismanagement issues will subsequently fade away the productivity paradox. However ***finding proper measurement techniques or methodologies is not unproblematic when considering the intangible characteristic of inputs and outputs involved in IT productivity effects which very often cause IT impacts ambivalent and conjectural***. It is worth noting that the virtual environment created by the use of technology in the modern economy is favorable to intangibles such as variety, timeliness, quality, better responsiveness to customers and better coordination with suppliers. The performance evaluation does not always report these hidden cost (Savall, 1974)

[30] See performance paradox section page 68

or inferred cost (Greeman, 1999) like IT training and systems maintenance, which represent half of total ICT expenditures and consequently ignore the aforementioned intangibles. The productivity of ICT remains controversial until new scientific methodological approaches implying the four factors mentioned above by Brynjolfsson could be found in late 1990's. In this context, Quinio (1997) concluded: "the productivity paradox is a simple criteria research methodology paradox for complex effects evaluation".

Dedrick, Gurbaxani & Kraemer (2003), in a conclusive review of over 50 scholarly studies published between 1987 and 2002 on information technology and productivity, stated that "productivity paradox as first formulated has been effectively refuted. At both the firm and country level, greater investment in IT is associated with greater productivity growth". There were two more reasons explaining the failure of the early studies regardless of IT and performance.

1. First as we have seen above, the studies were flawed in both methodologies and data sets employed.

2. Second, the IT was too nascent to have a measurable impact; as a result IT performance was quite limited (Atkinson & McKay, 2007). To benefit from a technology an organization must fully utilize it and reorganize her, unless this technology is ready for a complete use. This was not the case for IT in 1980's to mid 1990's when we consider that the first Pentium was introduced in 1993 with average disk drive storage of 2 gigabits and the fist easy to use Microsoft's Windows version in 1995, virtually there were no PC connected to Internet. So we conclude that IT was not ready to be shown up in statistic as argued by Solow.

From the after-the-dot-com-burst and today several studies show indubitably that IT boost productivity in firm and national level. A study by Varian, Litan, Elder and

Shutter (2002) showed that between 1998 and 2001 firms in the US saved $155 billion, and by 2010 are expected to cumulatively save $ 528 billion. Brynjolfsson (2003) in a study of over 1,167 large US firms found firms with the highest levels of IT investment per worker had the highest levels of productivity. Daveri (2003) found that 78 percent of the increase in productivity in US was due to IT. Caselli and Patterno (2004) found IT investment in manufacturing had a higher impact on productivity growth in the second half of the 1990's than in the period 1973-1995. The OECD[31] (2004) found that IT was responsible 109 percent of the growth in labor productivity from 1996 to 2002. Attrostic and Nguyen (2005) found that productivity is raised by roughly 7.5 percent by the use of computer networks in manufacturing plants. The first annual i2010 Report on the European Information Society (2007) found that in the period 200-2004 ICT accounted for productivity gains of 0.5 percentage points per year in the EU. The same report shows that 45% of the 1.1% annual aggregate productivity in Europe was due to ICT between 2000-2004. Significant impacts of IT on productivity of firms have been found in many other nations including Australia (Simon and Wardrop 2002), Canada (Baldwin, Sabourin and Smith 2004), France (Greenan, Mairess and Topiol-Bensaid 2001), Finland (Maliranta and Rouvinen (2003), Germany (Hempell), Korea (Seo and Lee 2006), Japan (Motohashi 2003), Netherland (Van Leeuwen and Van der Wiel (2004), and Switzerland (Simon and Wardrop 2002). Cross-national studies prove that nations whose invest more in ICT have recorded more productivity (Schreyer 1999, Gust and Markez 2002, Daveri 2003, van Ark, Inklaar and McGuckin 2003, CSLS 2005, and OECD 2005).

4.5. Why developing nations have less impact

While ICT investment is fastest rate of growth in developing countries[32] (Qiang and Pitt, 2004), several studies have found that the impacts from the use of ICT

[31] OECD

[32] IT expenditures rose twice as fast in developing countries from 1993 to 2001 compared to OECD average.

to be less than in developed nations (Atkinson & McKay, 2007). Is productivity paradox back in ICT performance study in developing nations? The key reason is that their officials have perceived ICT sector as a source of tax revenue and did little to promote ICT adoption, as a result they imposed high tariffs on imported ICT products and people found less incentive to use them (give the ict user # in Africa, in LA and in south Asia). Kaushik and Singh (2004) state relating to ICT adoption in India: "High tariffs did not create a competitive domestic industry, and they limited adoption by keeping prices high". Heshmati and Yang (2006) give another reason when arguing that the lack of high quality data on ICT use in those countries[33]. Also many developing countries have no proficient ICT observatory to track information on the ICT use and their contribution on the national economy; consequently many reports stemming from international organizations are often based on false data[34]. A further reason is that citizen workers of developing nations have not been trained to use ICT in order to have better jobs and higher wages, which could be, resulted in better quality of life and in turn influence the national economy (Atkinson & McKay, 2007).

4.6. Evaluation concept

Giving that the key problem engendering doubts and pessimism on ICT productivity in earlier studies is the evaluation method, it is vital to understand the evaluation concept. The word evaluation finds etymology from the French word "Évaluer" which means determine the value of, worth of an object. This term was used in US from 1960 to measure the level of realization of goals and to compare different scenarios (Krief, 1999). For Stufflebeam (1980) evaluation is the process to demarcate, obtain and provide useful information in order to make a decision. Balantzian (1995) defines evaluation as "The allocation of a value

[33] For example software usage is much higher than sales which is a result of software piracy.
[34] Third World Economics reported that the World Bank's global poverty statistics, based on income and purchasing power parity, are produced using wrong methodologies and are unreliable for estimating levels, distribution and trends of global poverty, according to two academics of Columbia University in New York. (No. 287, 16-31 August 2002)

according to a set of preferences repository conscript. The search for a pure objective evaluation is unrealistic because every individual gives a sense to the evaluation via an interpretation". Quinio (1997) himself describes evaluation as "The stake in balance of the investment to be made and expected profits". From those various definitions we note that ***evaluation is aimed to interpret phenomena by collecting, treating and analyzing information in order to support judgment on a decision and its consequences.*** But the result of an evaluation may be quantitative, qualitative or financial. However Adroino (1993) warned that Evaluation although embraces the control notion but overtakes this concept.

4.6.1. How to evaluate information system?

According to Quinio (1997) there are numerous evaluation methods and there is no theoretical consensus on which method is best or not. Then it is imperative to consider the method regarding to the object to evaluate, the chronological position of the evaluation and the method to collect data plus the type of data collected.

4.6.2. What to evaluate?

The aim of our research is to evaluate the information systems or information technologies of 30 public agencies and ministries (see empirical analysis section). ***We will target not only one technology but also the ICT infrastructure and all technology available in each public institution targeted.***

4.6.3. When and why evaluate?

Scholars establish two different chronological evaluations:

1. Evaluation ex-ante, which anticipates the result when being done before the decision has been made so it can be justified.

2. Evaluation ex-post takes place after the decision-making. **Our research is evaluation control ex-post based in order to verify how performance objectives of IT investments are being reached.**

We measure the performance of an information system by evaluating its efficacy and its efficiency, but other scholars add other relevant elements which are important like: Esthetic & Ethic, user's satisfaction, transaction cost, quality, utilisability & utility and its utilization level.

The Quinio (1997) works propose three approaches in performance evaluation as set in the table below. The first is ***information value approach***, which considers the quality of the information, but the subjective character of this method makes it too restrictive. The second approach is concerning ***project evaluation*** which is too limited to the objectives set by the project. The third is **global performance** approach, which studies the link between ICT and different views on social, economic, systemic, software and the control panel. This last approach is aimed to address the scientific methodological approach missing in ICT performance evaluation. **Our research is global method based; accordingly, we do not target one technology but the ICT infrastructure and all technology available in each public institution targeted**.

Approaches	Concept	Authors	Limitation
1. Information value approach	Evaluating the information quality (quality/quantity…),	Lesca et Lesca, 1995 Daft et Lengel (1986) / 34. Courbon (1993) / 34.	Evaluation too subjective; Difficult to apply; restrictive methodology
	Evaluation of the output of the system	Zardet (1986)	Difficult to apply regarding the Information

	regarding decision and action as results.		technology context and the difficulty to extricate decisions stemmed from those tools.
2. Evaluation project approach	Evaluate the profitability of the project (Upstream); evaluate the effective profitability (downstream)	Peaucelle (1996) Parker et Benson (1988) / 34 Rowe (1994 a.) / 34	Restrictive methodology concerning the project, the financial data used and the vision adopted on performance
3. Global performance approach	Study the link between ICT and different views on social, economic, systemic, software and the control panel.	Reix (1977) Galbrecht (1979) / 45 Peters et al. (1983 Kaplan et Norton (1992)	

Table of Benjamin Demissy, 2002. Etude des impacts des NTIC sur les performances, Lyon II University

If doubt, perplexity and pessimism had affected the study of ICT impacts on performance in early 1990's, none can prove that ICT have no effects on productivity. Nevertheless new research such as works of Quinio and Brynjolfsson established convincing proofs of significant impact of ICT on organization productivity. Nevertheless it is important to note that these impacts whether direct or indirect are scattered and are contingent to organizational and strategic management. Brynjolfsson (1998) concluded that the question now is not whether technologies contribute to productivity but "how to make more computerization effective".

4.7. Impacts of ICT on public management

4.7.1 ICT impacts require organizational changes

Before we study the ICT impacts on public management, it is important to note that any organization which aims to have ICT impacts must do more than

investing in ICT, it requires fundamental reengineer processes. Bresnahan, Brynjolsson and Hitt (2000) note: “Firms do not simply plug in computers or telecommunications equipment and achieve service quality or efficiency gains. Instead they go through a process of organizational redesign and make substantial changes to their service or output mix”. The OECD (2000) found that IT “seems to offer the greater benefit when ICT investment is combined with other organizational assets”. Bartel, Ichniowski and Shaw (2005) add, “Once a business invests in new IT based production machinery and installs the equipment on the factory floor, it will be changing the fundamental nature of what it does and how it does it”.

Though we are convinced that **technologies have strong impact on productivity and performance,** we will not forget that **those impacts are not automatic but are associated with organizational changes**. Experiences have demonstrated that to ascertain actual impacts of performance by exposing an organization to ICT, it is inevitably necessary to manage to make evolved the behavior of the actors using the technology. In fact, during implementation process, the actors of organization usually consider ICT as a myth. With the availability of the ICT infrastructures and tools answering their need, their curiosity will be sharpened to discover more and if the technology remains during the period of time needed organizational behavior changes will be visible, consequently there will be a social appropriation which will result in real (performance) impacts while necessary actions should be undertook to provoke organizational changes.

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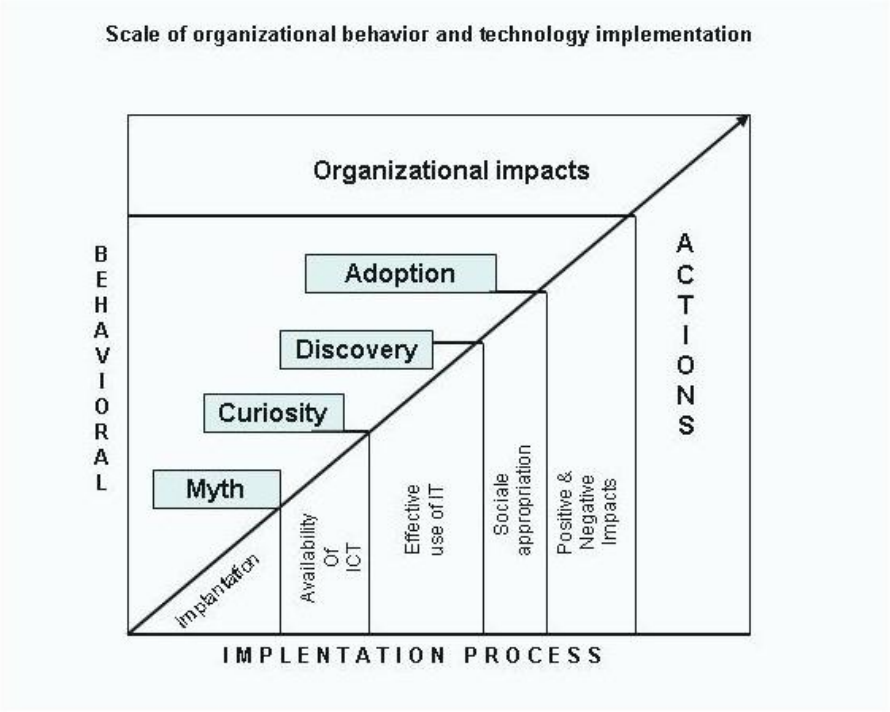

Figure 4.2

Jane A. Fountain (2001) in her book "*Building the virtual state*" proposes an analytical framework named *enacting technology* which can help us understand better the process of ICT impacts on public institutions and why productivity and performance impacts are not automatics. She posits that "capability and potential of an information system are enacted by the users of the system" she goes on to say that "individuals and organizations enact information technology by their interpretation, design, implementation, and use of it in their organization and networks." This interpretation implies "cognition, culture, social networks, formal rules regimes" that will shape the behavior of individuals and organization as a result the outcomes should be indeterminate, unanticipated and multiple. Civil servants perceive ICT as source of insecurity and distrust, because of fear to lose power or unfamiliarity with technology. The perception of a lack of positive impacts of ICT tools and this uncertainty causes by the use of ICT in public organisation will constitute a serious pretext for a strong resilience to change (Garson, 2005); the organizational changes thus are not only indeterminate and unanticipated but also conjectural.

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Technology Enactment of Fountain

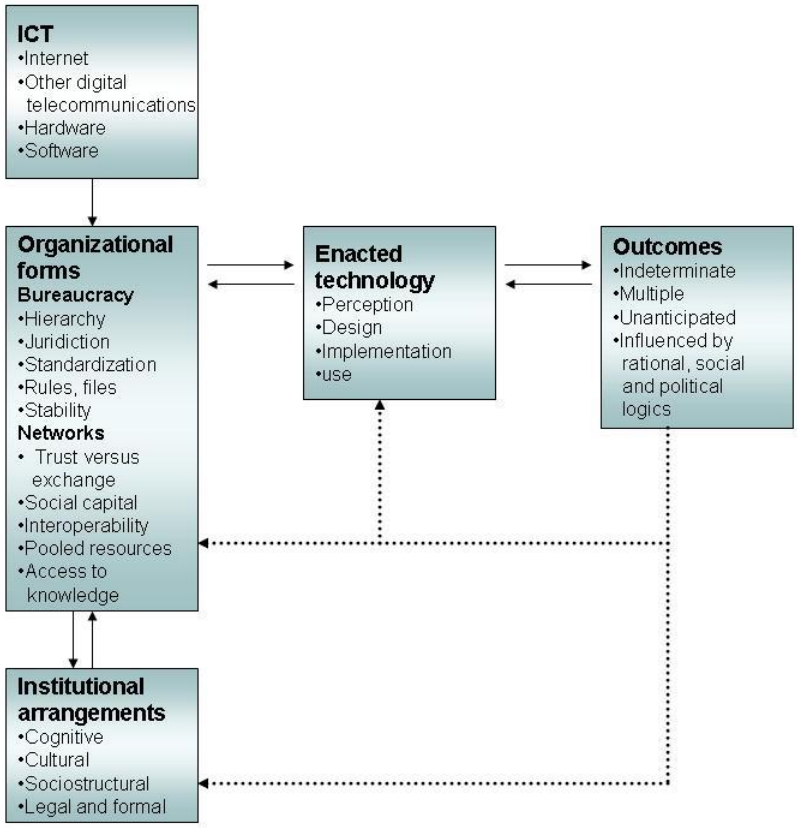

Figure 4.3 Technology Enactment: An analytical Framework (Fountain, 2002: 91)

It is indisputable that ICT have serious impacts on public management, for example the use of network systems to interconnect organizations results in possibility of lowering cost, using fewer resources and physical outputs which gives rise to efficiency gains (Mechling, 2002). However those impacts are registered in organizational level, instead of institutional level, as ICT affects actually the key characteristics of the Weberian bureaucracy (see table #) like production, coordination, control, and direction processes (Fountain, 2002). But the organizational changes will not automatically turn into institutional changes, Gasco (2003) makes it plain when stating that "institutional change occurs whenever and alteration of relative prices is perceived by one of the parties taking part from a transaction as win-win situation for that party of for all the

participants involved. Therefore, institutional change depends on the actors' perceptions with respect to the gains to be obtained". Because of human cognition, the cultural and sociostructural, the legal and formal structure changing organizational at institutional level is a gigantesque task that requires considerable political negotiation and deep cultural change (Fountain, 2002).

Table 4.0 Organizational changes in Weberian bureaucracy

Elements of weberian bureaucracy	Organizational changes
Functional differentiation, Precise division of labor, Clear jurisdictional boundaries	Information structured using information technology rather than people; organizational structure based on information systems rather than people
Hierarchy of offices and individuals	Electronic and informal communication; teams carry out the work and make decisions
Files, written documents, staff to maintain and transmit files	Digitized files in flexible form, maintained and transmitted electronically using sensors, bar codes, transponders, handheld computers; chips record, store, analyze, and transmit data; systems staff maintain hardware, software, and telecommunication
Employees are natural, impersonal, attached to a particulate office	Employees are cross-functional, empowered; jobs limited not only by expertise but also by the extend and sophistication of computer mediation
Office system of general rules, standard operating procedures, performance programs	Rules embedded in applications and information systems; an invisible, virtual structure
Slow processing time due to batch processing, delays, lags, multiple handoffs	Rapid or real-time processing
Long cycles of feedback and adjustment	Constant monitoring and updating of feedback; more rapid or real-time adjustment possible.

Source: Comparison of Weberian and virtual bureaucracies in Building the Virtual State by Jane A. Fountain, 2002: 61.

4.8. Conclusion

Undeniably technologies have strong impact on productivity and performance**;** nevertheless the projected positive impact is not automatic and therefore is associated with organizational changes**.** The organizational changes expected depend on the interpretation of the civil servants who are using the ICT; this fact makes the impacts not only indeterminate and unanticipated but also conjectural. However the organizational changes should not expected to turn automatically into institutional changes. In this present research we have the opportunity to

investigate some organizational changes the use of ICT and networks communication in public administration is occasioned and how strong it is the resilience to change in Haitian public organizations.

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