

## CHAPTER 1

### INTRODUCTION AND RESEARCH DESIGN

#### 1.1 General Introduction

The public sector has over the years amassed data for functional management purposes. However, little of this information was applied in the context of strategic management. The aspect of information management with the aid of technology in the public sector for improved governance therefore needs attention. In actual terms this refers to the issues to elevate the current paper environment of Public Administration and Management to that of an integrated environment of communication, media application with and through the use of information management and technology of a particular public sector environment. These now becoming possible through the use of information technology for the formulation of policies, which are realistic and practical for the purpose of implementation. Information management and technology in the public sector does not bring about electronic (being computerised with the free exchange of information) democracy (the physical aspect of government in which a free nation share through their elected representatives) and governance (the administration and management of government at all spheres). It merely facilitates the migration to a more participative or direct democracy managed effectively and efficiently. As a means to an end this should result in a situation whereby less time is spent on administrative issues and more time is available for management issues. These issues include the collation of data for informed decision-making as well as monitoring delegated tasks at all levels of government. The application of advanced information management will

result in more time being made available for executive management decision-making purposes.

The concept of electronic (direct) democracy and governance is not new. Applying technology for improved information management and hence improved decision-making is being experimented with in the United States of America (USA) and Western Europe. Resistance is being met. Most of the resistance centres on the aspect of reliability, security of information and voter/citizen distancing and what the actual benefit to the citizen is or what he/she is being deprived of. Furthermore the question is raised as to how public sector management may be improved through the application of information technology. An aspect also under scope is what added value is obtained from the implementation of the information technology? This, needless to say, at great cost to the taxpayer. In this instances, the development of three logistics information systems for the Armed Services in South Africa serve as an example (Director, Enterprise Information Systems Architecture, Department of Defence, 2000).

It has to be stated that electronic democracy and governance does not solely consist of technology but has as its basis the need for communicating management information effectively and efficiently. Thus the question arises to what extent does the governing authority need to empower both the citizenry and the government in terms of not only access but also education and skills required to both participate and to apply this means of democracy in the public management and administration environment.

It needs to be understood that various concepts surround the use and application of information technology as a method for participative or direct democracy. In this instance, electronic democracy and governance may be seen as an end in itself in that the computerisation for the sake of improved transactional use justifies the cost thereof. The

one aspect not clear at this time is whether this route will create a greater interaction or closeness between the public office-bearer and the citizenry whereby management and administration of the public sector is improved.

## 1.2 Frame of reference

The policy making and implementation through the use of information management and technology in the public sector of the Republic of South Africa will be analysed with specific reference to the influence of defined driving forces and denominators (*Infra.* par. 1.3.2). Influences also to be referenced are technology, communication, information and decision-making based on the inference of available data. In addition a background will be presented with regards to the development and requirements for electronic governance through the application of applied information in the public sector management.

Apart from the references to the influencing factors and for the purpose of presenting a holistic framework of the research for this thesis, the principles underlying policy formulation and implementation as well as the principles underlying information management and technology from both the national and international perspective will be analysed. This analysis is to determine the existing *status quo* of information management and utilisation of applied information for the formulation and eventual implementation of policies.

The research conducted is in the area of selected Republic of South African public departments, to wit, the Department of Defence, the Independent Electoral Commission and the Department of Justice and Constitutional Development. The time dimension of this thesis is over the period 1994 to 2001 but in certain instances not limited to this time frame. The research encompassed literature research and interviews.

The level at which the interviews were conducted, was at the level that of director and chief director.

### **1.3 Problem formulation**

This section comprises two aspects to wit the problem statement and the objectives of the study.

#### **1.3.1 Problem statement**

Vast sums of taxpayer money are spent on policy making. Equally, vast sums of taxpayer money are spent in ratification and promoting the need therefore. In many cases these policies are never implemented. Public policy making has generally suffered from the need of being fundamentally based on sound management information. In many cases policies at all spheres of government were designed based on a party political need rather than citizenry (voting populace) requirement for a process solution in support of the nation. This, needless to say, leads to the non-acceptance of such policies and the eventual non-implementation thereof (Dye, 1987:19).

Equally so is it found that many excellent policies are devised based on citizenry requirement in support of national needs, but not implemented. Here again, fundamentally, the underlying scientific information supporting or warning against this policy might be lacking, making the policy, although excellent in concept, impractical to implement either from a cost perspective or from an executability perspective (Dye, 1987:19-20). Point in case might be the implementation of the new national identification smart card system and the related cost against the backdrop of the recently (1998/1999) much publicised drive to new bar-coded identification and related documents.

However, applying the masses of data to which the public figures responsible for policy formulation and implementation have access could alleviate many of these problems. Housed in masses of databases managed by mainly the State Information Technology Agency (SITA), South African government departments have access to vast amounts of applicable information that could substantiate or prove the risk in many policy decisions. At this time an integrated approach to transactional information (information required to execute the functional tasks), content information (information contained in documents, policies and procedures) and knowledge information (information reflecting on internal scripts, records and processes as developed by the specific department) is absent. When implemented, is integrative approach will lead to an improved executive management capability (*Infra*. Chapter 3, par 3.15).

However, to support the public services information management requirement, there is a requirement for technology and interconnectivity. Shortcomings exist in the field of infrastructure and communication networks. This data, applied correctly, could also assist in the implementation of the correctly formulated policies in that public and private acceptance through buy-in for the policy will be made easy. In South Africa this concept of electronic democracy and governance is still new and needs to be exploited to a greater extent (*Infra*. Chapter 3, par 3.15).

As an instrument for policy making and implementation data (unprocessed facts from which conclusions and information might be drawn) in its unprocessed form, may form a framework for the proposed policy. However, information (processed data obtained from the performing of an operation and from which informed decisions may be taken) should lead the decision-makers in making more informed decisions regarding the proposed policy. This could include the aspects

of both executability and cost (KableNET, Dec 10, 1999 and Sept 10, 2001).

It is interesting to note that much is written about the aspect of management or managing with the application of information technology in an electronic democracy and governance. In literary terms however this does not represent a well-researched topic. Internationally many Local Governments have to this day experimented with the use of electronic democracy and governance and the application of information technology but are primarily involved with this application in their line function or day-to-day operations. At a national level the United States of America, through the endeavours of Ross Perot, and the concept of Electronic Town Halls, is probably the most active in the field of electronic democracy. Perot actively applied the information from databases to enhance his political career (albeit that his endeavours were unsuccessful). In the United Kingdom major inroads are being achieved with the successful implementation of technology for information management at all spheres of government (KableNET, Dec 7, 2001; Dec 21, 2001 and Jan 11, 2002).

The point of departure for the information age is capabilities to not only transmit data but also to receive and make this data accessible to all users. This in turn implies converting this data into management information. This standard should apply to all three spheres of government. Taylor *et al.* (1999:61) refers to teledemocracy. This according to him is the combined application of telecommunication and computers. In the application of electronic democracy and governance and the availability of information vis-à-vis the citizenry, these two aspects are interdependent.

### 1.3.2 Research Questions

Research questions that derived from the problem statement are the following:

- a. What are the requirements for the application of information for executive management purposes and policy formulation and implementation in the public sector, through the use of information technology?
- b. On what information basis is policy formulation and implementation done?
- c. Is information and technology utilised to make informed decisions and determine policy making in the public sector?
- d. Are the vast information databases of the public sector utilised in the decision-making process, specifically when executive decisions need to be taken?
- e. Is the implementation of applied information management and technology for the establishment of electronic government and governance contributing to value (value adding) of the existing system. Also, is this information utilised to formulate policies. That is, to support the line function/operations or executive in the most cost effective manner?
- f. Does the public service apply the existing and futuristic information capabilities to the fullest extent in order to comply with the new democratic and transparent society?
- g. Does the public service continue with the existing transformation and reform policy in order to enjoy global support for all activities such as improving efficiency and improving the South African economy?

- h. Does the public service train their staff to the required levels of expertise to effectively and efficiently utilise the information management data and technology for the establishment of electronic government and governance?

Derived from the problem statement, the following section will endeavour to explain the process and route to be followed for the successful implementation of a probable solution.

### 1.3.3 Objectives of the study

The objectives of this thesis will be to:

- a. Determine and define the existing and proposing new parameters for this field of study.
- b. Define acceptable elements required (e.g. policy making and implementation, electronic democracy and the reconciliation with the grass roots level, defining the elements to be integrated such as human resource management, financial management, core operations and logistics).
- c. Consult with existing public information and technology users and fields of application in order to ascertain the application of available information resources in the field of information management and technology.
- d. Propose an integrated solution for the delta deviation (the difference in what is and what should be).

The research intentions for this thesis can be put down to ten objectives to wit five primary drivers and five secondary forces. Also to be added to this list are the five denominators (transversal elements). These are those elements, which are underlying to the primary drivers and the secondary forces. The question might arise as to why there are drivers



and forces and not only driving forces. In the context of this research it is to differentiate between that which is departmentally manageable, which could have statistical outcomes and inferences done (drivers as part of driving forces) and that what is part of the organisation (forces as part of driving forces). Individually either can be addressed but together they present the departmental whole.

From the research for this thesis the objectives will be considered in their three main divisions to wit primary drivers, secondary forces and denominators. The drivers, forces and denominators will be explained and validated in chapter 5 (*Infra*). The five primary objectives, also the drivers, are:

- a. To ascertain the relevance of having availability of both the information and the technology for policy formulation and implementation and to determine whether there is any actual improvement in availability and application of executive management information after implementation.
- b. To ascertain the influence cost reduction and cost avoidance have on the implementation of information management and technology for the establishment of electronic government and governance.
- c. To ascertain whether effectiveness and efficiency of a department or an organisation within a department, have any influence on the concept of applied information management and technology.
- d. To determine to what degree all participants in the applied information management and technology environment, for the formulation and implementation of policy recognise performance measures and measurements both prior to and after implementing information management and technology solutions.

- e. To determine to what extent management should be involved in the decision to implement information management and technology for policy formulation and implementation and to what degree the management is effected by the decision.

The secondary objectives, also the forces, can be stated as:

- a. To ascertain whether the human resources element plays any significant role in the decision to apply information management and technology.
- b. To determine to what degree culture should be investigated or taken cognisance of when the decision to apply information management and technology has been taken.
- b. To determine to what degree the application of applied information management and technology necessitates a new training curriculum at all levels and, what is the effect on the knowledge base of the existing public servants.
- c. To ascertain what degree of control at all levels are gained or lost when implementing applied information management and technology for the establishment.
- d. To determine to what degree, if any, the organisations should adapt after the implementation of applied information management and technology.

The denominators (or transversal elements) are represented by the following five objectives to be achieved:

- a. To determine the type of and depth in research to the application of applied information management and technology prior to implementation and whether this was enough to facilitate the implementation thereof in a complex service oriented environment.

- b. To determine whether it is actually an economically viable solution for public enterprise to contract in on the implementation of applied information management and technology.
- c. To determine what the maturity levels were prior to the application of information management and technology being implemented and whether a growth in maturity had occurred.
- d. To determine to what extent the current information technology can accommodate a concept so reliant on accurate data and real time information to management in order to make the implementation thereof a success.
- e. To determine to what extent the application of information management and technology was communicated horizontally and vertically in the public service as this is considered a necessity for successful acceptance and utilisation and what policies, if any, support the communication initiate.

#### 1.4 Hypothesis and Affordability

The hypothesis that may be derived from the problem statement could be formulated as:

*The public service of South Africa require the implementation of definitive driving forces in order to improve its management capability through information management and technology, imbedded in an integrated management and information management approach, utilising the operational and development capabilities of the existing and planned management information and technology environment.*

The hypothesis implies the integration of the information required for the execution of the core function of a department within the public service of South Africa, with the supporting elements of the operational environment of the department, which are logistics, human resources, finances, technology systems and documentation. The integration also implies the incorporation of the development elements, which are design and system expertise, reliability, availability and maintainability of information, the configuration management of the said information, the functional design specification and the management of the data requirements of the said information.

Imbedded in this hypothesis is the relationship between the various dependant variables that are simultaneously unique yet interdependent. They are:

- a. Telecommunication and Information Management
- b. Freedom of Information
- c. Applied Information Technology
- d. Economics and Affordability

The relationship between information technology and telecommunication and information management is obvious. Applied information technology cannot exist without the use of telecommunications and the *ipso facto* result of this combination is the management information. Furthermore a synthesis exists between the freedom of information for information management and the integrative application of the information technology and communication requirement. Lastly, the congruency of the economics and affordability as an influence on the variables is present at all times during the process of policy making and implementation. Economics and affordability in this instance refers to budgetary considerations, which in

turn, reflects the cost of information as determined by cost benefit analysis.

The need for specific criteria, for example the functional running of the specific departmental structure or the need for data interpretation must be explored and decided upon. This is to determine the required management and administration information and the availability thereof. Furthermore consideration has to be given to the usage of free data such as is available from the Internet or service providers (Schalken & Tops, 1999:144-145). Throughout, the link with the communication arena will be described. Aspects such as the World Wide Web (WWW) established as a management and administrative tool but now utilised as an integrated database to provide information on the Internet has grown in popularity (Stair & Reynolds, 1998:19). Against this backdrop the current concept of performance management and the proposed methodology to follow will be considered. The whole drive towards e-commerce will also be considered as it impacts on all spheres of government.

## 1.5 Constraints

A constraint of this research is the lack of literature on the specific topic of applied information management and technology for the establishment of electronic government and governance in the public service. Various countries such as The Netherlands, the United Kingdom and the United States of America are experimenting with the concept of electronic government and governance but for the purpose of voter participation, political communication or party political gains (Silverman 1999, December 10; 2000, October 5 and 2000, September 10 [WWW documents]). In order to circumvent the constraint, the research was expanded to countries, which to some degree facilitated

the concept of applied information management and technology in policy formulation and implementation.

A further constraint of this study is the new Republic of South Africa democracy design as it is being developed around the current budgetary and democratic scenario. These scenarios set results in political strategies that could at any time be modified and thus change the research parameters. In order to circumvent this constraint the research was limited to the research period.

An assumption of this study is that in the public service in the existing democracy will still rely on a single point responsibility concept, as the Accounting Officer/official must report to the Public Accounts Committee regarding all expenses. Should any governmental policies change regarding this accountability policy, the research focus must be revisited.

## 1.6 Research design

The research of this thesis is centred on an empirical and qualitative design. The data required for this research was obtained by firstly doing a literature search. The first activity herein was to apply the Internet and available Uniform Resource Locators (URL's) especially those linked to libraries and research institutions in order to ascertain the current *status quo*. Secondly the normal research as per available documents and other forms of literature was consulted.

Interviews or discussions with selected senior public officials augmented the literature study. The thesis is formulated around an empirical literature and environmental research. Strongly supporting this methodology is qualitative interview or discussion based study in support of the findings. The literature and environmental method was chosen as it facilitates a contextual approach as is followed by this

thesis. The qualitative method gives a synopsis of the overall domain phenomenon using cases and in this instance specifically, personal interviews, which collectively supply an internal validity to the thesis. The thesis, as per the frame of reference, by no means professes to have a general validity, as the study is limited to the South African environment and furthermore to departments within the national Government, as indicated in the frame of reference.

The research unit is a small sample of public service managers at senior and middle management within the public service related to the information technology support environment. They were selected due to their involvement with existing information and data management and due to the situation that gave rise to this research report. This resulted in a more informal approach based on personal interviews. Certain individuals in the support and mostly parastatal sector that had the public service as its customer were also interviewed in order to give the research report an unbiased base. This approach does impose certain limitations as the personnel interviewed were from a limited source. The interviewees are however all capable of delivering suitable contributions regarding the problem statement of non-application of information management for the establishment of electronic government and governance in the public service.

### **1.6.1 Research population and sample**

The sample size for this research is limited to selected senior governmental officials involved in the application of information technology as an executive management tool in various government agencies.

### **1.6.2 Target population and sample size**

This thesis is literature bound with supportive data supplied by the interviews within the governmental departments. The exact sample size

is therefore a variable. The target population with regard to the governmental departments is limited to the Independent Electoral Commission (IEC), the Department of Defence (South African National Defence Force -SANDF) and the Department of Justice and Constitutional Development (DoJ), as these departments are known to make extensive use of technology-based management information at some levels.

### 1.6.3 Study area demarcated

As the background research indicates, no topic addresses the issue of information management and technology in public policy making and implementation in South Africa (Silverman 1999, December 10; 2000, October 5 and 2000, September 10 [WWW documents]). The State Information Technology Agency (SITA), in virtually all instances, control the public sectors information and functional databases. Yet no central information data is available and no or little management information other than predetermined reports may be obtained. Even in this situation reports are time consuming to prepare and, in terms of managerial requirements, late.

Furthermore, various government departments all initiate their own requirements with regard to systems. There is also no existing architectural design for systems or proposed systems other than in the Independent Electoral Commission, the Department of Defence environment and those planned for the Department of Justice (Interviews with Director Enterprise Information Systems Architecture, Department of Defence, 2000; Manager Voting Station Infrastructure and Electoral Logistics (Chief Director), Independent Electoral Commission, 1999 and Project Manager Digital Nervous System, Department of Justice and Constitutional Development, 2001).

b. Applied information management and technology;

c. Departmental culture and structure;



The study area is thus limited to the public service and related supportive institutes such as the State Information and Technology Agency (SITA) including the Department of Defence (South African National Defence Force). Benchmarking will be done against private industry locally and against international public services.

## 1.7 Research questionnaire

The research instrument, a semi-structured questionnaire, was developed for this purpose (see Appendix A). This approach was selected due to the fact that the problem statement is best suited for open-ended questions from which the research model could be proven or disapproved. This approach was also selected due to the fact that its operational specificity is based mainly on sensitised concepts and secondly on the intuitive experience to label the phenomena.

The questionnaire is loosely constructed in various parts in order to ascertain the interviewee's relative stance towards the implementation of applied information management and technology for the establishment of electronic government and governance and whether policy is in place to support this drive. The relativity is emphasised, as the questions are open-ended and could result in virtually any answer being given. In all cases it was stressed beforehand that an open mind had to be kept and any aspect, however remote, could be discussed. The categories addressed in the questionnaire were selected as they logically structure the questionnaire and contain all the driving forces and denominators as suggested previously. These categories are as follows:

- a. Background;
- b. Applied information management and technology;
- c. Departmental culture and structure;

d. Transversal support structures; and

e. Conclusion.

These categories also guided the interviewee through the process to truthfully give his/her opinion on the aspects such as the absence of the driving forces during implementation of applied information management and technology for the establishment of electronic government and governance. Obviously these shortcomings, when addressed, should result in the successful implementation of applied information management and technology for the establishment of electronic government and governance and policy to support this. The discussion around the questions then leads to confirmation or rejection of the statement. The questions also had to prove the depth of the respondent's understanding of the problems in implementing applied information management and technology for the establishment of electronic government and governance successfully.

Considering each of the questionnaire sections the background has as its purpose to determine the interviewee's background regarding applied information management and technology for the establishment of electronic government and governance. These questions deal, with amongst others, the interviewee's perception of the concept as well as this person's feeling regarding the effectiveness and efficiency elements required to optimise executive management. Also required is information on the understanding of the cyclic or selected availability. A third aspect ascertains the general stance of the interviewee with regard to the impact of integrative executive management. Given that the application of information executive management and technology for the establishment of electronic government and governance is implemented with cognisance being taken of the driving forces required for such an action and will be covered by the denominator research.

The second section deals with applied information management and technology for the establishment of executive management information for electronic government and governance. The line of questioning had as its aim to validate the respondent's opinion towards the literature's theoretical stance that applying information technology as an executive management tool results in improved effectiveness and efficiency (driver). This section also had to determine whether the respondent is of the opinion that the required executive management information is available and whether it is applied or not. This section also had to validate the understanding of possible cost reduction and avoidance should such application occur. It furthermore had to solicit responses in terms of improvement regarding the improvement of effectiveness and efficiency. The aim was, ultimately, to determine the method by which performance is measured and the related improvement, if any, in executive management capability. This then led the respondent to compare the existing scenario with the possible future scenario and solicit a comment regarding the route taken by the specific respondent's environment. In this scenario the respondent's response is either not opting for the application of information management with available technology or for applying available information management with available technology for the establishment of electronic government and governance.

The third section deals with the departmental culture and structure. The questions in this section relate broadly to the secondary objectives (forces). These aspects are of importance as they support the basis of argumentation supplied by the preceding section. These questions lead the interviewee into a general discussion regarding the acceptance within the human resource or staff environment of the concept of information management with technology for the establishment of electronic government and governance. It furthermore considers the role culture has in the acceptance of this methodology for executive

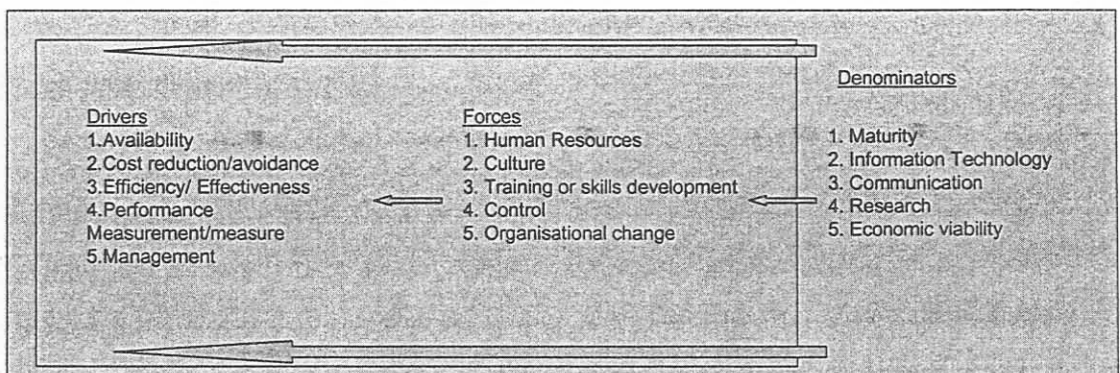
management optimisation. A further output of these questions is to determine the relevance of current training and development and required training and development with regard to the culture and human resources of the department. Resultant from the aforementioned, this will lead to a discussion with interviewees' regarding possible departmental impacts and/or changes. A final issue to be resolved with this line of questioning is to determine the impact if any on the control of both information and management.

The fourth section deals with the aspect of the transversal support structures. These are structures or elements in support of both drivers and forces thus cross-cutting all drivers and forces similar to a matrix composition (*Infra* Figure 1.1). The questions within this section relate to the aspect of the maturity of the public service with specific relationship to their capability to apply information management with technology for the establishment of electronic government and governance. This question is in support of the requirement, if any, for training or skills based empowerment. The questions further relate to that of a supportive information technology base (or infrastructure) from which executive management information may be obtained, in order to make the transition to applied information management through technology for the establishment of electronic government and governance. These questions are posed in order to validate the answers obtained from the first section with specific reference to the availability of information. Interviewees are also questioned with regard to the inter- and intra- departmental communication by which management information is communicated internally and externally. These questions are posed in order to validate the answers obtained from the section on organisation culture (preceding section). An aspect that has an essential bearing on the research is that of research with regard to applicability of information management with technology requirements for the establishment of electronic government and

governance. These questions are posed to determine the applicability of management information in the existing environment and will either support or refute the statements obtained from the questioning in section one (drivers). Lastly the aspect of economical viability will be explored through questioning the interviewees with regard to existing budgets and budget constraints. These questions will be posed to validate the answers from both preceding sections.

The fifth and last section concludes the interview. The interviewee is lead into an open-ended discussion regarding his/her opinions on the application of information management through technology for the establishment of electronic government and governance. Availability of structures, information and skilled staff are discussed. Existing standards and norms with regard to performance measurement and performance measure are addressed. All discussion and questions will be used to validate preceding argumentation. Deviations from previously stated answers were further explored.

**Figure 1.1: Driving Forces and Denominators**



Source: Adapted from Meyer, 1994:5.

## 1.8 Methodology for data gathering

Considering the research approach for the thesis, the nature of the interviews, the fact that the questionnaire was semi-structured and that

the respondents have diverse management approaches, resulted in the findings being directly related to the questions of the questionnaire. This in turn leads to the support of the driving forces identified and the supportive elements to the postulated problem. The questions merely solicited a desired communication rapport without prescribing or leading the respondent to a particular answer.

The questions were designed to both extract the fact that cognisance was not taken of all driving forces and also to determine the interviewee's stance towards the problem statement of the report within the ambit of the specific question. This was to determine the applicability of the question with regard to not only to the problem but also to the relevance of the aspect of drivers and forces.

## 1.9 Critical aspects for research

Based on the theoretical analysis and the interviews conducted, it is expected that the following examples of requirements in the implementation of information management through technology for the establishment of electronic government and governance will emerge from the empirical analysis:

- a. That although data is available little, if any, is applied in the role of enhancing decision-making executive management through the application of statistical inferences, data manipulations nor is this information necessarily applied in the formulation of policy. On the other hand, functional management, i.e. managing the functional or line/task environment is, to a great extent catered for. Both are, however, required to optimise and improve effectiveness and efficiency in the public service as a whole.
- b. That although initially the development of a technology infrastructure might be expensive the long-term benefit is

improved effectiveness and efficiency together with improved productivity. These executive management elements do in the long run reduce operating cost. However, the cost reduction benefit is not always translated in executable policy. Also, that with a solid hi-technology infrastructure maintenance and upkeep over time will become more cost effective, as upgrades due to technology enhancements become cheaper. Furthermore, that implementation costs should be spread across the life cycle of the project thus reducing the once-off cost.

- c. That due consideration was given prior to going the route of information technology with the aim of improving effectiveness and efficiency. That in many instances this was the primary driving force for implementing some form of information technology. That the actual implementation plan for achieving effectiveness and efficiency was however not executed through either formulated and implemented policy or other guidelines. That due to the fact that partial accomplishment was attained through improved efficiency by optimisation of transactional/functional tasks (line function) little attention was being given to true executive management information.
- d. That information management and technology was realised purely from the perspective of transactional/functional activities. That again little, if any, attention was given to the optimisation of the strategic managerial functioning, in the sense of statistical inferences and data manipulation of information, for the improvement of the department or organisation as an integrated whole with or without implementable policy.
- e. That the aspect of management is purely localised to the transactional level and virtually all systems designed ignored this role in the process. That virtually in all situations additional tools

1.10 had to be used to manipulate data or do statistical inferences for the purpose of improved management nor for the formulation of implementable policies.

f. That improved control over information and management has not been realised due to the absence of correct management tools and application as well as communication.

g. That insufficient attention is generally given to the existing work force and human resource component, or the transversal impact thereof on the department. That the impact of the information technology implementation is not always understood. That the human resources at various levels are usually ill equipped to handle the migration to an information management and technology environment. This is in most instances applicable to implementation of transactional/functional systems as well.

h. That the departmental culture was not taken cognisance of, prior to implementation. That the culture of the organisation was not considered and that little or no action to prevent culture shock was considered.

i. That departmental design was not process analysed or restructured so as to manage the transformation during and after implementation.

j. That little, if any, training programmes or skills upliftment programs to facilitate a change in the management approach was implemented. This pertains especially to management levels.



## 1.10 Implementation of research findings

Should the expected critical aspects for research be found to be validated by both the theoretical and the empirical research it will be a logical requirement to suggest a possible solution to the findings. Policy adaptation to facilitate the transformation to an integrated information management environment will have to be promulgated and implemented. In order to assist in this transformation, a model to address these problems will be postulated.

## 1.11 Definition of key concepts

This thesis presupposes that management comprises two aspects that when placed or used symbiotically, comprise the concept of management. These two aspects are the transactional management capability relating to line, staff and functional orientation and required for day-to-day decision-making with regard the day-to-day tasks. The other is executive management information required for the future strategic planning and positioning of the departments and organisations.

Furthermore, in this thesis, the following definitions and descriptions will apply to the concepts used:

### 1.11.1 Information technology

According to the Director Enterprise Information Systems Architecture, Department of Defence (South African Air Force), information technology encompasses the full ambit of information, technology and communication of information. In the first instance electronic information must be transmitted by means of satellites, modems, and/or telephone lines. Encryption and decryption tools (tools that code and decode data or information prior to and after transmission thus

improving the security of the data or information), are optional in all these scenarios. Information technology has, broadly speaking, two components, of which the one is the technology component, encompassing the aspects of hardware such as computers, and the other the software component such as Microsoft Office or Microsoft Explorer (the enabling tool). A natural spin-off is the masses of information that may be gathered or accessed by means of the database concept, and the inherent capability, if correctly managed, for the establishment of electronic government and governance.

Concepts that are used in the application of the cyber-highways are the following:

- a. Internet: Herein lies the inherent capability of computers to communicate with one another and also to access databases of information. The capability of this accessibility is linked to what is known as computer addresses such as “.gov.” which represents government sites, “.org.” which represent organisations and the like (Stair *et al.*, 1998:307).
- b. E-mail: This is the most basic method of talking to each other and could be set-up in groups. This facilitates the sending of messages to the addressees who could be local, national or international (Goldstuck, 1998:18).
- c. Usenet and newsgroups: The Usenet provides a centralised news service and acts as an information retrieval mechanism facilitating access to databases for the user. Newsgroups are on-line discussion groups in which interactive communication is possible (Stair *et al.*, 1998:15-16).
- d. World Wide Web, Web Browsers and Search Engines: This is the collection of independent computer addresses to be made accessible to any user who has access to a computer and a

1.11.2 telephone line. The Web browser acts as the interface and links the user to the data requested. Searches are conducted by utilising search engines with key word or phrases (Stair *et al.*, 1998:306-307).

The definition applicable to Democracy is democracy for the people by the people (Constitution, 1996). Democracy is described as a mechanism of ruling. According to Snellen (1999:50), a democracy is a population that governs itself. In this thesis the concept of democracy will be applied in the context of three democratic perspectives to wit the populist democracy, the liberal democracy and the republican democracy.

### 1.11.2.1 Populistic Democracy

Populistic democracy is a democratic view that represents the majority point of view and is based on collective judgement. Quoting Rousseau (18-15), Edwards (1999:37) states that this view is dependent on factors such as equality and simplicity, and is only feasible in small communities. Representative governance also forms an essential part of this view. This view presupposes that representatives are well acquainted with the needs of their voters. Ultimately the application of this view implies that the representatives ensure that the governance is in accordance with the majority party principles (Edwards, 1999:39).

Snellen (1999:52) is of the opinion that this form of governance, which the author refers to as representative democracy, is wrong due to complexities such as diverse interests and time-consuming deliberations. In terms of information technology, this methodology might represent greater accessibility and voter participation. Electronic access to records would enable voters to make more informed decisions and generate greater democratic transparency (Edwards, 1999:40). A higher turn-around and response to referendums/polls would be achieved if information technology were applied. The populist democracy perspective represents the majority point of view and is based on collective judgement (small community based) and that

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governance is in accordance with the majority party principles (Edwards, 1999:39).

### 1.11.2.2 Liberal Democracy

Liberal Democracy is a view that represents the collective choices and is populist, thus liberal in nature. The principle of freedom of the citizen is highly rated in this view (Edwards, 1999:40). This view utilises the presupposed concept of ideology, which *ipso facto* relieves the citizen of the requirement for a broad base of information.

Edwards (1999:41) states that by minimising the need for information, this reduces the information costs. Downs, quoted by Edwards (1999:41), states that perfect information to both political parties (about the needs of the voter) and perfect information to the voter (about the political party's agenda) could result in a collapse of a democracy due to lack of strategic mobility in any way. Snellen (1999:54) who states that the single-issue focus could introduce incompatible and non-integrative policy issues supports this view.

Snellen (1999:55) refers to this democracy as a direct democracy. Thus political parties and representatives will adopt policies that are more or less in line with voter's expectations thus enabling the political parties to follow majority strategies. Again the counter-argument could be raised in that voters are influenced through specific means to consent to specific policies.

The liberal democracy view also presupposes that representatives of parties are to a certain degree in a sustained balance of power and derive their power from their individual electoral mandate (Edwards, 1999:43). As a balance of power exists, so to does a balance of information requirement exists between the parties and the voters, but maintained through the imbalance of information (selective information). Contained and selective feeding of information could influence voters in

a particular direction on specific issues in order to maintain the strategic political edge. This implies less information available on-line. On the other hand, generalist actions such as polling and referendums could still be done electronically with greater success than in the past, by applying information technology.

There is no doubt that in this view of the application of information technology would be beneficial to the representatives and the public service that support information management and technology. This is due to the flow and availability of information. The principle of freedom of the citizen is highly rated in this view (Constitution, 1996:1(1)(a) and Edwards, 1999:40), relieving the citizen of the requirement for a broad base of information thus reducing the information costs.

### **1.11.2.3 Republican Democracy**

Republican Democracy is a view that is very much the same as the populist view but varies in terms of the mutual deliberation and openness (or common good) of debate (Edwards, 1999:43). Legitimacy of issues (or agendas) is settled through deliberation. These deliberations might then reflect on a more pluralistic society (Edwards, 1999:44). Snellen (1999:52) refers to this form of governance as that of “democratic constitutional freedom”.

The republican democracy view, however, might be the soundest form of participative governance with the interest (and agenda) of the voter and not the political party at stake. Within the context of this view, the relationship between the voters and the representatives is of such a nature that the representatives need to know and understand the voters concerns and issues in order to determine the political party's agenda. Snellen (1999:52) supports this view as the best plausible as it restricts the government interference to those sections where it is required. Thus, this view supports the concept of descriptive theory of representation (Edwards, 1999:45). The descriptive theory of

representation implies that voters are active participants in the democratic scenario with a high information need in order to sustain their requirement for acceptable solutions rather than correct solutions.

In the republican democracy view, similar to the liberal view, the balance of power concept also holds true for representatives. The electoral mandate dictates the power base and is maintained by the incumbents as long as they comply with their (voting) power base. Due to this view's deliberation point of view, information technology will best suit it for communication between representatives and citizenry. Information technology will be able to facilitate not only two-way and also group and multi-point discussion but also facilitate in opinion forming and soliciting. The application of information technology for the use in public debates (Edwards, 1999:46). Access to public debates will enable the representatives and the citizenry to remain current with their legislature.

Remaining in touch with the legislature and the voter might be the soundest form of participative governance with the interest and need of the voter at stake and given attention and not the agenda of the political party. Bureaucracies (for example the spheres of government and their supporting departments) support most political activities. This might lead to unnecessary time delays, if not managed correctly, in the formulation and implementation of policies, in response to voter's expectations. It is important to note that in order to improve relationships in and amongst populations, these bureaucracies must reflect the composition of the country. This will then have a *de facto* influence on the governance of the population (Snellen, 1999:57). The interdependency of media and the process of opinion formation are also well known (Graber, 1995:555).

An aspect as yet not explored within many governments is that of electronic documentation. Electronic documentation as a form of

### 1.11.3 Electronic governance in general

Access to the cyber highway is through the use of the telecommunications network be it telephones or satellite. More and more use of satellites is being applied. This method is however still controlled by the availability of telephone and satellite services (Taylor *et al.*, 1999:63).

In the application of the information, the technology applied refers to aspects such as e-mail and bulletin boards through which access to committee meeting records and agendas are obtained. For this purposes web pages are generated containing the electronic links to the different aspects. More commonly these links are referred to as URL's (Uniform Resource Locator). In applications where general use is made of e-mail and committee agendas and minutes, the political incumbents have more time available to apply to their actual task as representatives of the citizenry (Taylor *et al.*, 1999:64). Being more representative of the citizenry directly relates to the aspect of better governing through the use of applied information technology. As much as the global village concept is gaining ground so to is the concept of Electronic Village Halls (EVH). The purpose is to allow maximum access to all citizenry to all information with regard their governance and ultimately to electronic data interchange (EDI) (Taylor *et al.*, 1999:64). Again this can also be related to the improved application of electronic data by converting raw information into usable executive management information. The actual application of this function is generally low with the United States of America being the most advanced. The United Kingdom and Western Europe are on average at this time below the 20 % in terms of accessibility of information but improving on a year-to-year basis (Taylor *et al.*, 1999:66).

An aspect as yet not explored within many governments is that of electronic documentation. Electronic documentation as a form of



applied information technology is widely used in the private sector to great success and productivity improvement. The process of electronically capturing documentation does not eliminate the use of paper but greatly reduces it. Vintar (1999:100) reflects on this process as being applied in Slovenia. Similarly, Old Mutual and Metropolitan Life noted successes in South Africa. In both instances productivity was improved and storage and facility costs reduced (Director, Xcel, 2000).

In all that is said one has to consider the information (management decisions or otherwise) being made available or imparted through the use of electronic media. Bellamy *et al.*, (1999:79) refer to this as electronic exchange of information with the public (EIP). The methodology of applied information technology enables (empowers) the citizenry through the use of real time information. It also enables them to communicate with their representatives in real time environment. This real-time communication implies that a direct democracy is more real and available to those who have access to the information (Bellamy *et al.*, 1999:80).

Information technology applied correctly will improve the flow of information and make more information assessable to the citizenry. The feedback loop from the citizenry in turn might lead to improved executive management and administrative decision-making which in turn leads to improved policy making. This implies better and improved communication between the office-bearers and their support base (Vintar, 1999:97).

#### **1.11.4 International electronic governance**

Information technology allows the politician and the citizenry to be kept up to date with actual needs. In the United States of America this communication is achieved through interactive opinion polls and preferences are determined by the results of these polls. This

interactive communication proves that optimised (election) management is possible through the application of information gleaned from the Internet. Interactive communication may lead to voter's opinions being influenced by the application of, for example, group discussion on the Internet, videoconferencing and bulletin boards. Thus politicians manage (manipulate) the citizenry to follow a specific thought by putting it across in terms of their preferred environment, if this environment is known. This influencing is achieved by focussing or targeting an area's needs (Van de Donk *et al.*, 1999:18-19). Abramson, quoted by Van de Donk *et al.* (1999:19), reflects that the United States of America applies video and mail facilitation to great success in order to inform the citizenry about the representative's parliamentary activities.

Similarly, Canada has adopted a public route by introducing electronic mail in their postal service. In addition to regular postal services, Canadians can now electronically send and receive letters and utility bills and taxes over the net (Time, Dec 13, 1999).

Not to be left out and definitely to be considered, as an African renaissance example, is the Jordanian example of applied information technology. Based on relatively scarce data, the Jordanian public service adopted the use of information technology in the department in order to improve the management and administration capability. In addition to this the use of Internet activity in the ever-expanding application of electronic technology, is benefiting the Jordanian democracy. The application of e-mail and other Internet activities not only broadens the average Jordanian citizen's scope but also improves the democratic participation and public management and administration (Ahmad, *et al.*, 1998: 117-134).

An interesting perspective is that of the Mexican public service, who also went the electronic way. Some 218 accessible governmental sites

(Uniform Resource Locators) exist in Mexico. The Mexican government determined that the citizenry had the right to information and approached the situation from a client for information perspective. The Internet plays its role in making information available to the Mexican public. Again the affordability and access by the masses are problematic in terms of reaching all of the citizenry (Gutierrez , *et al.*, 1999:19-31).

In summary one may say that the concept of creating not only a new management styled democracy but also a conversational democracy is in the happening. Throughout the impeachment hearing of Clinton the concept of an electronic town hall as advocated by Ross Perot became a reality. In as much as the Republicans wanted the hearings to stop so much the Democrats exploited the situation. Interesting enough, all ambits of the communications media, from the printed media to the electronic media, were involved (Tapscott, 1999:35).

### **1.11.5 The role of the media**

The role of the media may best be described as that of agenda setting. Herein lies the policy and media agenda setting, which addresses the political and administrative agendas of the political groups and the public agenda that is obtained by polling. It is thus clear that agenda setting is nothing else than a schedule for public discussion (Weiss, 1992:377).

The role of the media in this day and age is greatly influenced by technology in that electronic and mechanical means are utilised to communicate. Attention must, however, be given to aspects such as campaigning and cross-cultural influences. It is in this influencing that the vital statistics of failure or success, or a mixed bag of both, lie (Weiss, 1992:377-378).

### 1.11.6 Political communication

The purpose of political communication is to influence the broad public in reacting in a particular political way. The communication will be planned through the agenda setting process and executed via the actual communication methodology. Through this rational, emotional or economical influencing is applied. It is therefore obvious that the result or the success of the communication should be measurable and according to the planned agenda (Coombs, *et al.*, 1998:203-217 and Garber, 1982:555-563).

The costs of communication through any and all means are to be established preferably in advance of the action being initiated. Virtual (electronic), news (advertisements and television time) and the printed media must be compared to the message and the delivery requirement (research) as well as the importance of the message to be conveyed so as to apply appropriate costing components (political economy) (Coombs, *et al.*, 1998:203-217 and Schalken, *et al.*, 1999:151-154).

## 1.12 Structure of thesis

The first chapter deals with the introduction and research design. This chapter introduces the field of study and supplies a background to the problem and stating the problem, the hypothesis and the objectives of the study. It also defines the research methodology and demarcates the field of study and defines the structure of the thesis.

### 1.13 Future studies

The second chapter is the description of the underlying principles as required for the implementation of policy formulation and implementation. This chapter not only defines policy but also describes the essential requirements for policies.

The third chapter describes the principles underlying information management and technology policy in South Africa. This chapter also

introduces the concepts of information technology as a solution provider. This chapter furthermore addresses the aspect of applied information technology, improving democracy through the application of applied information technology and addresses agenda setting and communication in the field of information technology.

The fourth chapter addresses the national and international trends on information management and technology. This chapter extends the definition of the problem and the research objectives.

The fifth chapter deals with the research findings of information management and technology in relation to the driving forces and denominators. This chapter also deals with the empirical situation in selected examples.

The sixth chapter is the analysis of the literature and empirical research findings and deals with the theoretical application of the findings, the literature study and the empirical approach with the resultant outcomes of the findings. In this chapter a model is proposed to assist the public service departments in improving policy formulation and management in general with the aid of improved management information.

The seventh chapter is the value assessment of the research and resulting model. In this chapter the specific focus is the attainment of the solution for the problem statement after which recommendations and conclusions are drawn.

### **1.13 Future studies**

From this thesis future studies could be conducted in the fields of strategic intervention and transactional management. The technical content of strategic interventions such as the field of architecture and systems design could be further explored.

In terms of the transactional level, the fields of transaction input to the managerial level might be explored. So too might the strategic importance of executive information be explored.

In terms of the transactional level the application and worth of transactional information in the executive information environment might be explored. All the suggested exploration should, however, be done against the backdrop of the public service.

Further studies could also be in the field of applied integrated information systems. The proposed model, applicable to all levels of management within the public sector should be further explored. These studies should cover aspects such as integrating the proposed model with the various elements as proposed in the model.

## **1.14 Conclusion**

This chapter dealt with the problem definition and the related research intentions. In this the specifics of the problem were explained, as was the reasoning for the current problem. The text dealt in-depth with the intentions of the thesis as to what is to be achieved. The chapter also supplied the reader with the assumptions and constraints under which the implementation of information management through technology for the establishment of electronic government and governance has to occur. This chapter had as its second aim to introduce the model of the report the research is based upon. It also pointed out the results, which are expected to be achieved, based on the type of questioning. This chapter's value can be seen as the basis for the functional analysis where the main features of the postulated problem of the report are to be validated or negated. In this particular case, validation is expected. From this chapter the next logical point will be to look at the analysed interviews in order to ascertain the relevance to the theoretical and expected results.

The contribution of this chapter to the overall problem statement is found in the fact that it sets the basis against which the theory and the empirical research will be validated. This chapter basically sets the stage against which the researcher's problem statement will be tested.

## PRINCIPLES UNDERLYING POLICY FORMULATION AND IMPLEMENTATION

### 2.1 Introduction

In the preceding chapter an introduction was given and the research design of this thesis explained. This entailed an introduction to the field of information technology in public management and implementation in South Africa and supply background regarding this problem. Other aspects addressed were the problem statement and related objectives, defining the research methodology, demarcating the field of study and defining the structure of the thesis.

This chapter has as its aim to introduce the principles underlying the requirements for the formulation and implementation of policy in public sector to the reader. The spectrum of available literature will be described and related to the broader concept of the applied information technology. Elements that could bear relevance to the importance, formulation implementation and monitoring of policies in the public service will be identified and explained and in later chapters be described and validated.

The importance of this chapter is found in the fact that it forms the theoretical basis of the arguments regarding the requirements for formulation and implementation of policies in the public sector. It is also the basis from which an argumentative basis is formed regarding on how data is applied in the public sector for the formulation and implementation of policies.