

Integrated Governance (i-Gov) Framework for E-governance (IFEG), using ERP in Uttarakhand.

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Abstract: *The proliferation of mobile devices and internet technologies has made web services available to a wide range of population in India. The advent of low price handheld devices and communication technologies has connected people seamlessly without considering the geographical barriers. Taking it as an advantage the government can work more effectively to reach its citizens by providing them better e-services via e-governance. However, many of the public departments had already switched to e-governance module in the state of Uttarakhand, but still there lay a hope to increase the efficiency and reach of these services. The services of each department are provided separately with an access to separate web address. In this paper the author has focused to integrate e-government services of a state, so that they can be accessed through a single window. ERP has been a success factor in private domain which can also be implemented in public sector to integrate the e-government services. The state of Uttarakhand is ideal to select for this experiment because of its small geographical area, less population and high rate of literacy among the public. The ERP based framework is also discussed here while proceeding towards integrated governance module for the state of Uttarakhand.*

Keywords: *E-governance, Integrated Governance (i-Gov), ERP, SWAN, IFEG*

I. Introduction

E-Government is going through four evolution phases which are the information phase, the interaction phase, the transaction phase and the integration phase [1]. While the first three are minor transformation, the last or the fourth one is the major and most complex transformation. The information phase just connects the government with the citizens by providing the unidirectional information of the government department and its services on the web. The interaction phase provides a bidirectional communication with the government and citizens with a request and response paradigm via e-mail. The transaction phase is the automation phase of the business processes, where the citizens can perform all the services with the government agencies online. The radical change among all is the integration phase where the various governmental agencies are integrated into one as to provide better services to the citizens. This provides four categories of challenges and barriers which are strategic, technological, organizational and political [2]. Here, we have focus on technological barriers which lead to compromise in integration of one government agency to other government agencies (GA2GA), central government to government agencies (CG2GA) and government agency to government users (GA2GU). This service integration will integrate people, processes, information and technology in aim to provide 'citizen centric' e-government.

II. Integrated governance (i-Gov)

Connected governance or integrated governance is built upon the concept of interoperability that is the ability of public agencies to share and integrate information using common standards [3]. In, India most of the e- governance services laid down by central and state agencies is not integrated. There are many reasons for this lack of integration but most specifically it is because of lack of communication between different departments. The information which is with one department has no or very little significance to some other department or government.

The success of connected governance depends upon effective service innovation and multi- channel service delivery within the government and as well as to the citizens. Service delivery and integration will determine on right strategies, effective policies and interoperable architecture which in turn allow data, ICT, business process flow and delivery channels to operate heterogeneously. Integration of delivery channels and back office processes can complement each other to improve the quality of both services and the delivery to government and citizens [4]. Integrated e-Gov will in turn help foster sustainable development because national and local government is citizen-centric and economic, social and environmental aspects of government. This horizontal integration of e-governance services will act as a 'one stop shopping' for the citizens. In simple case if a citizen has to moves from his/her home, the basic address can be propagated to all functional agencies such as election commission or vehicle registration department from a single portal and updated to the central

database. The citizen does not have to fill personal record form and submit to each individual department or agency [5].

III. Enterprise Resource Planning in Public Sector

An Enterprise Resource Planning (ERP) system is an incorporated computer-based application used to manage internal and external assets, including tangible assets, financial resources, materials, and human resources. Its purpose is to assist the flow of information between all business functions inside the boundaries of the organization and manage the connections to outside stakeholders. Built on a centralized database and normally utilizing a common computing platform, ERP systems consolidate all business operations into a uniform and enterprise-wide system environment. First tier companies (those with a turnover greater than Rs.10 billion) implement ERP to increase internal effectiveness and external global competitiveness. Once ERP is established at internal level, these large companies begin to desire similarly increased efficiency from their suppliers. Hence, second tier companies are pressured to implement ERP, and a trickle-down effect ensues. Powered by the proverb that a chain is only as strong as its weakest link, Indian industry quickly has recognized that in order to work at maximum efficiency, ERP must be implemented at all levels.

With a successful adaptation in private sector, government organizations across the world are adapting ERP systems for several benefits such as integrated real-time information, better administration, results oriented management, and effective e-governance. ERP as tool for integration in public sector can provide shared accessible resources, online and anywhere availability, single view for and of the citizens and interoperable environment as a whole (Fig.1).

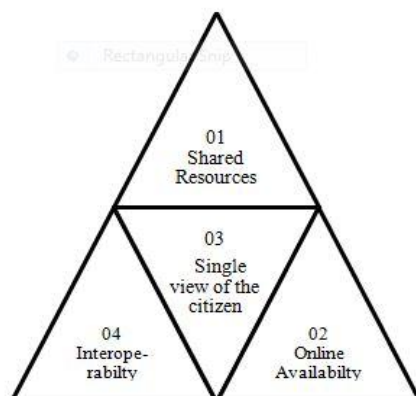


Fig1. Trends in ERP at public sector

However, due to their social obligations, higher legislative constraints and citizen accountability, unique working culture and other factors, government entities face many specific challenges in their transition to ERP environment [6]. Thus, the success of ERP in public domain will totally dependent on the studying the environment and laying down the right strategies that will minimize the challenges and risk factors. The focus should be on the:

- Role: Expose information to enable collaboration with other agencies and departments.
- Domain: Public sector focus.
- Functions: Government specific processes and functionality.
- Process: Externally connected.
- Architecture: Web-based, open, componentized.
- Data: Internally and externally published and subscribed [7].

Public organizations and government agencies were not in the initial target zone of many ERP vendors, which were just developing products for manufacturing companies. However, ERP systems are rapidly being deployed in public sector.

IV. Uttarakhand current e-initiative framework

Knowledge from previous e-Governance initiatives had played an important role in shaping the progressive e-Governance strategy for the country. To speed up e-Governance implementation across the various departments of Government at National, State, and Local levels, a right approach needs to be adopted, guided by common vision and strategy. This approach has the ability of saving costs through sharing of core and support infrastructure, enabling interoperability through standards, and of presenting a seamless view of

Government to citizens. The Government approved the National e-Governance Plan (NeGP), consisting of 27 Mission Mode Projects (MMPs) and 8 components, on May 18, 2006. The Government has accorded approval to the vision, approach, strategy, key components, implementation methodology, and management structure for NeGP. So far approx. 3046 Common Service Centres (CSC-Devbhoomi Jan Seva Kendra) have been established in the state and 967 CSCs have been approved to deliver e-District services out of which 433 centers are operational. Apart from e-District services other services such as Aadhar registration, Banking services, payment of electricity bills and other non-govt. commercial services are also being delivered through these centers. *CSC – 2.0 schemes has been approved by Govt. of India as the second phase under which one CSC is to be established under each Gram Panchayat.*

Under National e-Governance Plan (NeGP) it is proposed to create State Data Centre(SDC)for state to consolidate services, applications and infrastructure to provide efficient Electronic delivery of G2G, G2C and G2B services. The Nationwide SWAN Scheme for 29 States & 6 Union Territories, at an estimated of Rs. 3334 crores was approved by Govt. of India in March 2005 to set up State Wide Area Networks (SWAN) interconnecting each State/UT Head Quarter with District Headquarter and below each District Headquarter with the block Headquarter with minimum 2Mbps Lease Line. The objective of the scheme is to create a secure close user group (CUG) Govt. network for the purpose of delivering G2G and G2C services.

The work is under progress by BSNL in RTO, Food department, Rural Development, Employment office, DIET, PWD and THQ/BHQ under Horizontal connectivity. ITDA has released payment against demand note raised by BSNL for 26 converters required at 13 locations due to non availability of serial ports [8]. The e- District project has been conceptualized to improve and enhance the efficiencies of various Departments at the district-level to enable seamless service delivery to the citizen. Front-ends under the scheme, in the form of citizen facilitation centers, are envisioned to be built at District, Tehsil, Sub-division and Block levels. Village-level front-ends would be established through Common Services Centers (CSCs) for delivery of services.

This scheme is financial assisted by Govt. of India in 80:20 ratios. District Pauri Garhwal in satte of Uttarakhand was selected as pilot for this project and now the project is being state wide rolled out. Under this project the maximum services related to citizens (i.e issue of certificates – Caste, income, Domicile, Character, Solvency, Hill Area Certificate, Freedom fighter, Uttarajivi, Birth, Death and other services like Old Age Pension, Widow Pension, Handicap Pension, Registration in Employment Exchange, Renewal of Employment Card, Pariwar register copy and entry, Compensation for Damage due to disaster etc) delivered by District Magistrate office are to be covered in a computerized manner. Currently around eight services are being delivered in 12 districts and 17 services in pilot district of Pauri Garhwal. Overall 13 lakh applications have been processed in all the districts of Uttarakhand under e-district project up to January 2016 [9].

V. The need of Integrated Framework for e-Governance (IFEG) in state of Uttarakhand

As a lot has being achieved from the effort laid in the field of smart governance through the infrastructure laid down by the state government in accordance with the central agencies, it can be said that the three evolution phases has been achieved successfully. The information is reaching the citizens in a better and easily accessible way, the interaction between the citizens and government has been evolved somehow and there is transaction phase in its early stage where all business process of a government agency can become online for the citizens. The last and radical phase of e- governance evolution that is, integration phase is the future of e-governance where the various governmental agencies are integrated into one as to provide better services to the citizens. This provides four categories of challenges and barriers which are strategic, technological, organizational and political. Here, in this paper the authors have focus on technological barriers which lead to compromise in integration of one government agency to other government agencies (GA2GA), central government to government agencies (CG2GA) and government agency to government users (GA2GU).

Interoperability in e-Governance is defined as “the ability of different systems from various stakeholders of e-Governance to work together, by communicating, interpreting and exchanging the information in a meaningful way”. The interactions between all stake-holders are achieved; by sharing of information and knowledge through the business processes they support [10].

VI. Design of ERP development Model for Uttarakhand (UK)

As shown in figure2, the designed ERP model is divided into three implementation stages; the pre-implementation stage contains the details of Uttarakhand ERP requirements (Business Processes and Flow), UK’s Critical Success Factors for ERP implementation and Uttarakhand ERP product selection. The second stage of designed model contains the full details of ERP implementation processes. Final stage of the designed model focuses about ERP operational stages.

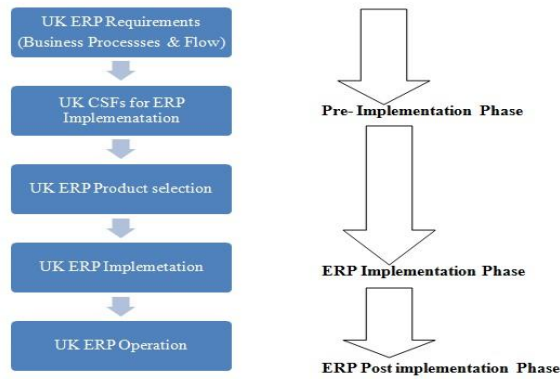


Fig2. ERP development model for Uttarakhand

The detail descriptions of all these three stages are shown in the figure3, as process of ERP implementation at state of Uttarakhand.

VII. Process for ERP implementation at Uttarakhand

This phase describes the detail steps follow in proposed design of ERP model for state of Uttarakhand.

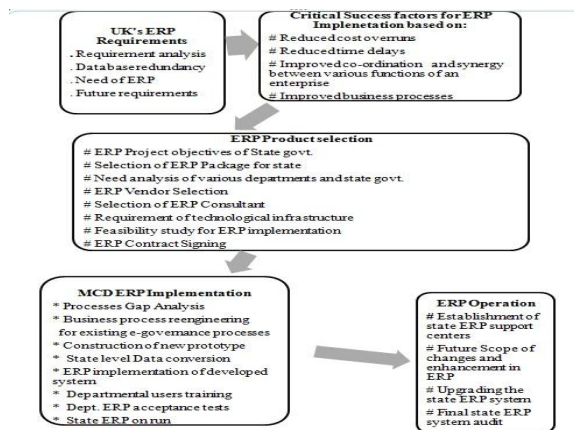


Fig3. Process for ERP implementation for the state of Uttarakhand

VIII. Basic structure of i- gov with ERP implementation in Uttarakhand

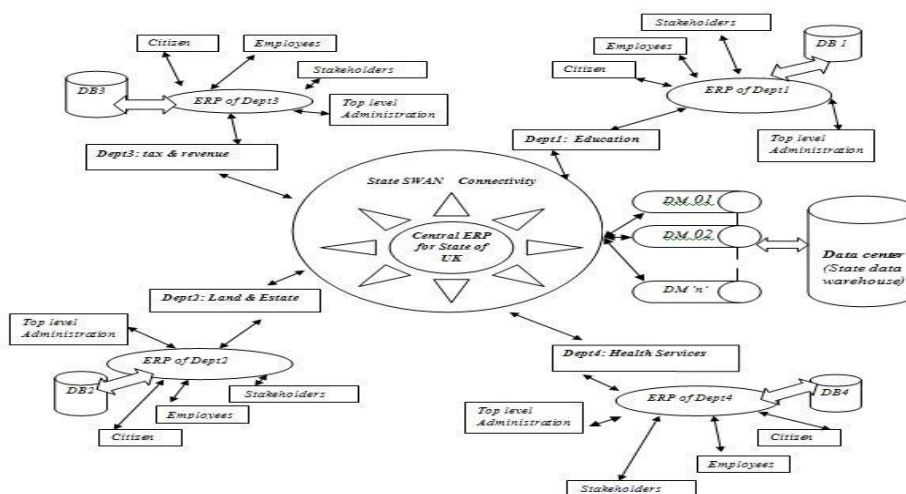


Fig4. Basic framework model for ERP based e-governance in state of Uttarakhand

The framework model as depicted in Fig4. relates to the implementation and working structure of effective e-governance through the ERP. The ERP as an integration tool works within the various departments as well as it integrates the other departments to the central structure. The module disintegration of ERP for a

single department will be a helpful tool for not only the department but will be based on citizen centric service provider. Module within the department can be accessed by stakeholders, citizens, employees and other associates dependant on the services of a department. The various departments will be integrated with SWAN to the central server. For example, the department of Health services can be accessed by employees to look out for their salary slip, their attendance and various other funds and services of their use. The citizens can access the various schemes and services provided by the department, as well as they can have access to online consultancy and information about various diseases, doctors available and nearest community centers or hospitals to gain better services. The different stakeholders and vendors can access their bills and payments receipts from the module and also apply for the tenders which are floated on the module. The entire ERP of a department will be merged to the central ERP system within the state, which will finally be the single entity for all the departments to access and store information. The state data center will be a data warehouse which will be built up consisting of different Data marts (DM) of different specific areas. The data marts will help in accessing faster information based on various data mining algorithms.

Apart from this, the decision makers or the top levels management can also access reports generated on the module to have better visibility to the information which will help them in efficient decision making and submitting the reports to the ministry. The data generated and stored inside the database of a department can be connected to the central ERP management system which will have a central DBMS. This will certainly help in reducing data redundancy and will also provide integrity to the data, as it will be managed by central server at the state level.

IX. Benefits of integrated e- governance through ERP

The benefits of ERP and its success factors in private enterprises can all be attained here in public domain. The data redundancy is the main limitation of present e-governance scenario. A person has to maintain different logins to access the services of a multiple departments. They have to provide personal information to all applications while registering to different departments. The data stored inside each department for a single individual is an example of redundancy. This creates duplicity as well as inconsistency of data of same individual. With the help of ERP this can be fully eradicated as a user have to create a single login to connect various departmental services and provide his personal details only once. The issue is of data integrity, which is a crucial factor when it comes to sensitive and confidential data. With implementation of ERP this factor can also be resolved as the integration of data will reduce inconsistency and multiple accesses to the individual data. Another issue is of confidentiality, which can also be reduced as paper work will be reduced and access to information will only be based on access control mechanism. The most beneficial factor with the ERP system is the availability and authenticity of the information. Users can have 24*7 accesses to the information as it will be available anytime, anywhere on the globe. The authenticity can also be maintained as data is integrated and stored centrally on a state central server machine, which can be accessed by authorized users only.

X. Conclusion

The long term success of ERP in private sector can never be over looked. For effective and citizen centric governance, the benefits of ERP can always be implemented in public sector. However, the structure of public sector, working culture, operation and management, financial concerns and political and administrative issues will be barriers in adoption of ERP. But, if state of Uttarakhand has to be the top amongst the other e-governance states, it certainly has to follow an approach of private sector in their working culture, financial concerns and resolve other barriers. In, this paper the author has tried to present his view regarding the need of integrated governance which provides seamless and convenient access to the information. The ERP based e-governance model as depicted by the researcher is the way to connect different departments to the state central DBMS, for non redundant, integrated, confidential and always available data and information. The e-governance based on citizen centric architecture and effective management of data and information can be achieved through ERP. In future, the technical architecture and interoperability issues can be studied so that various barriers in implementation of architecture can be resolved.

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