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Assessing the Implementation of ICTs in Municipal and District Councils in Mauritius

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1.0 National Governance Framework

Mauritius is a Small Island Developing State and one of the strongest economies in Africa. It is a stable democracy and respects the principles human rights. The 1968 Constitution is the supreme law and it clearly establishes the separation of powers between the legislative, the executive and the judiciary. The legislative power lies in the hands of the National Assembly which the supreme body where its members vote laws, discuss the affairs of the nation and control the use of public funds. The Head of State is the President who is elected by the National Assembly. On the other hand the Prime Minister is the Head of Government and he presides over the cabinet of Ministers, which is collectively responsible to the National Assembly for any action taken by one of its members. Government's 19 ministries and around 80 government departments are the main instruments for advising ministers, for policy formulation and implementation. The country's legal system is based on the Napoleonic Code and English common law. The Supreme Court heads the judicial system and has the power to interpret the constitution and to judge the constitutionality of legislation brought to its attention.

Mauritius has developed from a low-income economy to a middle-income economy in a relatively short time. The economic growth, enjoyed by the country over the past two decades, was sustained by four main pillars, namely agriculture, manufacturing, tourism and financial services. Government is now giving high priority to the development of the Information and Communication Technology (ICT) sector to transform the country into a cyber island. The ICT sector is set to evolve as another main pillar and give way to a knowledge economy.

2.0 The National Perspective on ICT for Development

Among developing countries, Mauritius has a long tradition of focus on the telecommunication and ICT sector. Institutionally, the ICT sector is guided by the Ministry of Information Technology and Telecommunications (MITT) and umbrella statutory bodies such as the National Computer Board (NCB) and the Information and Communication Technology Authority (ICTA). Mauritius has exciting plans for becoming an information society or, in its own words, a Cyber Island¹. The concept of building an information economy goes back to the early 1990s. However it is only recently that top-level commitment backed by funding for specific Information and Communication Technology (ICT) projects has given Mauritius a new momentum. This is manifested in the government's intention to make information and communication technology the fifth pillar of the Mauritian economy alongside sugar, Export Processing Zones, financial services and tourism².

¹World Economic Forum. Global Information Technology Report 2002-2003 - Readiness for the Networked World.

²http://www.weforum.org/pdf/Global_Competitiveness_Reports/Reports/GITR_2002_2003/GITR_Rankings.pdf. [Accessed 21 July 2004].

² See the Digital Access Index web page at <http://www.itu.int/ITU-D/ict/dai/index.html>. [Accessed 21 July 2004].

The Mauritian government is now fully conscious of the importance of the "new economy" of information and communication technology and the opportunities which it affords to countries like ours. As such it has taken several initiatives to transform the Mauritian nation into an information society where everyone is ICT literate, has access to ICT facilities and can participate in the Information Society. To improve the quality of life of citizens, the government's nationwide programmes for the promotion and adoption of ICT, can be summarised as follows:

- strengthen to Develop a fully ICT literate nation through broad-based ICT education and awareness,
- formulate measures to promote the development of local content and creativity,
- enhance schemes to promote household PC penetration.

The use of IT in education is central to supporting the development of an efficient workforce for sustaining economic growth. Hence, one of the strategies of Government is the use of Information Technology (IT) as a supporting tool in education. It is expected that the use of ICT in education will support the development of an efficient workforce for sustaining economic growth. This is the objective of the School IT Project. It is intended to teach IT as a subject in itself at schools and to make use of IT for the teaching of subjects across the curriculum in primary and secondary schools. There is however, a growing need to develop connectivity among schools and establishing a network for better information and knowledge exchange in the education sector.

ICT courses were made compulsory in secondary schools in 1995 and students were expected to be proficient after the third year. Some 330 primary school teachers were hired in 2001 and completed a nine-month ICT training course. As from 2003 on, they have started teaching ICT courses in every primary school. A pilot project, funded by the Ministry of Education and Human Resources and the British Council, was launched in 1997 to supply seven schools with two multimedia PCs, one printer and educational software. Specially trained teachers used ICTs for math and language courses. The evaluation of the project was positive. Since 2006 ICT is used as a pedagogical tool across the curriculum, by when all teachers will have received the necessary ICT training.

To encourage students to use and apply ICT, the National Computer Board (NCB) organizes annual software competitions with cash prizes. Students have to think about how the Internet can be used as a research tool and create a corresponding web site. All secondary schools in the country can participate in the competition. At the tertiary level, the two Universities of the island, have expanded the number and scope of its ICT courses. To increase the pool of ICT manpower, there are plans to facilitate accreditation for private institutions and to devise an incentive scheme for private providers to offer tertiary education. Tertiary Education Commission closely works with Business Parks of Mauritius, the administrator of the Cyber City project, to identify the number and type of ICT degrees that will be needed. While Mauritius currently faces a shortage of ICT graduates, the government has clear goals on *where are needs to go?, how it can get there?*, and the progress it is making. The government has also undertaken an extensive training programme in IT for school leavers at 'A level' wherein they undergo a 6 months program on basic IT skills and

are paid a nominal stipend as an incentive to attend these programs. Over 2500 students have been trained so far.

The focus on education at all levels is sharpened by Mauritius's relatively poor adoption

of the internet. Thus on the demand side, the National Computer Board's initiative to operate two "Cyber caravans" and raise awareness of ICT around the country is important and succeeding in exposing many thousands of Mauritians to ICT. A computer training program on basic computer skills for any citizen is in place. Conducted by the NPCC, the program is open to any citizen at a subsidised fee of Rs 700. These programs are conducted at the secondary schools in the evenings. A certificate is awarded at the completion of the course.

In its endeavour to make Mauritius regional ICT hub, the government has:

- established an ICT industry comprising the Cyber City and Business parks, supported by world class telecommunications infrastructure for wealth and job creation
- attracted and maintaining high calibre ICT experts in Mauritius and to increase the local availability of trained manpower in ICT;
- created a favourable business environment with a sound legal framework and attractive financial incentives for foreign investors.

Moreover, to promote the development of start-ups in the ICT sector, the NCB launched an ICT Incubator Centre in January 2003. The government has taken a leading role in the development of the ICT sector by removing customs duties on all ICT hardware and software; providing, through a number of institutions, a wide range of fiscal incentives both to companies wanting to finance computerization projects or wanting to start job creating businesses in the field; and encouraging the setting up of tertiary education institutions providing courses in IT, Management and Business.

Under the E-Government initiative, Government has started delivering some of its services online since May 2005. This will radically improve services to the citizen as consumer, transform government operations, reducing costs to the benefit of taxpayers, and ultimately enhance Mauritian socio-economic performance through increased public sector productivity.

As far as the impact of electronic information on citizen's lives is concerned, it can be noted that almost all Mauritians aged 13 and over watch television or listen to the radio and 92 per cent of households have a television in their home. There is however a gap between old (TV, radio and fixed telephone) and new (mobile telephone, PC and the Internet) ICT. For those using newer ICT, changes are occurring in lifestyles. Almost half of those with a PC at home use it for email and 23 per cent use it for doing office work at home. Education and entertainment are also popular applications. Personal financial activities using electronic services are also popular. The ratio of credit cards to the adult population stands at a high 91 per cent suggesting that most Mauritians are accustomed to making electronic payments. The nation's 261 Automatic Teller Machines (ATMs) processed 2.5 million transactions in December 2002 (or 2.8 per adult population⁷). Some seven per cent of households with Internet access shopped online for its convenience. Moreover, Relative to other African countries, internet access is very inexpensive in Mauritius. In particular the Regulator

has overridden Mauritius Telecom's requested price of 0.33 Rps per minute to connect internet calls and made it 0.10 Rps per minute.

An area that needs further exploration is the use of ICT for social development given that there are real opportunities for Mauritius to improve the quality of life of disabled persons, senior citizens, unemployed, young people and women through ICT. In addition, with the government ambition to transform Mauritius into a Cyber Island, the development of e-commerce and e-business type of activities at the level of businesses and SMEs is seen as an important turning point to ensure higher productivity and efficiency gains and create employment opportunities.

Furthermore, as Government is now putting more emphasis in Small and Medium Enterprises and promoting a culture of entrepreneurship in Mauritius. The aim is to generate employment and growth. In the same line, the National Computer Board (NCB) has set up an Incubator Centre to promote entrepreneurship in the ICT Sector. This Centre provides an ideal environment for young starts ups and new technopreneurs to nurture ideas and develop them into productive businesses. Actually, small cybercafé are making their footprint in rural areas. This will definitely boost up Internet and ICT penetration in rural area. On the other hand, increase in computer ownership can also be attributed to competition in the computer sales market. Each competitor tries to attract potential buyers by offering the best packages of software and accessories, after sales services and on prices.

As the Cyber city is already operational and meeting its full capacity in the near future, a lot of direct and indirect jobs related to IT and non-IT is being created. For the period February to September 2006, the BPO sector has registered a growth rate of 38.3 %. Actually, 148 companies are operational with a current employment level of 5, 513 workforce. This will surely have a spillover effect in raising standards of living, combating unemployment and alleviating poverty in the longer term.

3.0 Contribution of Project to the National Perspective on ICT for Development and LOGIN

Government is making great effort to bring ICT in public administration through computersation projects and e-government initiatives. Other institutions, like International and regional Organisations and universities are providing supportive role to government in ICT adoption. These institution provide the appropriate information that help policy makers in their tasks. In the same way, the project of assessing the implementation of ICT in Municipal and District Council in Mauritius, undertaken by University of Technology, Mauritius in collaboration of LOGIN Africa will help formulate, draw the best lessons of e-local governance and provide the best recommendations to central and local authorities in Mauritius. It will consolidate the application and promotion of ICT undertaken at national level from grass roots level. As sub nationals institutions are nearer to the citizen, they will be in a better position to help central government objectives of making this country a knowledge hub, developing ICT as the fifth pillar of the economy and meet e-government initiatives. Inculcating the ambition of e-administration and e-service delivery in local authorities will have an influencing impact on citizen's daily life and support government national perspective on ICT for development.

Among other research issues LOG-IN Africa will address the current state and outcomes of e-local governance initiatives in Africa and in particular how ICTs are being used to realise good local governance at four levels: a) the internal organizational processes of local governments and the provision of information and service delivery. This research will help LOG-IN Africa in answering the above in the Mauritian context. Moreover, most studies done in both developed and developing countries, have concentrated only on the service delivery aspect of e-Government projects and have ignored the impact on the internal process of the public administration. This research will fill in the gap by focusing on both service delivery and internal processes and will thus provide some empirical results for the network in area which lacks research, and the results can be used as a basis for further research in other African countries.

4.0 Research Problem and Objectives

Mauritius has an E-Government readiness index of 0.471 (Global information Technology Report 2003) which is high compared to other Sub-Saharan African countries, yet the application of ICTs at Local Governments level does not seem to reflect the potential of the country. We believe that we would be able to add value by undertaking this research and consequently generate findings useful to the Government of Mauritius by assessing the current implementation status of e-Government in the different Local Authorities (municipalities and district councils), identifying the stumbling blocks to its implementation and hence proposing ways to increase availability of ICTs at the community level and suggesting how ICT can enhance the role of Local Authorities in meeting the preferences of their respective residents.

Moreover, the United Nations Global E-Government Readiness Report 2005 ranked Mauritius first among African countries with an index of 0.5317, followed by South Africa in second position.

Research Objectives

To assess the effects of the implementation of ICTs at the local government level on:

1. e-administration
2. e-service delivery;

Specifically, the research seeks to:

- Assess the current implementation status of E-Government in Local Authorities at:
 1. Administrative level
 2. Service Delivery level
- Identify the stumbling blocks to the implementation of E-Government in Local Authorities in terms of:
 1. Supply Side Barriers, e.g, budgetary resources, officials readiness for change(attitude),E-business climate etc
 2. Demand Side Barriers, e.g, ignorance, lack of basic skills, language, connectivity –reliability, speed etc
- Propose solutions and make policy recommendations based on research findings

5.0 Significance of the Study (Local & Central Government Levels)

As indicated above Mauritius has already set the foundation for ICT to become the Fifth pillar of the economy. This vision dates back to the early 1990s when plans were being made for an information society. The Mauritian Government has long recognised the importance of ICT in the public administration with a Data Processing Division created in the Ministry of Finance established as far back as 1970. In the late 1980s several institutions were established to promote the use of ICT at the central government level and society. The E-government Master Plan, which charts out strategies and action plans for the short, medium and long term for e-government, was formulated in 2003. The objective is to set a roadmap towards a coherent and integrated approach to implement e-Government. However, though Local Government in Mauritius dates back to 1790 most E-Government initiatives have been only implemented at the central Government level.

State transformation and vision to have a “Knowledge economy” is driving forward reforms, public sector transformation, donor involvement and to public-private partnerships. Among these public sector reform is everyone’s responsibility - politicians and public servants alike, the leaders and the doers. All Governments do it to improve the service they offer citizens to reduce costs, to increase efficiency and to stimulate economic development.

This research will probably be of invaluable assistance to any future local e-governance initiatives by acting as an eye-opener to policy-makers and implementers as regards the supporting and hindrance factors to the ‘effective’ development of local e-governance in Mauritius and thence shed light on ‘effective’ strategies for more and more sophisticated deployment of ICT in local governance thereby tapping the benefits that accompany adoption of such technologies

In fact, ICT use in Mauritian local authorities is so rudimentary that it makes sense to find out why, in spite of all the promises of ICT in transforming the state and such a high ‘e-government readiness index’ in Mauritius, all that seem to have been done so far seem to lead to ‘Islands of Automation’ and some ‘front-line’ computerization

The challenge is to find out why in spite of such a high ‘e-government readiness index’ developments seem to stagnate or at best are very timid.

6.0 Conceptual Framework

6.1 Introduction

Information and Communication Technologies (ICTs) provide a powerful tool to help achieve the Millennium Development Goals (MDGs). Thus, the “mainstreaming” of ICTs

within planning and design of development strategies is pivotal, both at national and regional level. Since the mid-1980s, strategic efforts have been exerted by many countries to build their telecommunication and information infrastructures³. The mobilization of information technology (IT) is deemed crucial in fostering national

³ For a survey of the policy approaches taken by various countries to develop their information industries, see Dianne Northfield, *The Information Policy Maze: Global Challenges - National Responses* (Melbourne: RMIT University Press, 1999).

competitiveness in the context of a rapidly changing global economy. Increasingly, strong IT capacity is perceived to make a difference not only in the marketplace but also in the field of governance.

Governance could be seen in broad terms as a system for steering and coordinating collective action. However, the realm of public action transcends notions of public delivery and state-led changes⁴. The state's role is transformed from that of an almighty sovereign to one that is based on coordination and fusion of public and private resources. New modes of policy consultation are experimented to improve citizen engagement in the policy deliberation process. Information tools such as electronic web sites are utilized to allow various stakeholders to present their perceptions on public issues.

Moreover it has come to be commonly accepted that decentralisation can be an effective tool for bridging the distance between citizens and politicians, improving service delivery and enhancing citizen participation because people at the local level have the information and incentives to design and implement policies that respond to local needs and preferences (Litvack et al. 1998, World Bank 2001). Information Technologies must contribute to increasing the possibilities of all citizens to enjoy their full potential rights and to decreasing the differences in the living conditions in our communities. A prerequisite for active participation in the modern society is access to the physical communications network. The fact that Local Councils play an increasingly relevant and central role in the life of the community, make them an ideal platform that will generate a multiplier effect on the rate of ICT take-up. The advantageous position in which they are situated gives Councils the opportunity to cut across the barriers of affordability, accessibility and training.

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6.2 What is e-Governance?

The e-governance idea has a relatively short history. The word has been coined according to the more general practice of employing the "e" prefix to stress the electronic way of producing and distributing services (e-commerce, e-learning, e-business, e-economy, e-society, etc.). Interestingly enough the term has found global

⁴ Mark Turner and David Hulme, *Governance, Administration and Development: Making the State Work* (London: Macmillan Press Ltd, 1997), p. 21.

use regardless of cultural, economical and geographical diversity (3rd Global Forum Conference Proceedings, 2001).

But, what does it mean? There does not seem to exist a universally accepted definition. Let us start, therefore, by looking at some of the competing definitions.

6.2.1 Some Competing Definitions

As can be seen from the discussions above, ICT can be used to transform the internal and external relationships of government. Using ICT to transform the internal and external relationships of government has been described as e-governance (World Public Sector Report, 2003).

However, coming upon the numerous definitions that exist in relevant literature one can easily conclude that there is no one definition enjoying broad acceptance. From a semantic point of view the “e” prefix stands for the electronic type of governance. Yet, e-governance means different things to different people. This was demonstrated most clearly in a recent discussion among several officials concerned with technology management in the executive and legislative branches of the American government⁵. Each official articulated a clear sense of what e-governance meant to him/her individually, although collectively they failed to develop a common definition of what constitutes e-government. Nevertheless, a consistent theme in those discussions focused on government providing customer service to a consumer-citizen in an environment free of the boundaries of rigid government structures and hierarchies.

Other definitions of e-government that are encountered usually focus on the change of means that administrations employ (Caldow, 1999; The Gartner Group, 1998; European Commission, 2000). According to another definition, governance turns to “e” when “... it digitizes its processes and the way of communicating both internally and externally” (Enterworks Inc., 2000).

Our analysis of the transformational potential of ICT in government point to the ability of ICTs: to allow governments to become more efficient through rationalization, to improve upon the quality of services; and increased possibilities for democratic participation and citizenship.

6.3 Why e-Governance? Assessing E-government Value Creation Potential

The above, then, are the main dimensions of what are essentially technologically determinist debates about social impacts of ICTs. Even if we admit that ICTs are ‘ambiguous technologies’ as some academics playing safe like to qualify them, their value to government can be appreciated if they create more public value than they destroy. So, what are those benefits that ICT deployment in governance brings?

By analyzing the change potentials of ICT and the views expressed in the perspectives on the information age (*for instance, Richard Heeks*), it is clear that ICTs can objectively create public value in the following ways:

⁵ "What's E-Government? How Do We Do It?" Government Computer News, 23 July 2001, p. 8. The full transcript of the interviews on which the article is based can be accessed at [<http://www.gcn.com/pdf/egov.pdf>].

Efficiency gains:

- ***Governance that is cheaper:*** producing the same outputs at lower total cost.
- ***Governance that does more:*** producing more outputs at the same total cost.
- ***Governance that is quicker:*** producing the same outputs at the same total cost in less time.

Effectiveness gains:

- ***Governance that works better:*** producing the same outputs at the same total cost in the same time, but to a higher quality standard. This could possibly include increase in transparency and reduction in opportunities for corruption by government officers with discretionary powers.
- ***Governance that is innovative:*** producing new outputs.

These are the direct and objective benefits ICTs can bring many others. For example, use of ICTs by government can bring benefits both internally and externally:

- Internally, providing benefits such as better staff motivation or greater political control or an improved public image.
- Externally, by delivering cheaper, better services to those who depend on government. Indirectly by demonstrating the benefits of ICTs to the wider population; by catalysing the local IT industry; and by encouraging foreign investment.

The benefits that the deployment of ICTs can bring to any organization or society are such that the question is no longer whether ‘e-governance’ but how to turn governance into ‘e-governance’.

The next section details the literature and theoretical framework that will guide this research.

6.4 Literature Review

The outcome of any e-government initiative should lead to a process of transformation, which increases the effectiveness, efficiency and transparency of government and administration. The basis for assessing any e-government initiative, this study will use the demand and supply side framework.

Since the main focus of this research is on the two categories of the application of e-government that is e-administration and e-service, our theoretical framework will be based on the demand and supply side challenges, facing these two categories of e-government application in Local Authorities.

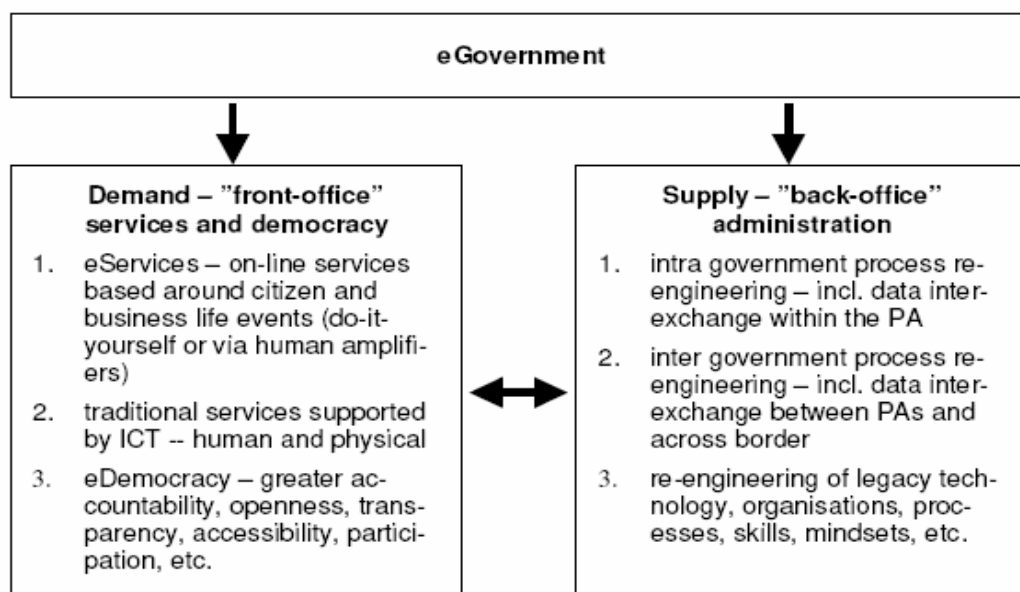
6.4.1 Demand and Supply Framework

New Public Management” has become the dominant paradigm of institutional reform in the public sector since the beginning of the 1980s. Its key elements can be summarised along the following categories:

- Organisation: decentralisation, disentanglement, increasing autonomy;
- Procedure: management by objective, cost output analysis, controlling, separation of public services from politics, etc.;

- Personnel management: participatory, cooperative and group elements, external consulting, evaluation, career planning and corporate identity; and
- External relationship: customer orientation through “Total Quality Management” and “Management by Competition” (Bogumil 1997, 30). As such the public sector has focused more on the demand side of e-Government initiatives rather than on the supply side. In the following figure, the demand side is defined by the requirements of the users (i.e. the citizens and businesses) while the supply side describes how these services are “produced” in the back-office.

Figure 1: Demand and Supply Framework of e-Government



Source: H. Westholm and G.Aichholzer (2003)

6.4.1.1 Demand Side (e-service)

- ***Information and Communication***

By shifting the focus away from the supply side and the delivery of well-defined, standardized goods and services, towards the demand side and the delivery of more client, citizen, patient, student-specific requested goods and services, public services would actually follow a development path set in motion in the private sector in the 60’s and 70’s bringing to the forefront consumers’ ”love of variety”. Such an initiative has led to numerous information and communication services available, but has left behind transaction services, which initiate electronically the movement of goods or the delivery of services. Today, citizens can access much government information on-line, but two-way electronic interaction is still not very common. Tax filing, applications for licences, permissions, or any kind of queries relating to administrative procedures are still mainly accomplished through postal mail, telephone, and face-to-face contact, but are increasingly being supplemented by on-line forms.

The added value of using digital signatures is rarely to be seen for citizens who have to make large efforts (time and money) obtaining the necessary hardware (e.g. card readers and smartcards) and software. In terms of security and privacy, there is still a clear difference observable at present between services already introducing digital

signatures, on the one hand, and the technical and organisational standard solutions to implement digital signatures, which still lag behind legislation.

- ***Participation, Transparency and Empowerment:***

Portals for delivering services to business, individual citizens and communities reflect the view from outside government and administration. Although portals are of prime concern, it should be noted that communicating with public agencies is only the tip of the iceberg: the entire scope of administrative action has to be involved. Restructuring the government services mode of operation will provide transparency and citizen participation in the political decision making process, especially on the local level. The vision focuses on governmental process innovation rather than the transformation of existing processes for on-line delivery. Thus citizens will benefit from highly efficient access to government services and will be empowered to fully exercise their citizen rights and duties.

6.4.1.2 Supply side (e-administration)

Re-engineering of public administrations is one of the most important pre-requisites to realise electronic services for citizens and businesses. A change can come, for example, from the implementation and further development of a Web portal in the first place that can assist with the push for the re-engineering of the back-office. The change of the organisation of the back-office can then enable the further development of the front desk in the second place. Hence the supply side becomes vital for assessing an e-Government project.

- ***Efficiency***

A major factor to expand e-government services concerns the workflow systems of the suppliers of the service. Workflow “refers to group activity automation by task sequencing and information routing” (Csetenyi 2002, 44). In other words, a workflow is an activity involving the coordinated execution of multiple tasks performed by different members of a team (group of people collaborating by jointly executing work items). Workflow Systems allow public administrations a decentralised way to work on case files of citizens. Workflow systems also require the re-organisation of public departments as well as training of civil servants. For example, ambiguous responsibilities of public servants can hinder them from using such workflow systems in an efficient way. Revenue-generating projects are difficult to find; mainly the public sector is subsidising these costs as technological investment or organisational investment that should contribute to raising the efficiency of internal workflows.

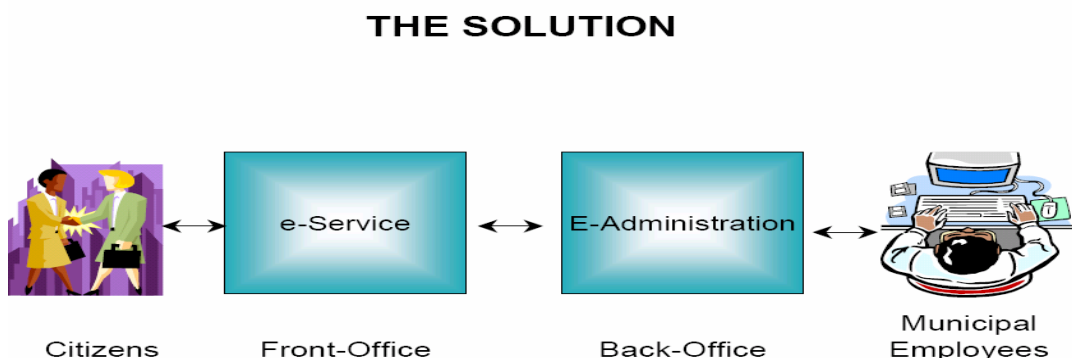
- ***Cost Savings***

An argument that should not be ignored when discussing impacts and influences on the suppliers’ side is the cost-side of IT-implementation in public administrations: Although a mid-term objective is to reduce costs for suppliers, currently administrations have to invest large amounts of money that are needed elsewhere (e.g., to subsidise socially disadvantaged citizens). Today, public institutions cannot easily increase taxes (and many want to decrease them), and many also have debts in some states (e.g. Germany) that prevent them fulfilling their constitutional obligations.

- **Integration and Effectiveness**

Besides, the whole supply chain is integrated: In many governmental services it is not the case that only one agency is involved, but rather that the primary agency needs to forward data to another agency in order to satisfy certain preconditions for providing its services. For example, the request for a new passport or personal document is normally made at the local government level, it is checked there and then forwarded to a national agency. There is no real gain if the application is sent online by the customer to the local government but then the second step in the supply chain is still paper-based. Thus, the degree of integration in multi-agency, multi-stages processes is of great relevance to back-office reorganisation. From the perspective of the target group, all relevant services, including work processes, are integrated into a single front office. These offices or service centres have electronic access to the various back offices where administration and production take place and which reflect existing organisational structures (e.g. departments). The front office takes the lead in the provision of the service but the back offices finally determine what is delivered. In the longer term it also implies the reorganization of back offices so that they no longer reflect historical or traditional organisational structures. They tend to be rationalised towards more effective and efficient processing of front-office functions. The following chart reflects the ideas discussed above, in the case of a municipal council.

Figure 2: E-administration and E-service



Source: B. Dobrev and M. Stoewer (2004)

The range of process-integration vary among scenarios and it' s hardly possible to foresee them for all scenarios because they are not rigidly but a lot of workflows (besides legacy services) are sequential and often interrupted by cooperation in deliberating meetings – but ICT enables these new ways of cooperation, especially with remote working partners. Files can be approved electronically (officers and customers will know about who is working actually on the document) and e-government implies options for other ways of working, decision-making and discussing like tele-cooperation which is not only adaptable for well-structured workflows which could partly be automated but also for less-structured activities like mixed-activities in a ministry with high degrees of policy-formulating and implementation-control.

Good practice in e-government means above all real advances from electronic information and communication services to transaction services, which enable users to carry out an administrative process completely, or to a large extent, online. Hence the assessment of any e-Government project must take into account the impact of that initiative from both demand and supply side dimensions.

6.5 Theoretical Framework

6.5.1 Web Presence Measurement Model

The Gartner Group postulates that e-government and for that matter e-governance development can follow a five stage process explained as follows below.

- I. Emerging presence:** This is the first stage of e-government readiness, representing information that is limited and basic. A government web presence is established through an official web site, a national portal or an official home page. Some archived information such as the head of state's message or a document such as the constitution may be available on line. Links to ministries/departments of education/health, social welfare, labor and finance may exist, as well as links to regional/Local government and branches other than the executive one of the federal government. But most information remain static.
- II. Enhanced presence:** Though offering some enhanced capabilities, e-government efforts are still limited to providing one-way information to the public. At this stage, the government provides sources of current and archived information to the public. At this stage, the budget, laws and regulations, reports, newsletters and downloadable databases. The user can search for a document and a help feature and site map are provided. On the public participation side, a greater menu of relevant government documents may be available such as strategies and policy briefs on specific issues. Though more sophisticated, the interaction is still primarily unidirectional, i.e. from Government to Citizen (G2C)
- III. Interactive presence:** This is the third, and relatively more sophisticated stage in the schema, where e-government readiness for provision of on-line public services enters the interactive mode with services to enhance convenience of the users. These may include downloadable forms for tax payment, applications for license renewal etc. that may need to be printed but may have to be mailed back to an agency – a task that could only be carried out by making a trip to the agency concerned. Audio and video capability is provided for relevant public information. The government officials may be contacted via e-mail, fax, telephone and post. The site is updated with greater regularity to keep the information up-to-date. The government at this stage has not employed e-government to fully inculcate citizen participation, though some form of input from the public is admitted through provision of e-mail and other contact information to answer simple questions.
- IV. Transactional Presence:** This, the fourth stage in the evolution of e-government initiatives, allows users to complete entire tasks electronically at any time. Backed by simple user friendly instructions, these obviate the

necessity for the physical presence of the users or utilization of other than electronic means for paying taxes or applying for ID cards, birth certificates/passports, license renewals and other similar C2G (Citizen to Government) interactions by allowing him/her to submit these on line 24 hours a day, seven days a week. The users are able to pay for relevant public services or expenses (e.g. fines for motor vehicle violations, taxes, fees for postal services) through their credit, bank or debit cards. E-procurement facilities are available with providers of goods and services able to bid on line for public contracts via secure links.

- V. Networked Presence:** This is the highest mode of e-government initiatives in the schema characterized by an integration of G2G, G2B (and its reverse) and G2C (and its reverse) interactions. The government is willing and able to involve the society in a two way dialogue. Through employing the use of web comment forms, and innovative online consultation mechanisms, the government actively solicits the views of people acting in their capacities as consumers of public services and as citizens. Implicit in this stage of the model is the integration of consultation and collective decision-making.

It is to be noted that it is not necessary that governments, whether at central or local levels' will necessarily embark on a phased approach as it may appear by considering the five stages of e-government. It is possible to leapfrog to a higher level without going through stage I in the first instance.

6.6 Theoretical Framework About E-governance and Institutional Change

Our quest to understand the e-governance challenges and prospects has yielded 4 possible approaches to explain e-government development in practice. The first two replicate dominant, though ultimately technicist, approaches to mapping and analyzing the 'information economy' and the 'information society'. We will consider them here in outline, before discounting their usefulness in favor of the third and fourth approaches which seem to better explain the realities of e-governance change and may even be used to forecast future e-government developments realistically in the evergreen tradition of Kurt Levin who argued that 'there is nothing so practical as a good theory'.

6.6.1 Mapping and Measuring Technological Diffusion

The first approach is one which offers an understanding of e-government in terms of the diffusion of ICTs. This approach focuses on measuring the uptake of new technologies by governmental organizations and mapping the extent and distribution of technological innovation in relation to a range of managerial, operational or political functions. It yields analysis of the different patterns of technology adoption as a platform for exploring the significance of the expanding use of technologies in government. For example in the case of the U.K, the Society for Information Technology Management (SOCITM) undertakes an annual survey based very much on this approach. In the case of Mauritius the National Computer Board occasionally carries a more or less similar exercise. The United Nations Department of Economic and Social Affairs (UNDESA) in its world reports uses the same approach. Such organizations may conduct exercises like counting the uptake of specific forms of IT and applications software in government organizations and gather evidence, for

example, on the size, shape and strategies of IT departments. SOCITM's survey in the case of U.K, for instance, provides some of the most valuable information on technology diffusion, forming a useful grounding for other research. However, this is, at root, an approach which is technology-led. It is so for many good reasons, not least the identification for public bodies of benchmarks and trends against which they are able to assess their own performance. It is also an approach which has enormous utility for the ICT industry, enabling it to understand the directions in which valuable markets for its products and services are being developed. It is much less helpful when it is also used to generate explanations of change: when, for example, it encourages simple-minded extrapolations to be made from quantitative data on the uptake of new technologies to assumptions about the qualitative impact of those technologies on government.

6.6.2 Analyzing the Business Logic of ICTs: Business Process Re-engineering

A second approach to understanding and delineating e-government in practice has its origins in the substantial literature on the 'information economy'. Like the first, this approach places primary emphasis upon technological innovation and is particularly focused on its implications for the cost structures of business, and therefore for business organization and strategy. This emphasis derives from the assumption that the configuration of business organizations, the nature of inter-firm relationships and the focus of business strategies will change radically under the weight of the economic 'logic' of technological innovation. Thus, as the Schumpeterian 'gale of creative destruction' blows on the business of government, so it will bring in its wake new organizational forms, new ways of delivering services and new ways of relating to suppliers and consumers. Indeed, as the business logic of new technologies comes to be better understood, so radical opportunities for reshaping the machinery of government and re-engineering its processes will more strongly be brought forward.

However, BPR appears to offer a value-free prescription for transforming business processes, its doctrines have politically significant implications for relationships in and around government, especially those between public services, their suppliers and their consumers. In this respect the use of the word "re-engineering" is not accidental but symptomatic of a world-view seeking to treat politics as aberrant and dysfunctional. Organizational life is messier, less easy to order and more political than the advocates of BPR pretend. Constitutional Objections and political resistance to changing longstanding governmental arrangements may not only shape e-government development but even make the bureaucracy absorb technology to strengthen itself. While it is expected that government would tap from the power of ICT to change institutions, structures and organizations in public administration, what may be more common is the power of institutions, structures and organizations in public administration are acting to absorb and accommodate technology without undergoing much transformation themselves. Such are the powers of institutions that many governments are characterized by inertia, i.e., they embrace the status quo. They react only under crisis situations or more realistically they react when a crisis situation intersects with an opportunity.

6.6.3 An Institutional Approach to Information and Communication

As the above two approaches seem to be inadequate in explaining e-government development in reality, there is a need to move on from these first two approaches, partly to escape from their incorrigible technicism, and partly because of their lack of

engagement with the complexities of the political and social world in which technologies are being adopted. Furthermore, it is important to see e-government issues as deriving from, and being interpreted and resolved within, specific social contexts. Thus, we argue in this paper that the perceived business logic of the information age implies new kinds of trade-offs between values such as universalism and selectivity, equity and efficiency, and privacy and transparency. However, the nature and the implications of trade-offs which actually occur can be fully understood only by reference to the political imperatives, business values and organizational cultures from which they arise.

An institution is best understood as a set of formal and informal rules, norms, expectations and conventions which govern human behavior maintaining the regular routines through which society is ordered. Institutions provide, therefore, for continuity and predictability in everyday life, setting frameworks for action, inaction and innovation. Thus institutions are not to be understood simply in terms of formal organizational structures, though they may validate organizational boundaries and jurisdictions. Indeed, a formal organization may accommodate a number of institutionalized systems, such as those which govern the behavior and strategies of actors occupying various occupational or functional roles. Institutions may, by the same token, stretch well beyond the boundaries of formal organizations. A bundle of organizations may become meshed together in a set of ordered, routinized relationships which are governed by well established norms and conventional procedures. It is in this sense, for example, that Lowndes has referred to more or less stable 'policy communities' in governance as 'disaggregated institutions' (Lowndes 1996).

By maintaining and legitimating the normative frameworks within which actions occur, institutions provide a predictable environment for the exercise of bounded rationality. Institutions are, in effect, a 'set of readiness to distinguish some aspects of a situation rather than others and to classify and value these in this way rather than that' (Vickers 1965: 67). Put another way, institutions close the 'competence-decision gap' (Dosi *et al.* 1988). In times of uncertainties in the environment of organizations, such as those which currently characterize public administrations, they assist and influence decision-makers by providing tried and tested ways of doing things, enabling them, through a combination of tacit knowledge (Best 1990) and implicit references to past actions, to reduce the costs of information gathering and processing which would necessarily be incurred in the pursuit of high levels of rationality and predictability.

6.6.4 Market and Social Shaping of Technology and Organizational Development

The claim that ICT-intensive government will work better and cost less is predicated on securing greater integration between business processes, both horizontally across government and vertically between suppliers, producers and consumers. Securing and maintaining the business relationships on which this integration depends critically on the informatization of government. That is, it depends on new capabilities for capturing, for sharing, for integrating and for exploiting information by means of new kinds of information systems capable of supporting new information flows. However, beyond institutional factors, the reality of ICT-use in government is more complex.

No one can deny, for instance, the power of private sector vendors to shape government's action. In the U.K, the government seems to have become a prisoner of

its arrangements with private sector companies to which it has been outsourcing government processing as a legacy of the NPM era. In the US antitrust legislation prevents the government from outsourcing a majority of government processing activities to one private company. In Mauritius, Microsoft and Linux are competing to the make government choose their operating systems. In India, Microsoft is helping the state of Karnataka – a state of 55 million inhabitants to adopt e-government strategies (Srinivasan, 2004). The point is that, it is naïve to explain e-government development simply on the basis of its techno-economic promises. Commercial interests to a large extent drive e-government as much as the nature of such interests. When the demand and supply sides (i.e. market forces for e-government) are strong enough to force institutions to move away from their inertia, changes are more likely occur, i.e. local governance turning into local e-governance or otherwise

The System That Makes E-governance Happen

The demand for e-government cannot be underestimated as a factor influencing supply of the latter. Demand comes from both within and outside governance structures. Its proponents include those who have high on their political agenda: limiting the size of government and making government work better (not that these two are mutually exclusive). Proponents thus cover a very wide political spectrum and many interest groups, which have been assuring steady political support for e-governance in many countries of the world. Barring take-over of political power by Luddites⁶, for different reasons, political parties along most rungs of the political spectrum have been and are likely to continue to support e-government.

Many reformers who have wanted to limit the size of government have been responding to pressures on public budgets (PUMA, 1998). They have advocated the need to achieve greater macro-economic balance in economies increasingly integrated with the global financial and trade markets. Embracing the New Public Management (NPM) ideology, they have seen as a source of savings (on staff and operating cost) the ICT capacity to automate certain public administration functions and to increase the speed and precision of others. Their insistence that government should work more like business opened the door to a search for tools to increase the efficiency and effectiveness of public organizations. Efficiency and effectiveness have become the benchmarks of performance in government, those who have had difficulty in measuring up, in many cases have seen their functions outsourced to private business firms.

We know, by now, the limitations of the NPM revolution, especially in developmental, political, cultural and bureaucratic contexts that are starkly different from those in which NPM originated, and in which it has brought the most commendable results. However, the example of the NPM countries has been well documented and is readily available for copying. It has impacted thinking in many multilateral and bilateral development organizations. It has been absorbed by parts of the Western-educated elite all over the developing world. And its core message is irrefutable: as long as the public interest is sufficiently protected (or even infringed upon, but still to a degree that is tolerated by the public), anything in the organizations

⁶ A 'Luddite' is a person who fears or loathes technology, especially new forms of technology that threaten existing jobs. During the Industrial Revolution, textile workers in England who claimed to be following the example of a man named Ned Ludd destroyed factory equipment to protest changes in the workplace brought about by labor-saving technology. The term Luddite is derived from Ludd's surname. Today, the term Luddite is reserved for a person who regards technology as causing more harm than good in society, and who behaves accordingly. *Source:* (www.whatis.com)

of public administration that can bring costs down and effectiveness up should be welcomed. Investment in ICT to increase revenue intake and lower the operational cost of government across the board has presented itself as a smart choice, especially if compared with the option of facing the political consequences of cutting social services for the sake of keeping national bureaucracies intact. Difficult as it is, the NPM message, supported by capacities brought by modern ICT, is being tested all over the world (Heeks, 2002).

Reformers who have pursued the need to make governments work better have come from many more quarters: Among them are the socially conscious, who have always abhorred the dwindling quality of public social services further away from the capital cities (in most developing countries) and further down the income ladder (for all countries). The low-cost outreach capabilities and improved effectiveness ICT brings have been attractive to them.

Others have come from the business community, and especially the small and medium-size enterprise (SME) sector, which has recognized the potential for lowering that transaction cost of doing business by making much of the relevant government-generated information and G2B2G interaction readily available via the Internet. ICT-induced speed, precision, simplicity and outreach matter to them most.

They have come from the international financial community (trading and investment partners, donors and multilateral financial organizations) as well as, in many cases, from the national financial and business community. Macro-economic stability and the elimination of corruption in the national economies that join the global market – developed and developing alike – have been prominent as motivating forces for them. As a rule, they have favored ICT applications to better collection of tax revenues, more open public procurement and precise financial management, as well as all the applications that have been following the NPM track. For them, the whole spectrum of ICT features, if applied to operations of public administration has mattered, with speed, precision and simplicity especially relevant on the public finance side.

Finally, they have come from the public at large, especially from those who have seen themselves as consumers of public services.

Part of the impetus has originated from the timeless wish that government should deliver more and do it better, and that the cost of dealing with government (in time and money) should be lower. This cuts across all income groups and social sectors of society, arguably with the income-poor, marginalized groups of the population – voiceless as they are – most interested in such a change.

Part of it has originated from pure comparison between the ways in which government has committed to operate with the ways in which private firms have started to use ICT to enhance their operations, especially at the point of interaction with customers.

Part has resulted from the spread of the NPM ideology and a growing appreciation that a new medium exists that can put a better doctor in front of a patient or a better teacher in front of a pupil. In many industrialized countries, the increasingly educated and vocal public has started to demand greater value for its tax money. And those with the highest levels of education and skills have started to vote through their decisions to resettle in the global labor market to tax jurisdictions that offer as part of the societal and tax burdens. (However it must be noted that opportunity for high income has been playing a prominent role in such decisions as well, despite the fact that the “high-income opportunity tax jurisdictions” and the

“high-quality-of-public-service tax jurisdictions” have not necessarily been overlapping).

Finally, many academicians and original planners and practitioners of e-government development have attached to it hopes for revival of democratic governance.

In a separate but related way, it must be noted that from the point of view of the major ICT companies, e-government, has become a product. This means that it has gone on the list of their development, marketing and delivery of goods. It is increasingly admitted that these companies may have acquired “too much role” in creating the need for e-government, both in the industrialized countries and in countries with developing economies (Osorio, 2002). Indeed, it seems increasingly true that in countries where ICT vendors have found it possible to influence the decisions of the politicians, this particular interest group has become very prominent among the promoters of e-government development. As one researcher concludes, “Vendors are often in a position to guide – even direct – the direction and content of e-government” (Heeks, 2002). In fact, when introduced the case of ‘Outsourcing’ as a trend in e-government (Chapter 2), I showed how private companies like EDS, Accenture, IBM, etc. which make big business from government outsourcing of its processing, also, push government to outsource more and more of their processing, hence leading to development of electronic government. Along the same line of argument, Bellamy and Taylor (1998) argued that the power of private IT vendors, telecommunication companies and software companies to pressurize the U.K. government to adopt more and more of ICT cannot be underestimated. Such companies thrive on sales of ICT products and services and will therefore lobby the government for business.

With the message coming from so many quarters and in so many forms, the politicians, especially in the developed world, have been found to react positively.

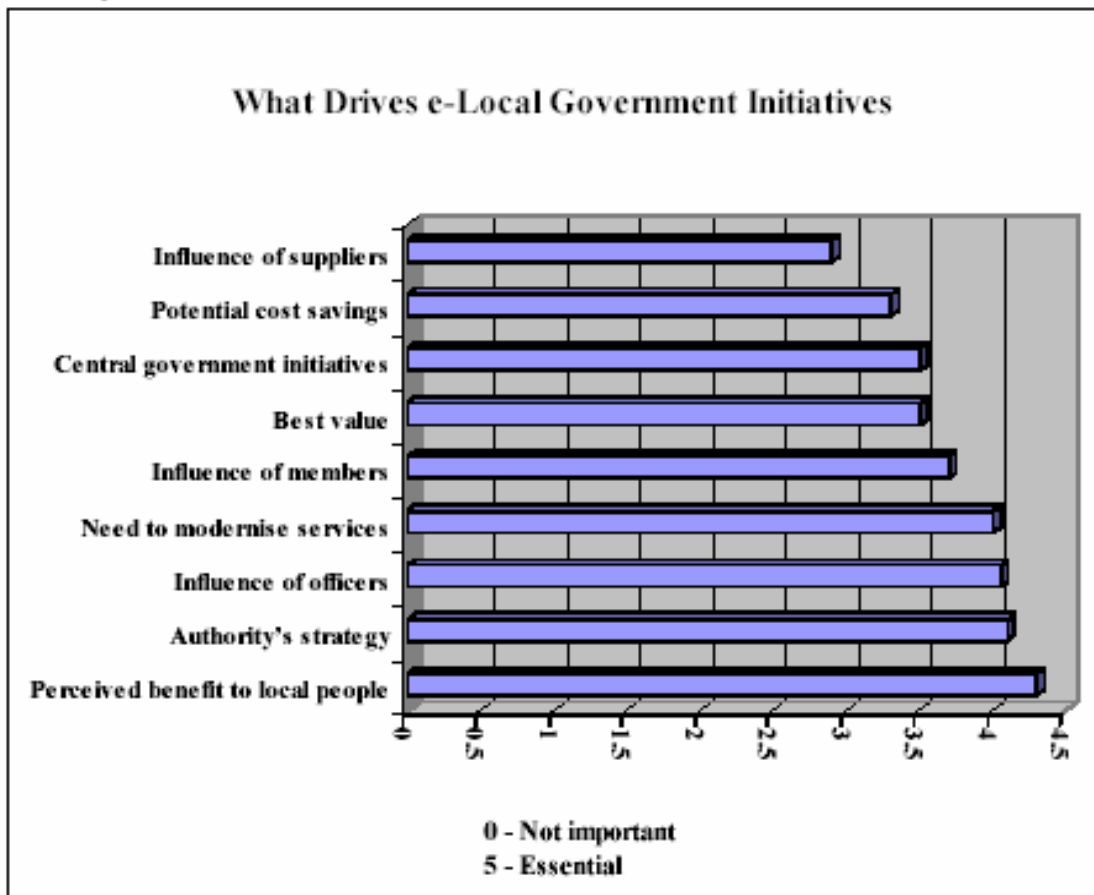
They found money for e-government development in public budgets, grants and loans, as well as in financial partnerships with private business (in exchange for profit sharing). They have found readily available sources of advice (private consultancy firms, international financial and development organizations) and of technical inputs (private vendors of hardware and software).

In most situations, the policy decision about if, how and where to develop e-government has looked as if it has been almost made. Anything that has promised to save or add public resources or raise the financial transparency of the government has automatically qualified as a likely entry on the list of e-governance applications.

The above are the broad features of the system that has been responsible for the “production” of e-government and e-governance strategies in developed countries. Not surprisingly, when it has begun to play out its potential in real life situations, it has brought its measure of successes, failures and surprises because the market may not be working efficiently in all cases and because factors, other than the market for e-government, also come into play in shaping e-government outcome.

There are also other researches which have attempted to find out and sometimes even prioritize the reasons for which local governments are choosing to become e-governments. For instance, a survey of the importance of potential driving factors for local e-government initiatives (Webster 2001) indicates that improving service (benefits to local government clients - local people) is rated as the most important factor followed by other factors as shown in the chart below.

Figure 3 Forces Driving e-Local Government Initiatives



Source : Webster (2001)

Key findings of Accenture (2003) research, on the other hand, reveal the following reasons for implementation of e-government initiatives (more specifically e-service initiatives) and the level of importance of the factors as shown in Table 1.

Table 1 Factors Driving the Development of Service Delivery Initiatives

Factors	% of Respondents Rating the Factor as Either Extremely or Very Powerful
Improving Citizens Satisfaction	93
Customer Demand New & Better Services	83
Government Performance Targets	77
Political Pus/Pull Factors	67
New Technologies	62
Security/Fraud Concerns	61
Regulatory Requirements	58
Pressure to Reduce Costs	57
Voter Apathy	18

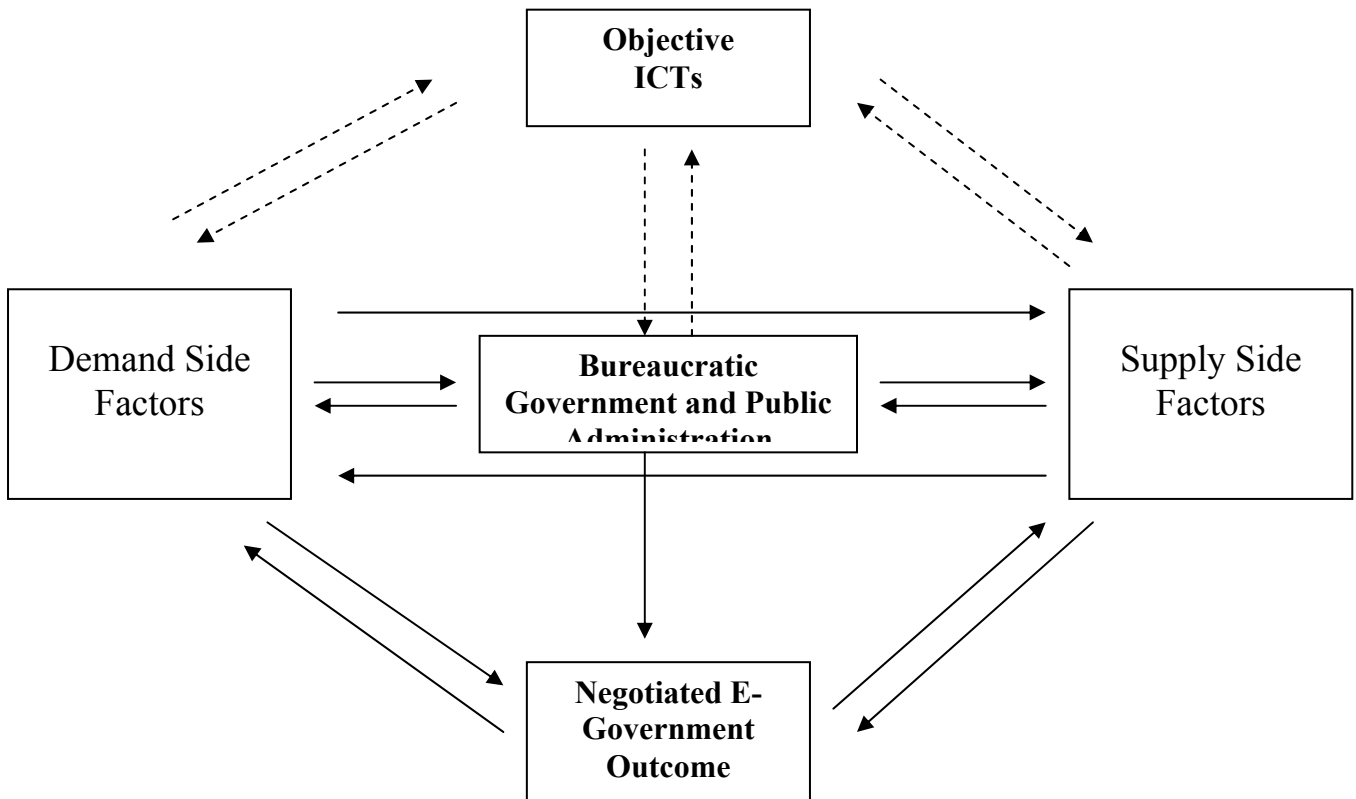
6.7 E-government Outcome in Practice: What Shape and Why?

The following broad observations can be made from the discussions above:

1. ICT can be considered as ‘objective technologies’ which have real promises and potentials for developing more effective and efficient local governance.
2. Objective Promises of ICT however influence both demand and supply sides of e-governance and are influenced by them.
3. Institutional forces of existing networks and organizational structures and cultures etc are at the centre of converting these pressures into realized e-government strategies
4. The final outcome is a ‘negotiated e-government’ – the result of interplay of all the forces.

Modeling E-Governance Development and Identification of E-governance Challenges

Figure 4 below diagrammatically shows how we see e-government development happening in practice – as a by-product of interplay of forces associated with ‘objective’ ICT potentials, demand-side and supply-side factors of e-governance, government and its institutions and e-government outcome itself.



Source: Authors

If we consider challenges as being difficulties to be overcome to pursue effective e-governance as a goal, in the light of the above model, therefore, we can see three main local e-governance challenges in Mauritius:

1. To remove stumbling blocks on the demand and supply sides of e-governance;
2. To re-invigorate the traditional bureaucratic government structures which usually act as the (bad) ‘judge and party’ to transform themselves. We are inclined to use the

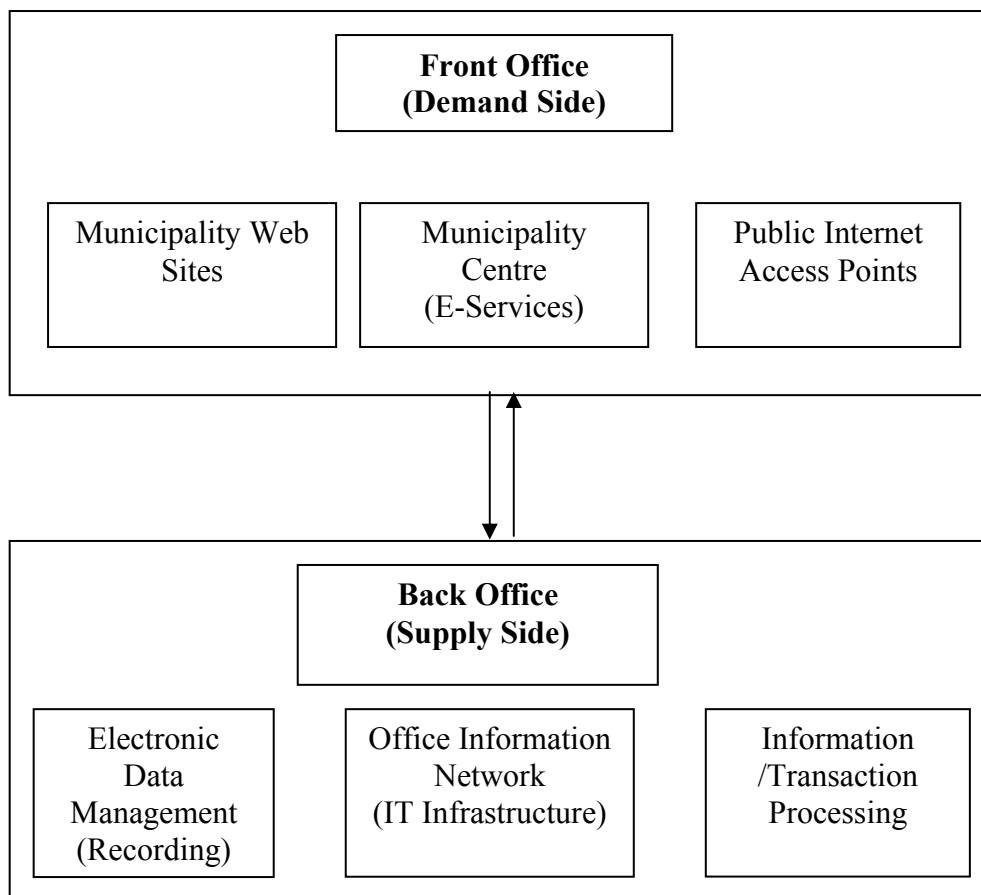
term (bad) to qualify the traditional government, because the bureaucracy is known for its usual inertia, its non-rational approaches to decision-making and administration, and the power of the institutions to absorb technology without undergoing the much needed changes required to become effective e-government.

3. To minimize opportunities for ‘undesirable’ negative e-government outcomes eg. E-government failures and growing digital divide, etc.

6.8 E-model for Revenue System.

Two categories of application for e-government relating to local e-governance will be analysed within the methodology: first realized as Front Office delivering e-services to citizens and businesses (Demand Side); and second as Back Office with e-Administration (Supply Side). This is shown in figure 5.

Figure 5: Front and Back Office Revenue System



Source: Authors

Front Office Applications prototypes for local e-government will include:

- Municipal Web-Sites and E-Services
- Public Internet Access Points (Cyber Café, Mauritius Post Ltd Internet Kiosk)
- Support Help Desk with Computers and Internet Access

Back Office Application Prototypes – e-Municipality should include:

1. Office Information Network (IT Infrastructure)
 - Interface with others (municipalities, government, companies, etc)
 - Electronic Recording and Data Management

6.9 ICT Applications in Local Governments

Municipal or regional Web sites like *bremen.de* , *lewisham.gov.uk* and *bay.net.de* or *wien.at*, offer public services oriented towards the needs of the citizens and not only towards the defence of a bureaucracy. Terms like “marriage”, “moving”, “birth” or “business start” are used as “entry-links” in order to make people search and find information and services much faster than through an ordinary list of agency links (Dosi et al.,1988).

According to Schwabe and Krcmar (2000), from the perspective of parliamentary work workflow-changes in the *City of Stuttgart* is particularly interesting. It entails Cuparla (or STADTRAT-online), a Lotus-Notes-based software (with document-management, scheduling, e-mailing and fax-connection) application, to support communication, information delivery and information processing within parliamentary parties and the administration from the point of view of the parliamentarians. The local councillors are working in the plenary, at home, at work or on the road with their notebook. Launched in 1996, Cuparla is included in a framework of municipal information systems, the local service for council meetings, and KOMMUNIS, the municipal statistical information system) with internet access. But it is also usable offline as a mobile telecommunications system – e.g. in meetings or on the road. The value for users is obvious and evident. Cuparla enables to relieve councillor’ work by offering independency of locality. Engagement on honorary basis is possible besides family and job, and teamwork between councillors is improved.

Lall (1999) argues that improvement of human working conditions is a pre-condition to motivate public employees to work on and with e-government solutions. For example, within the *Bremen* government (Germany), usage of IT for re-structuring internal administrative processes, also offers new perspectives for employees: Besides “new models of job time”, employers and employees agree upon an official regulation called “model trial“ alternating tele-working” , meaning that employees can work part-time at home under special circumstances. Jobs must be defined by a high degree of data procession, definable results and technique-supported settlement of tasks. Centralised states like France use the opportunity to give IT-support to their regions and municipalities by offering a central portal which enables citizens to get in contact with “government as a whole”.

The Danish government provides a geographical map of the country on their central Web site www.danmark.dk with its regions and users can click on their region or city and are linked directly to the relating local Web sites with governmental information. Some states are promoting this more “ top-down” -approach, e.g. France with its “Cobranding project” of Service-public, the Flanders part of Belgium with its Eloket and the Netherlands with *OL2000*. Other states, especially in the Central and Eastern European area like Hungary, can use the capacity of central government to re-organise administrations through combining it with introduction of IT-usage. The City of Turin in Italy provides *Torinofacilissima*, a personal card that makes it feasible to

secure services (SSL) from any Internet access point. Main services made available include ticket booking and payment for concerts and shows, cadastral survey, tax computation and payment, personal data certificates issues and regional and municipal tax survey.
http://europa.eu.int/information_society/europe/egovconf/projects_selected/italy/index_en.htm.

Srinivasan (2004) noted that local government services, like the German Bremen Online Services (bos) offers full transactions (including payment) in applications like change of address in central citizen's register and with many other private institutions, ordering birth certificates, marriage licenses etc., ordering monthly public transport card, or payment of city ordinances and fees, are available, small and medium-sized businesses can search for public tenders and request the applications materials online, lawyers can search for legal information on companies and request extracts from the city register online.

In Egypt, the Information and Decision Support Center has created a comprehensive national database with 85 million birth records, 34 million death records, 12 million marriage records and 2 million divorce records. This has provided the basis for a national ID number and, hence, a secure and accurate national ID card. Automation of previously-manual processes has saved considerable sums of money. The information base and ID numbers have also been an essential building block in the creation of other public sector planning and service delivery applications (Goran, 1999).

United Kingdom (UK)

The Office of the Deputy Prime Minister's in England (ODPM) has funded a project of £1.2m that allows local authorities to use e-Payment solutions. This makes it easier for citizens and businesses to pay for services from local authorities. E-Payment also supports the ODPM's wider agenda of e-enabling all local authority services by 2005 and specifically the payment interactions. The use of e-payment solutions has the potential to provide significant benefits to both councils and citizens by enhancing customer service, reducing the cost to councils of processing payments manually and improve service delivery by enabling citizens to make payments. E-payment involves electronic channels such as the Internet, telephones, mobile phones, kiosks and SMS. These can be used for electronic payments of services including council tax, waste disposal, and leisure services and planning applications.

According to Local e-government minister Phil Hope "e-Pay fits well into local government, and if it is rolled out effectively in local authorities it could save £708m over the next five years". The project offers local authorities better accessibility and accountability, and could transform services.

Hammersmith & Fulham Council (LBHF) has been at the forefront of innovations in e-payments for several years as more and more residents look to pay bills online and over the phone.
http://www.lbhf.gov.uk/Directory/News_and_Media/Press_office/Press_releases/40094

Town hall staff in the West London Borough has seen a huge rise in the total number of e-payments, rising from less than 17,000 in 2001 to over 100,000 this year. Now

the council is looking to add more services to the online and pay-by-phone system and help other councils nationwide to follow suit.

Thus, Local e-government is a remarkable achievement in UK. In March 2002 just 26% of council services were e-enabled. Now, 98% of councils are e-enabled. By offering cheaper self-service options to the e-literate this has free up time and resources to provide for those most in need.

Banks sometimes quote figures which show that receiving payments online, particularly for small transactions, is much cheaper than processing a cheque. Empirical evidence that confirms this is the case across the spectrum of local government services for which charges and fees are made will be a key driver for moving to an online payment process.
<http://www.governmentbusinessuk.com/default.asp?id=105>

Australia

Electronic payments provider CommSecure has entrenched its position in Australian local government, securing deals with key local government associations and two prominent councils in Queensland.

In addition, Logan City Council and Townsville City Council are implementing the company's BillSecure electronic bill presentment and payment solutions, allowing ratepayers to settle rate notices via the councils' Web sites or Internet banking sites.

The Queensland services are introduced with the distribution of rates assessments to more than 60,000 properties in Logan in October 2003 and 32,500 properties in Townsville in January 2004.

Romania

In March 2003 the Giurgiu Local Council launched a Document Management and Tax Automation Systems (DMS & TAS) project. This project is part of the Giurgiu “Integrated Informatics System” initiative that seeks to develop information and communication technology (ICT) applications to increase the efficiency and transparency. This project is implemented in order to strengthen the capacity of the Local Council and improve the services for the business environment and for the citizens by providing easy and quick access to public documents and information, implementing a highly developed infrastructure (computers, software, network, and Internet access), and providing computer trainings for the employees of the Local Council.

Tax collection

In the past, the bookkeeping of local taxes and fees was done using old MSDOS software called VENIS, dating from the 1980s. This application had several disadvantages:

- it worked very slowly as the database was just a text document without any structure;

- the system did not allow consultations, updates or changes without the intervention of the owner;
- information about the tax debts was available only at the collection points where people were asked to stand in line to pay their taxes;
- taxes were paid only at one collection point located within the tax department;
- tax payments were not recorded in real time in the database, causing duplicate payments during the same day.

New system – Integrated Informatics System (DMS/TAS)

Using the new Document Management and Tax Automation Systems the Giurgiu City Hall is now open around the clock for businesses and citizens, providing efficient services. Documents are no longer handled on paper and taxes are collected with a new application that solved all the problems generated by the old system. The Giurgiu City Hall developed a portal that can be accessed at <http://www.primaria-giurgiu.ro/> and provides FREE services for businesses and citizens, including:

- Registration online
- Schedule Appointments online
- Electronic archive with Local Council Decisions
- Forms and services online
- Information about the tax debts on the Internet
- Electronic payment of local taxes and fees
- Questions and answers online (forum)
- Useful information on the Internet

The DMS/TAS project has already had significant impacts on the businesses and citizens of Giurgiu and on the Local Council, including:

- More efficient tax payment and document management processes;
- Substantially reduced waiting time for taxpayers to make payments;
- Easy and quick access to public documents and information;
- Increased transparency in the budgetary process;
- Greater involvement by citizens in the decision-making process.

United States of America

According to Moulder (2005), more than 50 percent of local governments (including 50 percent of those with populations from 5000 to 9000) plan to offer online payment of utility bills, fees and fines. In some cases such as in the Illinois E-pay Program the state may arrange a contract and make online payment systems available to a wide variety of governmental organizations including many municipalities and county governments that have few IT resources of their own and, in some cases, even lack their own website.

<http://www.illinoisepay.com/epay/index.jsp>

Perlman (2001) discusses how the use of third party vendors has allowed counties without large IT resources such as Cobb County (Georgia) to implement an online ticket-paying system. Cobb County obtained a 17 percent usage rate and helped to shorten lines at the courthouse. These cases show that small and moderately-sized

cities can experience success through use of vendors and cooperative efforts of pooling resources.

For local governments, the percent of web payments with credit cards range from zero percent for two local governments to a high of 45 percent for simple building permits. Generally, the penetration rate for web payments of most local government applications appears to be low. The percentages of payments by electronic debit (also often referred to as “ACH” or “bank draft” by our respondents) were generally more substantial than the percent of web payments.

We also explored the hypothesis that the size of the government as indicated by its population would have a positive impact on the percent of online transactions. Population size has been found to be important by Ho & Ni (2004) to the expansion of e-government features. Although the correlations were in the expected direction, there were no statistically significant correlations between size and usage rates overall or within the utility and water-related categories.

The City of Tampa (Florida) provides a test for the impact of convenience fees. They dropped convenience fees in March of 2005 and both the percentage of the count of online payments and the percent of the amount paid online increased the months following the change despite the fact that the government did little or no promotion. The percentage usage rates represent an average for all of Tampa’s applications but their individual application rates vary greatly—from more than 18 percent for parking tickets to less than 1 percent for business taxes, demonstrating that the nature of the particular application affects usage rates. The Tampa data also illustrate that online percentages are generally fairly stable even though the absolute amounts may be affected by seasonal factors.

One of the attractions of web payments is the ability to earn “miles” or other rewards from credit card companies. This would be especially attractive for a large payment such as annual property taxes but most if not all of the property taxes online systems have fairly heavy convenience fees so that the percent paying online is small. Still some do pay by this method even though it does not appear to make economic sense. Indeed, an official in one government reported that in some cases, online credit cards were used for payments that resulted in hundreds or thousands of dollars in fees and the benefits from credit card companies did not appear to justify the costs.⁷

Philippines

The City of Manila is the capital of the Philippines. Local governments in the Philippines are authorized to collect taxes and fees to provide a host of services to their constituents. The most important sources of local revenues are real property and business taxes. These taxes are most difficult to administer and collect because of the enormous volume of records and circuitous processes involved.

⁷ *e-Government and Financial Transactions: Potential Versus Reality* Bruce Rocheleau¹ and Liangfu Wu² ¹Division of Public Administration, Northern Illinois University, USA ²Information Services Department, Village of Downers Grove, Illinois USA

In the past, these functions were conducted manually, which hampered efficient and accurate transaction processing. To address these issues, the government switched to fully computerized systems in early 2005. Later in the year, it engaged Oracle Partner Amellar Solutions to migrate applications to Oracle Database 10g.

The powerful Oracle platform enabled the government to improve transaction processing speed, scaled easily to cater for simultaneous report queries, and ensured large numbers of concurrent users could access the system during peak times without any slowdown in performance. The success of the systems prompted the government to increase the number of users from 60 to more than 200. With almost quadruple the number of users, government realized that its existing database engine was struggling to simultaneously handle user queries, process the large number of transactions, and generate management and statistical reports.

Payment processing, which usually took a few seconds, began taking a couple of minutes during peak periods to complete, affecting productivity and customer service. Adding temporary licenses and adjusting parameters on the servers and database engine did not improve the situation. Upgraded to Oracle Database 10g brought immediate benefit for users such as stability of all transactions and less waiting time for a transaction to be completed. In addition, back-up procedures are accomplished much faster. Records are now in a reliable and clean database. Ability to provide efficient services has improved. Transactions are completed seamlessly on a similar level as that of banks and other online services.

The government's real property tax collections alone increased by 62.4% or PHP681.4 million in 2005 compared to the previous year⁸

Netherlands

While high tech industry clearly dominates Eindhoven's past and present, it also is a source of inspiration. This is expressed most clearly in the city slogan: 'Eindhoven ahead in technology'. It thus comes as no surprise that Eindhoven is one of the cities trying to be a leader in ICT development and application, not only in its industry but also in the field of eGovernment.

Eindhoven has a city wide intranet, to which the vast majority of its 2200 employees is connected. The cities administration uses the Centric administrative package and the website is secured through a Secure Socket Layer. When citizen identification is required, this is done by a username password combination and in February, 2004 Eindhoven has introduced an Internet payment system, as one of the first cities in the Netherlands.⁹

⁸ *City Government of Manila Boosts System Performance with Help from Amellar Solutions, Oracle Customer Case Study.*

⁹ *Ronald E. Leenes and Jörgen S. Svensson (2005) "Local eGovernment in the Netherlands" Tilburg University / University of Twente. r.e.leenes@uvt.nl / j.s.svensson@utwente.nl*

Up to now, there is a lack of available evidence showing quantified expectations or even concrete empirical data for cost savings, one of the goals of public administrations expected from the establishment of web based services. Although reports published by consultant firms and the European Commission refer to “expected cost savings” for governments, there are few figures available supporting these assumptions. Recent surveys among high ranking public servants justify that only 13% on the national government level and 31% on local and regional level expect e-government investments financed by cost reductions (e-Forum 2002:24). Simultaneously, 41% perceive “reducing the costs” as an objective for governments resulting from ICT implementation (ibid.: 36). This could mean that those who are directly involved in IT-implementation in administrations estimate that the economic benefits will not be gained now, but in the future.

7.0 Result Based Management

To assess the chosen E-Local Government Project, that is the Revenue System¹⁰, both from the front office and back office perspective, the Result-Based Management Framework will be used. Results-based management (RBM) is a life-cycle approach to management that integrates strategy, people, resources, processes and measurements to improve decision-making, transparency, and accountability. The approach focuses on achieving outcomes, implementing performance measurement, learning and changing, and reporting performance. There is a broad trend among public sector institutions towards Results- RBM. The objective of RBM is to “provide a coherent framework for strategic planning and management based on learning and accountability in a decentralised environment.” Introducing a results-based approach aims to improve management effectiveness and accountability by “defining realistic expected results, monitoring progress toward the achievement of expected results, integrating lessons learned into management decisions and reporting on performance”¹¹. The essence of results-based management is that an end-state – a result – is expressed as the objective of the program. Then the intermediate things that have to happen to achieve that objective are set out. When this planning is done properly, progress can be measured and results assessed.

RBM can be defined as an approach to management designed to improve programme and management effectiveness, efficiency and accountability, that focuses on achieving defined results. The internal logic of RBM is based on the cause and effect relationships between inputs, activities and results. Inputs are the organizational, intellectual, human, ICT and other resources that are brought together in time and space and transformed by some management or implementation activity, e.g. the implementation E-Government projects. These activities, then in turn, generate a chain of results. This chain is composed of outputs, outcomes and impact level results. Outputs are the specific products and services which emerge from processing inputs through programme or non-programme activities. Outputs, or sometimes referred to as “deliverables”, are the immediate, visible, concrete and tangible consequences of

¹⁰ The choice of this e-Local Government Project is fully explained under section 8.

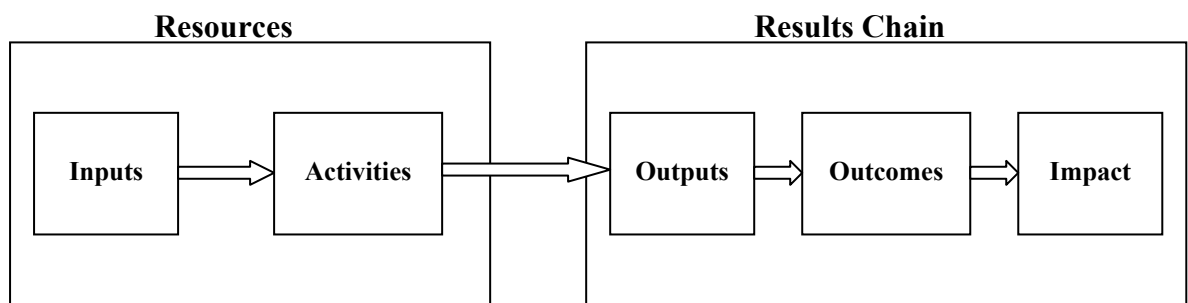
¹¹ “Results-based Management in Canadian International Development Agency”, CIDA, January 1999.

inputs. They, therefore, relate to the *completion* (rather than the conduct) of activities and are the type of result over which managers have a high degree of influence. Outcomes are actual or intended changes in development conditions that UNDP interventions are seeking to support. They describe a change in development conditions between the completion of outputs and the achievement of impact. An example is reduced cost of operations brought about by automating an organizational function.

Impact refers to ultimate long-term desired results and is a consequence of the achievement of planned outcomes. It represents widespread changes in the society, economy or the environment of the targeted population. Impacts are the highest level of results to which an organization contributes, together with the efforts of other partners. An example is the enhancement of the increase in employment opportunities in a community as a result of implementing an e-government project in a local government. Indeed, the *local socio-economic development* dimension in the framework proposed below is at the impact level.

Each of the results levels has associated indicators. Effective identification of indicators is important for two reasons. Firstly, the ability to track progress and learn lessons relies on the selection of indicators that isolate the essential changes sought. Secondly, the process of defining indicators itself can help managers in clarifying the outcomes they seek. If it proves difficult to identify an outcome indicator, it usually reflects a lack of clarity in conceiving the outcome, or the excessively broad or ambitious nature of the outcome sought. Output indicators track the most important immediate results of a project while outcome indicators measure relatively direct and short to medium term effects (on beneficiaries) of a project outputs. Impact indicators measure the longer term and more widespread developmental changes in society, economy, environment to which a project/program contributes.

Figure 6: The internal logic of RBM



7.1 Local E-Governance Conceptual and Methodological Framework

Table 2 shows the proposed conceptual framework for the chosen two categories of e-government applications, with focus on indicators related to the Revenue System.

Table 2: Local E-Governance Conceptual framework

E-Government dimensions	E-Administration		E-Services	
Good Governance constructs	Outcome Indicators	Output Indicators	Outcome Indicators	Output Indicators
1. Transparency	<ul style="list-style-type: none"> - Staff awareness of changes in rates, policies, policy for writing off bad debt. - Less discretionary waiving of taxes. - Increased transparency in revenue 	<ul style="list-style-type: none"> - No. of staff with access to processes and procedures on revenue collection. - No. of Staff aware of changes in rates, policies, etc. - No. of times in a month pertinent revenue information is communicated to staff - % reduction in discretionary waiving of taxes. 	<ul style="list-style-type: none"> - Access to information and public services. - Public awareness on changes in policies, procedures, and rates. 	<ul style="list-style-type: none"> - No. of stakeholders accessing revenue/billing information. - % of members of public aware of changes in policies, procedures, and rates. -No. of times in a month changes in policies, procedures and rates relating to revenue is communicated to staff.
2. Responsiveness	<ul style="list-style-type: none"> - Extent of Feedback from staff - Extent of staff satisfaction with computerised system/service 	<ul style="list-style-type: none"> - No. of responses and feedback from staff. -Frequency with which data and information circulated between staff. - % reduction in complaints from staff. 	<ul style="list-style-type: none"> - Less Bad debts. - Improve revenue collection on time. (Better Cash Inflow for local authorities.) - Less fine payers due to late payment -Increase in Customer Satisfaction. - Less court litigation. 	<ul style="list-style-type: none"> -No of complaints from public. -No of Bad debtors registered. - % reduction in court litigation. - Fines paid as due to late payment as % of all payments. - % increase in revenue collection. - Bad debts as % total revenue etc.
3. Effectiveness & efficiency	<ul style="list-style-type: none"> - Reduction in administrative costs, downsizing staff, ROI, -Increase in staff productivity - Improved cash inflow for local authority. - More efficient revenue collection. -More staff using the computerised revenue system on their day-to-day activities. 	<ul style="list-style-type: none"> - Access efficiency of processes -Management institutional efficiency - % increase in staff productivity. -change in no. of staff working in revenue/billing. - Admin. cost as % of total expenditure. -Adequacy of cash flow of LA. 	<ul style="list-style-type: none"> - Less fine paid by citizen - Decreased cost to citizen due to payment made on time. - More efficient and effective delivery of public services. -Better quality of services. 	<ul style="list-style-type: none"> - Fine paid as % of total payments. -% decrease in cost due to early payments. - No. of complaints and compliments. - Increase in no. of public accessing services.

		- Average waiting time for customers. -No. of simultaneous users of revenue system. -% reduction in operational cost.		
4. Strategic Vision	- No major change in e-government strategy in spite of changes in elected members running local bodies - Long term view and commitment of the LG in terms of setting direction towards improving revenue services.	- Stability of the strategic plans with respect to revenue generation in last 5 years. - No. of managers trained on governance and its relationship with LG strategic plan (especially revenue enhancement)	- Coherent strategy on revenue collection in spite of change in government. - Good practices lessons shared among other local authorities.	- Strategies developed for future to overcome barriers. -Number of people using ICT to access local e-governance service increased. -stability of the strategic plans with respect to revenue generation in last 5 years (residents view)
5.Equity	-Extent of equity in computerised revenue service access by staff without discrimination	- No. of staff at all levels accessing computerised system.	-Extent of equity in computerised revenue service access by LG residents and other stakeholders.	- No. of male/female accessing revenue information. - No. of rich/poor and urban/rural accessing revenue information.

Table 3: Local E-Governance Methodological Framework

	E-administration	E-services & E-citizens
Sources of data	<ul style="list-style-type: none"> Published documents, white papers and reports LG IT Officials and other officials 	<ul style="list-style-type: none"> Web sites Master Plan of E-Government
Methods of data collection	<ul style="list-style-type: none"> Structured and unstructured interviews Site visits and field Observations Surveys Document review Round table discussion Field notes Photography, audio recording and video 	<ul style="list-style-type: none"> Structured and unstructured interviews Site visits and field Observations Surveys Document review Round table discussion Tracer study
Methods of data analysis	<ul style="list-style-type: none"> For qualitative data-organise the data, shape data into information, interpret and summarise information, explain information 	<ul style="list-style-type: none"> For qualitative data-organise the data, shape data into information, interpret and summarise information, explain information For quantitative data-use of statistical package e.g SPSS.

8.0 Scope

Information Technologies must contribute to increasing the possibilities of all citizens to enjoy their full potential rights and to decreasing the differences in the living conditions in our communities. A prerequisite for active participation in the modern society is access to the physical communications network. Thus given the current imbalance of access to communications facilities, an important issue that must be studied is the extent to which this may result in the unequal distribution of the gains from the use of IT by the government. For instance a World Bank Study (2002) has estimated significant regional differences in the island, with higher incidence in rural areas, at 15.6% compared to 7.7% in semi urban areas.

However, a prerequisite for Information Technologies to contribute to increasing the possibilities of all citizens to enjoy their full potential rights and to decreasing the differences in the living conditions in our communities is access to the physical communications network. The fact that Local Councils play an increasingly relevant and central role in the life of the community, make them an ideal platform that will generate a multiplier effect on the rate of ICT take-up. The advantageous position in which they are situated gives Councils the opportunity to cut across the barriers of affordability, accessibility and training.

8.1 Review of Local Governance Policy and Strategy

Local government in Mauritius dates back to 1790 but is still subject to tutelage. According to the Local Government Act 1989 (Act No. 48 of 1989), amended by the Local Government Act 1992 (Act No. 30 of 1992) the Local Authorities fall under the responsibility of the Ministry of Local Government and Solid Waste Management.

Local Government institutions comprise five municipal councils in the urban areas, and four district councils with a lower tier of 124 village councils in the rural areas. Local elections in urban areas have been conducted on the basis of full adult suffrage since 1956, and that of the 1962 one was for village elections for electing village councils. All municipal and village councilors are directly elected by the electorate. Village councils are regrouped under district councils, and the district councilors are selected by village councils.

The Local Government Act 2003 initiates effective decentralisation with a view to providing the Local Authorities with greater autonomy and responsibilities in development matters. Alongside it is expected to empower the local population so that they have a greater say in the management of the affairs of their respective region and also to restructure procedures to enhance efficiency in service delivery and accountability and more transparency in the day to day running of Local Authorities. It also requires local authorities to 'play a more proactive role in combating poverty, improving the quality of life, and developing appropriate structures for the promotion of sports, cultural and welfare activities' in their areas. However it has not been fully implemented yet.

8.2 Current state of ICT in Local Authorities: Web Sites Assessment

In Mauritius, local authorities are conscious about the need to adopt ICT in order to enhance their efficiency and productivity in day to day administration. Actually, various Local Authorities can be categorised into those with a mixture of manual and computerised work. Up to date all five municipalities and four district councils have their websites which provide general information on the services provided, the activities undertaken and information about the organisation structure. For district council of Pamplemousses and Riviere du Rempart citizens can send online complaints. In case of Municipality of Quatre Bornes the annual budget is accessible online. Almost every Local authority has an IT section, which is headed by the Information Technology Officer and assisted by the Database Supervisor. Their main responsibility is to ensure the smooth running of the computer systems of the councils, proper management of hardware and software equipments and maintain security aspects. It is also observed that certain council's websites are rarely updated.

In 2002, the Municipality of Beau Bassin/Rose Hill has set up an 'e-town' committee. Their aim of this committee is to gear the council towards becoming an 'e-town'. This council also has a cyber centre with 64 Personal Computers. The main object of the centre is to empower the less privileged children of the township with IT Skills.

Following the preliminary assessment of the websites, it is observed that most of the websites are informative rather than interactive and transactionary which is far away from meeting the E-Government dimensions. Updated information is rarely available concerning council's decisions and organised activities. Information that is diffused relates only to Rules and Regulations, Government Notices and legal framework related to Local Government. These websites lay more emphasis on organisation structure, composition of Committees, duties of departments and about services provision. Certain web sites mention the names of senior public officers and their responsibilities and powers. Citizen can download Application forms and guidelines. These forms relates to application of permits and licenses and membership for library.

Moreover, most website have embedded feature of mailing directly to departments by using Outlook Express. On the web sites of Quatre Bornes Municipality and Pamplemousses District Council citizen can also post 'Upcoming Events' or social programme they are organising with date, time, venue and event descriptions. In the Pamplemousses District Council local citizen can create their own email account, give online feedback about web portal as well as cast their vote online for different opinion polls.

Since October 2004 to date there have been 9,203 visitors for the Municipality of Quatre Bornes web site. Since March 2005 the district council of Pamplemousses has registered 49 410 web page views.

Otherwise, research and published information on local governance in Mauritius is scanty and it is worse in the case of local e-governance. An exploratory survey however by the Mauritian team reveals that it is premature to use the term local e-governance at the present. What has been found is that there are only 'Islands of Automation' in local authorities and some front-office computerization. There seems to be hope, however, as the political rhetoric has started encompassing same.

The challenge, therefore, is how to devise strategies which can be sold to local governance policy-makers and administrators with the objective of tapping ICT potentials to bring more socio-economic development in regional areas in Mauritius.

In addition, most studies on e-Government focuses on the provision of online service (demand side/front office). This paper adds to the research gap by analyzing the impact of an e-Government project initiative on both the front office and back office procedures.

8.3 Choice of Local Government

As indicated above the five municipalities in Mauritius consist of both computerised and manual system. The decision that led to choose three municipalities was based on a step wise basis.

- Firstly, interviews were done with IT officers of all municipalities and site visits were made.
- Secondly, after interview the functions of various systems were studied and their characteristics were enlisted.
- Thirdly, a Matrix was constructed showing all computerised system implemented. This is shown in Table 2.

**Table 4: Matrix on Computerisation System in Municipalities
(Operational for more than 1 Year)**

Type of System Implemented	Municipality of				
	Port-Louis	Beau Bassin/ Rose-Hill	Quatre-Bornes	Vacoas/Phoenix	Curepipe
Billing	No	No	No	No	No
Payroll	Yes	Yes	Yes	Yes(Unix, Oracle)	Yes (Cobol)
Personnel /HR	Yes (Partly)	Yes (Partly) Employee Leave Record)	Yes	No	Subsystem of Payroll
Revenue/Income	Yes	Yes	Subsystem	Subsystem	Yes
Library	Yes	Yes (ALISE)	No	Yes	No
Purchase	Yes	No Subsystem of Expenditure.	Subsystem		No Subsystem of Expenditure.
Stock/Inventory	No	Yes	Subsystem	Subsystem	Yes
Registry	No	Yes (Cobol)	No	?	No
Property Management System(PMS)	No	No	Yes		No
Expenditure	Subsystem of Purchase	Yes	Yes		Yes
Publicity/Advertising	Subsystem of Revenue	No	Yes		Subsystem of Revenue
A Front and Back office feature.	Yes (Cahier System) VB	No	Yes FoxPro		Yes (Local Government Rate System)

Source: Authors

- Fourthly, the choice is made based on system functions that are common, meet front and back office scenarios and operational for more than one year. These system function include:

System Description

Payroll/HR: calculate employee pay, overtime, keeps contact number and other personnel records.

Revenue/Income System: Keeps record about tax collected from citizen. System also records information about General, Tenant Tax, license fees and other taxes.

Billing: Printing of Employee Pay slips and receipt of tax payment.

Library System: records list of books, books on loan and details of library users.

Stock: Keeps records of materials in the store.

Registry: Information about incoming and outgoing mails.

Purchase: records purchases made of administrative and non administrative material and expenses incurred.

Furthermore, the system selected to be studied is the **Revenue System**. This system keeps record about tax collected from citizen. System also records information about General, Tenant Tax, license fees and other taxes. Information about taxes and fees are provided on the municipal web sites.

Finally, the choice of three local governments namely, The Municipal council of Port Louis, Beau Bassin/Rose Hill and Curepipe is preferred.

9.0 Contribution to LOGIN Africa

How it fits into the LOG-IN Africa Research Framework

Among other research issues LOG-IN Africa will address the current state and outcomes of e-local governance initiatives in Africa and in particular how ICTs are being used to realise good local governance at four levels: a) the internal organizational processes of local governments and the provision of information and service delivery.¹² This research will help LOG-IN Africa in answering the above in the Mauritian context. Moreover, most studies done in both developed and developing countries, have concentrated only on the service delivery aspect of e-Government projects and have ignored the impact on the internal process of the public administration. This research will fill in the gap by focusing on both service delivery and internal processes and will thus provide some empirical results for the network in area which lacks research, and the results can be used as a basis for further research in other African countries.

¹² *LOG-IN Africa Project Proposal to the IDRC, November 2005.*

10.0 Project Implementation and Management

Project implementation is one of the most critical components of a project and more specifically the overall management. For project management there are a number of tools available that will help to plan and schedule activities. Hence the need to ensure that any such tool or aid used in the planning process is properly managed and that the inputs are accurate and realistic. It is important to use the Work Breakdown Structure (WBS) to identify all the major work to be done. Moreover, the WBS can be structured by deliverables. A project requires some basic fields on the work plan. This work plan can be entered into a project management tool, a spreadsheet, or paper. Furthermore, the team needs to manage schedule and costs of project. The major deliverable from this step is the updated **Project Work Plan**. The team also needs to prepare reports that need to be shared among member countries. This would help to visualize the work in progress and prevent the team from going out of the track. For LOGIN Africa project milestones and deliverables will be achievable according to time frame set for the whole network. For overall project implementation and management work in progress will always be monitored. This would enable project completion on time. Project implementation and management would also require meeting LOGIN Africa e-local governance project activities as laid down for the whole network.

11.0 Project Plan, including Outputs/Deliverables

1. Estimated Percentage of Work Done on CAFRAD Project Activities.

WORK IN PROGRESS		
List of Activities	Estimated Percentage of Work Done	Remarks/Feedback
Review country research proposal and come up with a revised and updated version	100 %	OK Jan 2006
Literature and Empirical Review with support from LOG-IN Africa	40%	Still ongoing
Finalise deliverable outputs in consultation with research Leader and research Director.	100%	OK Feb 2006
Train research assistant		Just recruited Part time
Preparation of a paper to be presented to the methodology workshop	100%	OK May-June 2006
Develop instruments and research methodology for data collection and analysis	20%	Just Started
Local Authorities Web Sites Assessment.	100%	Completed
Participate in LOG-IN Africa Methodology Workshop (Tangier)	100%	OK 8 th -10 th June 2006
Data collection through field visit observation	20%	Stakeholders contacted
Analyse findings from field observation and prepare report	Zero Per cent	Not yet
Contribute to the publication of the research paper on 'The State of ICTs		Not yet

and Local Governance in African countries' and Preliminary findings of the LOG-IN Africa Research Network''		
Contact and build partnership with stakeholders and organize national roundtable involving stakeholders to validate preliminary findings and results and to revise instruments and research methodology	Zero per cent	Not Yet Just informed Local Authorities Stakeholders about CAFRAD Projects
Contribute to the compilation of provisional pan-African outcome-assessment indicators		To be done in Uganda Workshop
Prepare report on research activities to be presented at the Mid-Term Review Workshop		As and when will be required
Participate in Mid-Term Review Workshop		
Prepare 2 nd Technical and Financial Report		
Collect data through survey		Not yet
Analyse data from survey, conduct comparative analysis with the findings from the field visit observation and prepare report		
Contribute to the development of guidelines in consultation with the Research Director		
Prepare 3 rd Technical and Financial Report		
Conduct a comparative analysis between Mauritius and a number of comparable countries from Africa and elsewhere to explore Mauritius' aspirations for developing into a cyber island		
Participate in LOG-IN Africa final Workshop		
Prepare report on findings from comparative analysis		
Contribute to reviewing the compilation of pan-African outcome-assessment indicators		
Prepare research paper on ''LOG-IN Africa: Research results and Road Map for e-Local Governance in Africa''		
Prepare Country Report focused on local strengths, weaknesses, opportunities and threats, with particular focus on strategies to overcome the demand and supply side barriers, and to develop guidelines for the development of e-Local Governance in Mauritius		
Prepare final report of the Research Activities		

12.0 Summary of Achievements To-Date

After the workshop of LOGIN Africa in Uganda the following activities have done for the e-local governance project in Mauritius.

1. Brainstorming to arrive at the conceptual framework for the national project.
2. Preliminary Investigation on Computerisation systems implemented so far in Municipal councils.
3. Design of a Matrix to allow choice of the appropriate system to be analysed that represent the best case of e-administration and e-service delivery features.
4. Select the Revenue Collection System.
5. Contact Treasury Departments and gathered secondary information on Revenue System.
6. Design Questionnaires.

13.0 Approach to Output Dissemination

Output dissemination helps ensure that the outcomes of data and interpretation collected during research can be of value to LOG-IN Africa, its donor and partners. LOGIN Africa have specific knowledge-sharing activities like Peer Review approach and networking as a part of its overall strategy and it is important that the outputs of the research feed into that knowledge sharing facility. The outputs dissemination also forms part of a suite of knowledge-based services for donors, economic blocks, governments, local governments and private and social partners. However, studies on research communication suggest that multiple outputs are required to fit with different agencies and audiences. The following dissemination strategy can be deployed to achieve the objectives of LOGIN Africa and meet the aim of e-local governance.

1. Output Dissemination Strategy:

How and where research results will be disseminated to academics, policy-makers and the public through publications, policy briefs, seminars, conferences, etc. The research results will be disseminated in the following ways:

Within the academic community:

- Scholarly publications by the research team but also collaboratively among other stakeholders such as the Central Statistics Office, for relevant refereed academic and policy publications.
- The organization of thematic research workshops;
- Collaborative presentations for relevant academic conferences nationally in the area of governance.
- Publication of an edited and peer-reviewed volume of research papers.

Outside the academic community:

- Collaborative presentations for policy, practitioner and community focused conferences, nationally Outreach to new audiences, including, as applicable, local and national policy makers, practitioners and the general public through presentations at public forums, special briefings, and others as available;

- Contributions to email distribution lists and information-sharing through the University of Technology, Mauritius Website;
- Development of a common accepted framework of measurement and methodologies and tools for achieving e-local governance for whole African countries and LOG IN Africa members.
- Peer-reviewed and other publications; policy briefs; and country papers/reports (e.g. case studies);
- Sensitisation and increased awareness among citizens' through the "field-work" research activities.

14.0 Capacity-Building

In Mauritius there has been a significant and damaging disconnection between those engaged in university-based research and teaching and those more directly involved in development initiatives whether as practitioners or as policy makers. In addition to directly strengthening the "research" capacity of the individual researchers, the intention therefore, is to strengthen their capacity as contributors to the work of policy makers and practitioners. The research will also allow the researchers to participate in partner activities or be exposed to other training and experience-sharing sessions. This should serve to enhance awareness; improve the researchers' and the partners' capacities; and networking.

Description of the research capacities that team members and their institutions are expected to build through their participation in this project is an important aspect and should be presented in some detail. What techniques, literature, theories, tools, etc. will the team and their institutions learn or deepen their knowledge of is identified through capacity building requirements. This project will enable the team to look into the different measurement, best practice from lesson drawn and indicators of good local governance. So far information on these aspects is not well established in Mauritius. This study will provide more depth into key aspects of good local governance.

The LOG IN Africa research will provide inputs to further develop the programmes and/or modules and mounting of new courses. These will surely be of interest and involve more academic staff and researchers at the University of Technology, Mauritius from the findings of the study. The team intends to involve a few junior staff and research assistants on the project so as make more people aware of the nature and status of e-local governance in Mauritius and take an interest in the various aspects of ICT and good governance.

Moreover, this project will also give an upper hand to team members on building, managing documentation and quality control on various reports and deliverables as per LOGIN Africa requirements. Peer reviewing will allow more collaboration and knowledge sharing. This will definitely contribute to academic enhancement and adopting new practices and concepts in report writing and project planning among members institution.

15.0 Recommendations

Annexes

References

1. Alladin, I. (1993), "*Economic Miracle in the Indian Ocean: Can Mauritius Show the Way?*" Editions de l'Océan Indien.
2. Alter, G. (1990), "*Export Processing Zones for Growth and Development: The Mauritian Example*", IMF Working Paper. Washington, D. C.
3. Bellamy, C. Horrocks, I. and Webb, J. (1995a), "*Exchanging information with the public: From one stop shops to community information systems*", Local Government Studies 21(1): 11-30.
4. Best, M. (1990) *The new competition: Institutions of industrial restructuring*, Cambridge: Polity Press.
5. Board of Investment (2006), "*BPO Flash- Facts and Figures on the ITES, BPO Sector Statistical Review February 2006 to September 2006*".
6. Center for International Development – Harvard University (2000), "*Readiness for a Networked World World: A Guide for Developing Countries*", Cambridge: Mass.
7. Center for Collaborative Government (2003), "*Finding our Digital Voice: Governing in the Information Age*", Crossing Boundaries, Political Advisory Committee, Final Report and Recommendations, Centre for Collaborative Government.
8. Daniel Kaufmann, Aart Kraay, and Pablo Zoido-Lobaton, (1999) "*Governance Matters.*" The Worldbank: Washington. p.61.
9. Dobrev, B and Stoewer, M (2004) "Electronic Services To Citizen in SEE and EU - The project Electronic Municipal Information Services (E-Munis)" Fraunhofer Institut Sichere Telekooperation
10. Dosi, F., Freeman, C., Nelson, R., Silverberg, G. and Soete, L. (1988) *Technical Change and economic theory*, London: Pinter.
11. *Global Competitiveness Report 2002-2003 and Global Information Technology Report 2002-2003*: World Economic Forum's.
12. Goran, H.(1999), "*African Perspectives on Governance*", Africa World Press.
13. Gulhati, R. & Nallari, R .(1990), "*Successful Stabilisation and Recovery in Mauritius*", The World Bank, Washington.
14. Gusev, M. (2004) "Local governance in FYR Macedonia 2004- Recommendations and e-model of Municipalities", UNDP FYR: Macedonia
15. Hepworth (1992), "*The municipal information economy?*" Local Government Studies, 18(3): 148-57.

16. <http://ncb.intnet.mu/mtit.htm>
17. <http://www.boimauritius.com/>
18. *ICT Outlook 2000-2004*: Ministry of Information Technology and Telecommunications Mauritius.
19. IFAD (2001), “*Rural Poverty Report 2001: The Challenge of Ending Rural Poverty*”, Oxford: Oxford University Press.
20. Lall, S. (1999), “*The Technological Response to Import Liberalization in Sub-Saharan Africa*”, London: Macmillan Press.
21. Larry, W. (1991), “*Mauritius: Democracy and Development in the Indian Ocean*”, Boulder: Westview Press.
22. Lowndes, V. (1996) ‘Varieties of new institutionalism: a critical appraisal’, *Public Administration*, 74: 181-97.
23. Matthias Finger and Gaelle Pécoud (2003) “*From e-government to e-governance? Towards a model of e-governance*”. In 3rd European Conference on e-government 2003. Dublin, Ireland
24. Mannick, A.R. (1979), “*Mauritius: Development of a Plural Society*”, Nottingham: Spokesman.
25. Nsibambi, A. (1998), “*Decentralization and Civil Society in Uganda: The Quest for Good Governance*”, Kampala: Fontana Publishers.
26. Ronald E. Leenes and Jörgen S. Svensson (2005) “*Local eGovernment in the Netherlands*” Tilburg University / University of Twente. r.e.leenes@uvt.nl / j.s.svensson@utwente.nl
27. Rocheleau¹, B and Wu,²L (2006) “*e-Government and Financial Transactions: Potential Versus Reality*” ¹Division of Public Administration, Northern Illinois University, USA ²Information Services Department, Village of Downers Grove, Illinois USA
28. Simmons, L. (1982), “*Modern Mauritius: The politics of Decolonisation*”, Bloomington: Indiana University Press.
29. Srinivasan, S. (2004) ‘Indian Tech City Turns to Microsoft’, Associated Press, Bangalore, India, 20 December, 2004: <http://story.news.yahoo.com/news?tmpl=story&nicd=738&e=1&u=ap/20041220>
30. www.clgf.org.uk

31. _____. (1978), *“The Economy of Mauritius: A Basic Economic Report”*, World Bank Washington ,D.C.
32. _____. (1983), *“Mauritius Economic Memorandum: Recent Developments and Prospects”*, World Bank Country Study. Washington, D. C.
33. _____. (1989), *“ Mauritius: Managing Success”*, World Bank Country Study. Washington, D. C.
34. _____. (1992), *“Mauritius: Expanding Horizons”*, World Bank Country Study. Washington, D. C.
35. Vickers, G. (1965) *“The art of judgement: A study of policy-making”*, London: Chapman and Hall.
36. Westholm, H and Aichholzer (2003) *“e-administration”*, Prisma Strategic Guidelines 1, Denmark. <http://www.prisma-eu.net>.
37. Zwahr, T, Rossel, P *“Towards Electronic Governance – A Case Study of ICT in Local Government Governance”* Ecole Polytechnique Federal de Lausanne(EPFL), Lausanne, Switzerland.
38. Zwahr, T and Finger, M (2005) *“Towards virtual governance architecture- a perspective on Information Technology as a transformer of Public Institutions and governments”* Network of industry management and e-governance, Lausanne, Switzerland.