# ADOPTING INFORMATION TECHNOLOGY
## A Challenge for the Public Sector in Botswana

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## Abstract

*Much development has taken place in the advancement of Information Technology as a means enhancing delivery strategies in all sectors of the economies of most developing and developed countries. However, one sector of the economy which appears to be left behind in developing countries in relation to incorporating IT into being an essential part of delivery strategies is the public sector. This paper examines current information gathering and processing strategies utilised by the public sector service in Botswana and examines the implications of IT on the delivery of services in the Public sector. The paper also examines the implications of adopting IT in the public sector and ways of creating a sustainable IT infrastructure.*

## Introduction

The concept of information technology as a means of furthering organisational strategies and consolidating competitive positions has been well embraced by many organisations in developed economies , and more recently in developing countries. This development however has tended to be restricted to the corporate sector and has not been so evident in public sector divisions of developing economies. The primary reasons for this are that the development of computers and telecommunication technologies [ the convergence of which is now commonly referred to as "information technology" ] were introduced at very high prices which were not affordable to most public service organisations in developing countries, and also because the development and promotion of IT was initially levelled at manufacturing and private service organisations .

One possible explanation for this is that organisations in the corporate sector which operate in competitive environments and hence realise the importance of IT as a competitive tool that could be used in taking a quantum leap ahead of competitors , and possibly developing such technology to maintain such competitive advantage ( Jackson, 1989 ). It is in this regard that IT has been combined with other organisational resources to forward generic strategies of focus, cost reduction and differentiation ( Porter, 1985 ).

The same strategies have not been adopted in the same way by public service organisations because of insinuating circumstances. Firstly, public service organisations do not compete with any organisation , or at least not directly. This is mainly due to the nature of the services provided which are government funded and are therefore provided freely or at highly subsidised prices. Secondly public sector organisations do not have a profit making objective and are not accountable to shareholders like private sector organisations( Wyatt, 1990 ) Rather , they have the responsibilities of providing administrative and social services to society and

are accountable only to the extend of good governance and diligent use of public funds . Their mission and objectives therefore centre mainly on service delivery and not on value maximisation. There will inevitably be variations in structuring and managing IT activities since differences exist in mission statements of public and private sector organisations. Each organisation will adopt an organisational structure to meet the different demands of their environments and this will be reflected in the way they adopt and structure IT ( Currie, 1990) . Contingency theorists also suggest that some types of organisations [ structures ] are more adept to environmental changes, especially in turbulent market conditions and that organisations in the public service are not so adept to changes ( Davenport et. al 1990 ).

## Changing traditional systems of information Storage

Government is both service-oriented and information-intensive. Extensive stores of information are required to deliver benefits and services. In most public service divisions of developing countries information storage is still confined to the traditional file systems. Botswana is no exception. Large volumes of data relating to patient health records, social amenities , the administration of justice, payroll and accounting records are still held in filing systems in the concerned ministries and departments. This creates a functional barrier in that the information is not only bulky, but takes a long time to access and process. In addition once this information has been gathered by one section or division in the public service, it is often not accessible to other sections which then duplicate the information gathering process in order to develop their own information system. The ability of computers to handle larger volumes of information that can be more easily accessed by other divisions by networking [ Local Area Networks and Wide Area Networks ] frees data from the functional constraints placed on it by traditional file structures. IT can be employed by the public sector to strategise ways of improving service delivery mechanisms if IT and IT management are embedded in public sector delivery strategies ( Streatfield, 1992 ).

One example of the flaws presented by the currently predominant information storage system that utilises filing system is in relation to accessing information on Government studies. Many studies are commissioned by Government or by individual ministries on issues relating to social, legal and functional issues at departmental or ministerial level. Since no central information system is in place for accessing and storing such information, many or the efforts will be subsequently duplicated by other bodies when the same information is required for similar or related studies.

## Potential Benefits of IT to the Public Service

### Operational Level

Information has always been an important factor in governing public affairs . It is the image of files and records , of protocols and dossiers containing information that symbolise government and public agencies at work ( Lilic 1990 ). The adoption of IT by public service divisions will assist in rationalising many or the activities involved in the information gathering process of public service units, and ensure that administrative and social functions are carried out in an efficient and economic manner. A misnomer has been created that computers take away jobs, but organisations are beginning to realise that computers allow businesses or Government to operate more efficiently and also create new jobs - resulting in an indirect cost saving ( Nganunu, 1993 ). IT reduces the unit cost of communicating and reacting to information, and greater use of IT today produces significant reductions in the cost of explicit co-ordination (Clemons, et.al , 1993 ).

Computers also have the added advantage of allowing users to carry out their work expediently and with more accurate information. This is an important aspect of computers for public sector departments as they are frequently criticised for their inability to carry on its functions expediently and tend to drag their legs rather than concentrating on service delivery to the public. In a sector of the economy which does not

have a profit making objective the use of IT can reduce the 'push' effect and increase the 'pull' effect on employees in that they will be more willing to carry on their duties as mechanisms are in place to allow them to be more motivated to work towards organisation objects and spend less time collecting and accessing information. This has particular importance in the context of Botswana at a time when productivity enhancement is encouraged at national level in all sectors of the economy.

**Management Level**

Currently the level of effective computerisation is low and there is general lack of quality, up-to-date management information for effective decision-making within the public sector. ( Mothlathedi, 1996). In such instances IT can prove useful as a means of improving management decisions and can result in more effective control and in turn contribute to more effective strategic decisions. IT can also be used to co-ordinate and monitor activities such as managing and monitoring the use of funds allocated to various projects by Ministries .

Currently the Government of Botswana is examining ways of rationalising and downsizing employees in public service. The adoption of IT and computerisation has enabled many organisations and business establishments to carry out reconstruction processes. IT has potential impact in organisations in that it facilitates the construction of flatter organisational structures which are at the heart of current paradigm. The public sector in Botswana can learn from similar experience of other countries such as Britain and Canada in this regard, but will have to assess its own unique conditions to ensure that this does not conflict with other Government objectives.

## Current IT Position in Botswana's Public Sector.

Prior to 1993, it was rare to find even a personal computer in government offices. Information was predominantly manually processed and stored in stacks and piles of files and folders. Today, the situation is changing, though compared to the private sector, the public sector is relatively largely "primitive". Many departments and sections are still struggling with typewriters, carbon paper and box files. Perhaps the most impressive advancement in computerisation is the new motor vehicle registration system of the Ministry of Works, Transport and Communication. The system is however still not yet country wide nor does appear to have eliminated a significant amount of paper work and clerical functions. Other computerization projects have also been undertaken within various ministries, but these consitute a minority when evaluating the potential for IT use and computerization. One attribute of the slow development of IT in the public sector has been in the management and co-ordination of IT activities. The next section is devoted to the management of IT in the public sector and examining other developments in public sector computerisation.

## Management of IT in the Public Sector

The development of information technology in the government can be traced to independence when the Government Computer Bureau (GCB) was set up.

### Government Computer Bureau

The Government Computer Bureau (GCB ) was established as a service department to the central Government in 1966. The main function of the GCB was to process government payroll and accounts. This function has since expanded to include;

- Being custodian to other Department's information and managing IT projects of the Departments.
- The provision of guidance and advise to Government departments
- Carrying out feasibility studies on the feasibility of IT systems
- Designing , specifying and writing IT systems
- Processing the data required for the systems.

Since its inception the GCB has been involve in many projects undertaken by Govern-

ment departments.These projects have however not been administered by GCB alone. In order to facilitate improved delivery of its services and proper co-ordination with other Government divisions , some committees have been set up to work closely with the GCB. The most important of these are the Ministry Computer Committees (MCC) and the Government Computer Steering Committee ( GCSC ).

## Working Committees

Ministry Computer Committees

To decentralise the management of IT activities and facilitate effective operation at Ministerial level , Ministry Computer Committees ( MCC ) were set up within each Ministry. The role of each MCC is to plan and monitor IT within the Ministry and to report to a centrally established Government Computer Steering Committee (GCSC). The main functions of MCCs is to oversee the development of IT facilities within its Ministry ,address IT training needs and to periodically review all IT systems to make decisions on future requirements within their Ministry. All these activities are to be carried out with assistance and guidance from GCB.

Government Computer Steering Committee

The GCSC is made up of representatives from the GCB and Permanent Secretaries from various ministries. The committee oversees IT projects within the public service, ratifies IT strategies and produces a range of policies , standards and guidelines. The main function of the committee is to manage IT strategy implementation on behalf of the Government.

## Current Management Problems

### Policy Issues

The GCSC is responsible for setting policies and guidelines relating to IT for all Government departments . As outlined in Table 1 below, they have not been successful to this end. The main reason for this is that the committee was inactive for a long time and has only recently convened. This has presented an operational problem in that ministries and departments were operating without any standards and guidelines on procurement and management of IT projects. A summary of these issues is presented in Appendix I .

### Staffing positions and Staff Training

At ministerial and department level there are very few IT posts and staff positions. Even the GCB does not have adequate personnel and some key posts are still vacant.

An even greater problem is that of staff training. Although adequate autonomy has been given to ministries by means of establishing MCCs , a critical flaw in the current IT Management structure is that personnel who comprise these committees lack the necessary experience and training required to determine current and future IT needs. This problem has been anticipated and it is expected that until Ministries have developed their own support system through staff training, the GCB will assist Ministries. This however has not been feasible as the GCB is a central agency and has its own duties and not enough manpower to continuously avail itself to departments.

Even within the GCB and the GCSC policy makers and project managers are still inadequately trained for carrying on their duties. Special training on IT has not been given to many of the senior government officials comprising the GCSC. Such training is essential due to the unique nature of IT projects and the speed with which they have to be implemented.

### Co-ordination between Ministries and GCB

The formation of MCCs led to the decentralisation of planning and management of information systems. This was important as decentralisation increases flexibility to exploit advances and to orient IT needs and procurement towards a more responsive 'in-house' information system that is able to fulfil the needs of each department. However , there was to be co-ordination of these activities with the GCB and this has not taken place in many ministries . As a result the GCB is not aware of activities such as IT needs and staff training being conducted in some departments.

In addition since implementation of Government strategy in terms of IT procurement and staff training was launched only a few years ago many people within the ministries do not understand the role of the GCB , and this creates a functional barrier.

### Implimentation of Strategies

The National Development Plan [NDP]VIII (1997-2003), provides for the computerisation of ministries. This is a giant step since in the past computerisation has not been provided for under the national plan. What is not clear from the NDP is how such computerisation is to be implemented: for what purpose, to what level and how staff will be trained to use it. The GCSC recommends an "IT Vision" be central to government IT strategy. The vision does not address issues such as how government would like to see itself using and benefiting from IT in the future.

The main barrier in the implementation of Government strategies lies in staff training and funding. Like other previous and current government IT strategies, an IT vision as a strategy is useful from a theoretical stand point. However some reservations regarding practicability arise. Firstly, the GCSC as co-ordinator faces problems of professionalism and competence. The current GCSC will have to be replaced with one that consists of IT professionals and IT competent Government heads of sections. Secondly substancial funds are require to see this IT vision and other strategies through implementation. This cannot be garanteed given the intense competition for limited funds within the public sector.

## Recommendations for Creating a Sustainable IT Infrastructure

There is a need to create sustainable development in IT infrastructure to ensure not only the continuity of IT strategies, but also future success of any IT development programs . Such development would also eliminate many of the problem discussed in the paper . This calls for proper planning and development of IT integration programs. In particular , there is need to properly monitor and following aspects relating to IT , its development and implementation.

## Partnership and sharing with Private Enterprise

Governments often support the internal use of IT within the public sector not only to reap direct benefit associated with IT use, but also to encourage and strengthen support policies for widespread use of IT in other sectors, and the development and production of IT by local industry.

Additional benefits such as cost and expertise sharing can be gained if the public sector is able to develop its IT strategies parallel to developments in the private sector. Failure to create a partnership between the public and business sector inhibits knowledge transfer and sharing of technical and human resources. Like other developing economies, the development and adoption of IT in the business sector begun long before similar developments took place in the public sector. This gap in the level of computerisation has been the main barrier to collaboration with the private sector in Botswana. Efforts made in the past for partnership with the private sector were not successful due to lack of co-ordination. Public sector units needs to re-initiate these efforts and to find ways of encouraging and promoting IT diffusion by working closely with the business sector.

## IT Funding

The acquisition of most IT is expensive and complicated. Consideration needs to be given to current and future funding of IT related activities such as procurement of computers , maintenance, salaries and supplies ( Kasango, 1993).

The Government of Botswana has recognised the importance of ensuring that adequate capital is set aside to fund IT projects. Between the financial year 1986/7 and the financial year 1994/5 recurrent expenditure authorised to Ministries and GCB on IT increased from P 538.08 million to an estimated P 3 056.8 million . Figure on Government

spending in IT are shown in Appendix II .

Despite the substantial increase in government spending in IT related activities, there is need to increase funds allocated for IT spending. Much is still required in the form of new microcomputer systems and software in both the ministries and the GCB. These will require substantial financial commitment in the form of Government funding in order to ensure successful implementation of IT strategies.

In addition the public sector needs to promote the sharing of facilities between it and the private sector where such developments have not taken place yet within Government departments. The use of data communications network in Government and links with the internet and information highways are still in its early stage. Substantial initial investments and maintenance will be required to get these systems running effectively. This will take away funds from other projects unless ways are found of sharing facilities and expertise across sectors of the economy.

## Staff Training

The educational sector has been one of the worst casualties of IT proliferation in Botswana. The introduction of IT was not accompanied by parallel developments in IT educational programs

At all levels of IT management in the public sector much is required in the way of training. Policy setters such as permanent secretaries and other top officials who constitute the GSCG need the essential training in making IT specific projections and also in using IT in their daily routines to improve their delivery. Within the GCB there is need to ensure that all staff are adequately trained in order to ensure that they are able to provide the required service to ministries as a central agency.

The greatest need for IT training is within the ministries themselves. Many employees are trained to use manual systems , or to be proficient in specific disciplines such as administration, accounting and economics. The adoption of IT as a means of improving the way in which information is processed necessitates the need to develop computer literacy for all uses. This should not be accomplished only by enrolling employees in 'IT specific ' training programs such as computer engineering and data processing. Employees across the spectrum should be sent for programs which train them in their specific disciplines, but also equip them with some computer literacy programs. This is already being at the University of Botswana and the Botswana Institute of Accountancy College. This will not only reduce IT specific training costs but will also ensure that in the long-term most people receive some computer literacy training.

## Manpower and Skills for Program Delivery

Proper program planning and delivery is essential to the success of IT strategies, and ultimately to the successful use of the programs. Properly trained and experienced and qualified people should be used in the development and delivery of these programs. A good starting point is often the use of consultancies. When private consultancies are involved in public policies for IT diffusion it ensure that proper programs are set in place for current and future IT needs. In ministries were the personnel are inadequately trained for formulating IT strategies the use of consultancies will bridge the gap and proper programs for IT use will be put in place. Experience in Netherland programs and elsewhere suggest that using private consultancies in the diagnostic stage is productive and that consultants tend to over deliver in the hope of winning further business.( Nagy et al , 1995). Where consultancies are seen as being over-priced, other agencies and institutions such as the University of Botswana could be utilised. The participation of young scholars at the institutes not only provides a cheap form of service, but give future employees insight into the practical aspects of their careers. In addition to this there should be incresed effort by the Ministry of Education in incorporating computer skills and IT training into the school syllabi .

## IT Suppliers and Support Services

There is a need to investigate ways of encouraging IT suppliers to make better support services available. Contracts should include post-installation services and maintenance of the systems. In addition Government needs create incentives for suppliers so that a supply base is set up in the country which benefits users in all sectors of the economy. This will also enable the development of indigenous systems and software that are made to meet local IT requirements.

## Reliable Services Infrastructure

In order to benefit from technology there is need for a well established and reliable telecommunications infrastructure as well as power supply. Data transfer and communications such as E-mail, teleconferencing and the internet rely heavily on the presence of good power supply and telecommunications.

Botswana telecommunications and electricity power system have been developed to a level where they are superior to those of other developing countries. However these developments should not be taken for granted. There is need to continuously improve these services to a point where reliability of power supply and telecommunications guarantee effective IT operation.

## Political Stability

The continuity of many government projects are not guaranteed in situations of government transitions. This is common in developing countries where changes in governments occur frequently. This however has not occurred in Botswana which has been ruled by a singe democratic party since independence in 1966. The development of IT strategies and implementation depends on political transitions which do not disrupt national development plans as new governments implement their own economic and social strategies for the nation. Any transition of power should ensure the continuity and improvement of IT strategies and support to all sectors of the economy.

## Conclusion

The importance of IT as part of the delivery strategy of the Public Sector in Botswana connot be over-emphasised; not just for improving the manner in which services are delivered, but also to enable Government to facilitate mutual development and partnership with the more developed nations. Traditional public services may come to be percieved as second-rated , inflexible and unattractive as we move into the next millenium. This will undoutably undermine government and donor organizations' willingness to invest in the country.The effect of this will be felt by all divisions of the public service and impact on the nation as a whole.

It is therefore imperative that mechanisms are put in place which fully enhance and encourage the development of IT in the Public sector as well as in other sectors of the economy. Only Government through its fund allocation process, educational campaigns and alliance with other organizations [ such as donor agencies ] is well placed to lead this important campaign. In this respect the development of IT and related activites should be seen as an opportunity and

**Appendix I : Current IT Situation in the Public Service**

| Ministries and Departments | Government Computer Bureau |
|---|---|
| Very Limited or no IT staff management capability at Ministry and Departmental level.<br><br>Growing number of staff with a broad understanding of computers and are keen to use IT to make themselves more productive in their work.<br><br>Few computers systems installed which address core management needs.<br><br>No independent funds for IT procurement, except through development costs.<br><br>No standards or policies to guide ministries in the management of IT projects or the procurement and installation of IT systems.<br><br>No guidelines or policies for the management and control of computer systems and data once implemented.<br><br>Very limited support given to ministries by GCB or private sector IT suppliers. | Inadequate staffing levels and skills to meet current demands.<br><br>No real mandate to prioritise allocation of resources to any one Ministry project over another.<br><br>Services to Ministries not clearly defined or understood. Most see it as being responsible for data storage and procurement of computers<br><br>Difficulties in operating without recognised and agreed standards and policies. |

*Adapted from' Information Technology in Botswana : Country Report' June 1994 , pg 41*

*APPENDIX II*

**Recurrent Expenditure - 1986-1995 ( Figures in Pula Millions )**

| | 86/7 | 87/8 | 88/9 | 89/90 | 90/1 | 91/2 | 92/3 | 93/4 | 94/5 |
|---|---|---|---|---|---|---|---|---|---|
| Total Ministry estimates | 469.5 | 559.3 | 727.1 | 910.5 | 1189.1 | 1647.6 | 1981.2 | 2564.9 | 2969.5 |
| Total Ministry authorised | 537.4 | 623.1 | 814.1 | 1069.2 | 1291.7 | 1673.7 | 2092.1 | 2634.9 | 3050 (Est) |
| GCB estimate | 0.84 | 0.9 | 1.06 | 1.36 | 3.48 | 3.51 | 5.58 | 7.05 | 7.64 |
| GCB actual | 0.68 | 0.74 | 0.95 | 2.4 | 2.9 | 2.8 | 3.98 | 6.5 (Est) | 6.8 (Est) |

***Source : Adapted from Government Computer Steering Committee Strategy Briefing Paper 4 , Page 8***

challenge that will lead to improved communication and service delivery , both of which are important aspects in public sector deliver strategies.

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