

# Data Warehouse for Administrative Decision Making: An Approach towards Electronic Governance

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## Abstract

Administrative Decision Making is a complex process and based on many social and socio-culture issue. Since centuries the conventional decision making for state administration is based on social and culture issues, religions background, traditional practices and even rules given in Holy books are some time applied in the name of natural justices. In the era of monarchy the rulers' wish and his Intelligent Quotation was used and applied for administrative decision making and justices. Remember, administrative decision making has no concern about true justice; it is something choosing best optimal from available, that is within rules and law and necessary need to control the ethics and social values. In this democratic civilized world the real decision making is based on the facts and figures provided by society members and individuals, some time historical court decisions, comments and remarks are used to take guidance for justices and decision making.

The Electronic Governance has become an accepted methodology involving the use of IT to providing information speedily to all officers as well as citizens. Improving public services and administrative efficiency is the key objective of E-Governance applications. Like other government offices is complex, time variant and multidisciplinary in nature. Quite obviously, the idea of using Electronic Governance for administrative decision making is courageous thought and far beyond computerization of other stand alone physical databases. This paper provides possibilities, perspectives and challenges for data warehouse based developing a decision support system for electronic governance. The use of IT by government would be made imperative to the extent possible but it has some challenges and limitation in implementation part. This paper focuses on centralized data warehouse for used for administrative decision and provide holistic view on the implementation issues using Electronic Governance.

## 1.0 Introduction

The Electronic Governance has become an accepted methodology involving the use of IT to providing information speedily to all citizens, Improving Public services, improving administrative efficiency. Queries over government offices often need to reference of data. Data, owned by in government organization is too complex and it is not updated frequently. Quite obviously, therefore, the objective of achieving Electronic Governance EG goes far beyond mere computerization of standalone back office operations. It means too fundamentally change as to how the Government operates and this implies a new set of responsibilities for the executive,

legislature and the citizenry. The effort should aim to bring about a social catharsis, which needs to be orchestrated in a comprehensive, concerted and planned fashion. Data is usually used in pre-aggregated form to ensure fast query response. However, pre-aggregation cannot be used in practice if the dimension structures or the relationships between facts and dimensions are irregular as in government departments. Data warehouses using a multidimensional view of data have become very popular in both business and science in recent years. Data warehouses for scientific purposes such as medicine and biochemistry are now under research and development, however very few steps are moved to develop a government data warehouse that is

centralized and could be used for multipurpose.

## 2.0 Government Data Centers

GDCs are generally created for the departments to consolidate services, applications and infrastructure to provide efficient electronic delivery of G2G (government -to-government), G2C (government-to – citizen) and G2E (government to Employee) services. These services can be rendered by various departments through common delivery network and infrastructure. The main function of GDCs is to store and manage data of the state, secure this data, and provide online delivery of services to the citizens. These services are providing through common infrastructure such as government Wide Area Network (WAN) and Telecommunication in rural areas. i.e. internet Present government data centers (GDC) are established to support government infrastructure, one of the most important objective of present GDC's to provide infrastructural support to government department. They are to establish a robust infrastructure to enable government to deliver quick and effective service to stockholders. A GDC connected to the government shall provide access to e-government application and services to government employees through intranet and to citizens through internet. Such data center arte implemented and managed by a competent agency or individuals of the related department. In the present scenario the focus of GDCs is on service delivery rather issues related to infrastructure, organization, decision making and authorization of data. GDCs are also responsible to centralized the data and reduce repetition of same information i.e. one information at one place. The E-government application and services of various departments need to integrated for this purpose a more authentic data and for this purpose more reliable authentic and accurate data warehouse is required. The proposed data warehouse is maintained by competent authority so that the accuracy and immediate updating could be taken in effective way.

## 3.0 Data Warehouse for Administrative Decision Making

The concept of data-driven decision-making is as simple as it sounds. Collecting data, refining the data into a usable format, and basic decisions on the information is the essential concept. Interpreting and processing data so it can be considered in the decision-making process has been the difficult part. When computers first became available, individuals were needed to write custom programs to pull the data from record systems. Unfortunately, this data extraction did not generally yield information in a useful format. Another program or set of programs was then needed to manipulate the data so that it could be useful. The steps were numerous, time-consuming, expensive, and required several people with experience in different languages or programs. Han and Kamber (2001) define a data warehouse as “a repository of information collected from multiple sources, stored under a unified scheme, and which usually resides at a single site” The past information available in electronic format about a state such as budget, payroll, student achievement and demographics is stored in one location where it can be accessed using a single set of inquiry tools. Two factors make this process different from a typical data processing environment. First, while the data warehouse contains historical information, it does not contain current-year information. Using current-year data is not recommended because it has not been cleansed to eliminate incompatibilities. Also, true data mining is computer intensive and usually not conducted in a day-to-day production environment. A second difference is that information from the various databases is extracted and then interrelated to ensure compatibility for ease of analysis.

The Proposed data warehouse for administrative decision making will be the key supporting element of e- government for delivering service to the citizen with grater reliability availability and effectively. The Proposed data warehouse coordinates between various governments departments and provides instigation and

authentication about individual's personal, financial and demographic information. This data warehouse provides better operational and management control and minimizes overall cost of storing management and deployment of data. The data warehouse will act as a mediator between open and unsecured public domain and sensitive governmental environment. It will help various government departments to host their services and application on a common data warehouse so that it could be used by multiple department, It also leads ease of integration and efficient management, ensuring the resources and network infrastructure is optimally used. In proposed data warehouse, the integration of the information from these databases allows new queries to be investigated. For example, when a state adopts a new policy related to traffic management, a properly constructed data warehouse makes it possible to compare the impact of that purchase on achievement with relative ease. After the required information is passed to the data warehouse, it can be extracted using a simple set of inquiry tools. Using the same warehouse, a historical comparison of success on standardized tests can be disaggregated.. The appeal of this process is that decisions could be based upon facts rather than suppositions, dubious beliefs or even rumors that have formed the basis for many past administrative decisions.

#### 4.0 Major Objectives and Possible Outcomes

Electronic Governance' aims at IT driven system of Governance that works better, costs less and is capable of servicing the decision making machinery and citizens' needs as never before. The purpose of government data warehouse for administrative decision making is to provide support in decision making, another major objective is to co-ordinate various government department. However some other major outcomes from such centralized data warehouse are given in following points:

- Detecting and gathering the needs of citizens in a detailed manner and quickly,

which in turn facilitates service customization.

- Providing the interoperability of Government technological systems and applications between the different Government instrumentalities and levels and the private and social sectors offering horizontal and integral electronic procedures and services to citizens.
- Offering electronic services through multiple devices and channels in wireless and mobile Internet access (phones, PDAs, PC, Handheld PC, game console) geographically-defined areas.
- Fostering with it the leveraging of better services of all sectors of society in a particular town: Health (m-Health), Education (M-Government for Education), Security (m-Security), Democracy (m-Democracy and m-Voting), Culture (m-Culture), Business (m-Business), Work (m-Work), Tourism (m-Tourism), Police (m-Police), Parking lots (m-Parking), Taxes (m - Taxes), Communities (m-Communities), Transport (M-Government for Transportation), etc.
- It may establish effective and efficient infrastructure monitoring and management practices to ensure reliability, availability, quality of service and security of information.
- To help departments to focus on addressing the issues in service delivery and administration as maintaining data warehouse is not mandate of the line departments.
- To support to take decision about performance management, security and authentication of individual citizens.
- Design and site preparation sit preparation of data warehouse in terms of civil, electrical and mechanical work must strictly abide rules given in guidelines.
- Develop an integral technological project, in order to get the execution of E-Government and Information Society, with

the participation of the productive sector, the municipal government and the civil company and their organizations.

- To identify the specific needs of the diverse sectors to solve them with the use of IT in the local environment
- To build technological and social innovation (prototypes, tests of laboratory, technological innovation in new products)
- To promote the interoperability and convergence of technologies between the different levels of government and among the different sectors of the society
- To generate conditions and opportunities of business for the actors involved in the project

## 5.0 Designing and Implementation Challenges

The broad requirement for government data warehouse includes infrastructure facilities, installation and integration of servers, telecommunication equipment, portal, departmental information system, network management and installation of software and hardware systems. Therefore it is necessary to prevent the system with possible threat and attacks on data and network security. The implementation policy must include some provisions for authentication and password management, data security threats and threats on network security. The paramount consideration in any arrangement is the security of data and the preservation of ownership and management of government data. In the view of these requirements, a set of guidelines need to be formulate which would include provision of technical and financial assistance to the government for designing a data warehouse. These guidelines should also include the norms for outsourcing the services from private sectors. There must be working policy for hiring the technical person from Private Sectors Company. While formulating guidelines it is necessary to note that some government organization has different approaches of the data warehouse while uploading their applications or

mining information from it. In case government organization is using data warehouse at district level, the data warehouse may act as a central repository of consolidated data. The department of IT also limit the size of data and applications that is supposed to hosted on data warehouse.

Design of data warehouse poses many challenges and it is complex task as it involves many interlinked issues related to personal, financial, educational social and other demographical information of individual citizens. Sometime government department needs such personal information that is individual's fundamental right to keep it personal, in such circumstances protection of such information is a big challenge. The data not only need to protect but ensuring its legal use is the responsibility of agency. The proposed data ware house become central of any government's IT enables plan by providing dynamic scalability, centralized and simplified management, improved quality of data housekeeping, lower risk of data loss and higher availability and batter management. These challenges must be keep in mind while deciding implementation policies.

## 6.0 Conclusion

However, for different countries and different governments, the approach and priorities are different. For some, especially those focused on improving access and delivery of services, this is primarily about the front-end interface with customers and citizens. It is about providing better organized, aligned and often integrated information flows, new transactional capacities, as well as new mechanisms for feedback, consultation and more participative forms of democracy. For others, especially those engaged in the management and delivery of public administration, it is about driving down costs and improving the effectiveness and efficiency of 'back office' functions and the basic machinery of government. For those working at the transnational level it is about removing the barriers to international

cooperation and development and creating an agenda of connected governance globally. However, given the high demands placed by E-Government on a multitude of foundational pillars which include prerequisites of infrastructure, appropriate policies, capacity development, ICT applications and relevant content that need to be in place to fully implement E-Government services, progress is slow. Only a few governments have made the necessary investment to move from E-Government applications to a more integrated connected governance stage. Establishing a data warehouse, converting already stored data, and capturing new data to continually build the knowledge base in the data warehouse would meet that need and be of great help to the educational decision-maker.

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