Table of Contents

Establishing State Residents Integrated Electronic Data Repository (SRIEDR) – A Step towards Digital Governance

Ghan Shyam Bansal, Alok Srivastva, Ramandeep Kaushal, Ashish Dhingra

Scientist "G" &SIO Haryana, NIC-HrSC, G03, Haryana New Secretariat, Chandigarh, Ph: 09417984502

Scientist "D", NIC-HrSC, 9th Floor, Haryana Civil Secretariat, Chandigarh Ph: 09417936808

Scientist "C" , NIC-HrSC, G04, Haryana New Secretariat, Chandigarh Ph: 09915718222

Scientist "B", NIC-HrSC, 9th Floor, Haryana Civil Secretariat, Chandigarh Ph: 07837870199

e-Mail: ghanshyam.bansal@nic.in, alok.s@nic.in, ramandeep@nic.in , ashish.dhingra@nic.in

ABSTRACT

Government extend benefits and services to residents through individuals and family based scheme and programmes. The interaction of residents, with government, starts from issuance of birth certificate and ends with the issuance of death certificate. From birth to death every citizen avail a number of services / benefits from the government, which require establishing unique identity of residents on one hand and uniqueness of delivered services on other hand. SRIEDR is an approach towards convergence of State Resident Data Hub & government delivered services by establishing residents' services data repository on one hand and integrating them in their families' database on other hand. This convergence facilitate establishing a single view of truth in respect of individuals and their families, for identity and services, thereby building effective mechanism for information acquisition and sharing across multiple arms of the government without requiring residents to submit same information to different agencies in government. This paper gives on overview of SRIEDR concept, which aims to develop a collaborative and unified service delivery platform to ensure seamless integration of applications which meet service delivery requirements across various domains of government services and facilitate verification of delivered services, as a major step towards Digital Governance.

INDEX TERMS: SRDH – State Residents Data Hub, RIDR – Residents Identity Data Repository, RSDR – Residents Services Data Repository, RDR – Residents Documents Repository, eDISHA - Electronic Delivery of Integrated Services of Haryana. SRIEDR – State Residents Integrated Electronic Data Repository.

I. INTRODUCTION

There are three categories of databases pertaining to various e-Governance projects, government benefits and various schemes, where the residents have one or more interactions during their life span. These three categories of databases are:

1) **Individual resident based services databases:** This category includes databases of a) UIDAI Aadhaar (State Residents Data Hub -SRDH),

b) Birth & Death registration & certificates,

c) Caste (SC, ST, BC, OBC etc.) Certificates,

d) Income Certificates,

e) Resident/domicile certificate,

f) Marriage certificate

g) Students Enrolment School Education Board

h) Income Tax PAN,

i) Election Voter ID Card,

j) Driving License,

k) Passport,

l) MGNREGA Registration and Job Card

m) Employees & Pensioners

n) Beneficiaries of DBT (Direct Benefits Transfer) Schemes

o) Other individual based social welfare schemes, etc.

2) Intra Family based services databases: This Category include databases like

a) Ration Cards,

b) Socio Economic Caste Census-2011,

c) National Population Register-2011,

d) Household Survey for identification of Below Poverty Line Families,

e) National Food Security Act-2013 etc.

3) Inter Family based Services database: This category may include

a) Land Records- Records of Rights,

b) Property Registration,

c) Vehicles Registration,

d) Shops & Establishments,

e) Industries & other Joint ventures etc.

The category 3) also include category 1) and 2) wherever applicable. The key interactions of residents from birth to death with state/central government during his life span, are shown in Figure-I.

II. EVOLUTION OF SRIEDR CONCEPT

During the implementation of various e-Governance projects & other beneficiary schemes, in the state, it has been observed that

a) The demographic details of a single individual are varying in various databases of line departments.

b) Various e-Governance projects have been found to being implemented in a stand-alone mode

c) Either there is no integration or there are very limited interconnects among different projects.

d) The documents related to various proofs, required to avail benefits of a state scheme/ service, deposited by the resident with one authority on one hand and the e-documents issued by the said authority, as part of its e-service delivery, on other hand, though stored as e-documents in the database, are not available to the another authorities, for acceptance as proofs, required for delivering another e-service to same resident.

These types of challenges can be addressed through the concept of SRIEDR, which has been evolved during the implementation of e-District project in pilot Rohtak district of Haryana and later on for implementing Haryana e-Seva project under SRDB (State Residents Data Base) framework.

The e-District has been envisaged as automation of workflow and internal processes of district administration with the possibility of seamless integration of various departments for providing integrated services to the residents. This project is of paramount importance to the State as it would help in creating an automated workflow system for the district administration and help in providing efficient individual department services through e-DISHA Kendras & Haryana e-Seva Common Service Centers (CSCs) which would be the primary front end channels envisaged under the NeGP program by DeitY, Government of India. Haryana is surging forward with a motto of 'reaching the un-reached and bridging the digital divide'

To implement the e-District in integrated manner, the SRIEDR concept was evolved, keeping in

mind the SRDH of Aadhaar database & ration cards database. The data structure of SRIEDR was defined in a way so that the demographic information can primarily be populated through SRDH, in absence of SRDH, citizens demographic details are registered online whenever he/she first time interacted for any e-service and thereafter at the time of final delivery of any of the e-service.

The SRIEDR consists of three interlinked data sets - demographic database, service data & document repository. SRIEDR can become an authentic & updated database, instantly available for query / service verification of identity & service documents.

III. SRIEDR IMPLEMENTATION PROCESS

To implement the SRIEDR, the residents information was segregated into three repositories; these are

i. Residents Identity Data Repository (RIDR)

ii. Residents Service Data Repository (RSDR)

iii. Residents Documents Repository (RDR)

In RIDR, the demographic information of resident is stored along with Meta data as given in annexure-A. This information is uniquely maintained using 12 digit Aadhaar number / RIDR Id and most updated. The RIDR is based on UIDAI and MDDS (Meta Data and Data Standards) standards for demographic data of residents. Whenever the resident gets any service from the e-DisHa (e-District Haryana Web Portal) , the changes gets reflected in SRIEDR and this updated information is available for all integrated applications.

In RSDR, all the services availed by the resident through the e-DisHa are stored and linked with the profile. These records are uniquely maintained using 15 digit intelligent Service Id. These information is used for searching & recording purpose e.g. If any resident takes the service of Caste Certificate from e-DisHa, then details of the service is stored in RSDR and his caste information will be updated in RIDR and would be readily available while taking other service where caste certificate is required.

In RDR, the digitally signed documents issued from integrated applications of e-DisHa, are stored, which is linked with RIDR and RSDR. These documents are available through e-DisHa portal to residents as well as verifiers.

When first time a resident is registered in SRIEDR, either from SRDH or through on-line registration, a 12 digit unique RIDR Id is generated (it can be Aadhaar number also, if available) and his demographic details are stored in RIDR along with this unique key. In case of on-line registration, four parameters (DOB, Identity, Address, Caste) are also registered as non-verified in the first instance.

Now, the resident is registered for desired service, a 15 digit intelligent Service Id is generated and given to resident along with RIDR Id and service details are stored in the RSDR. As and when the service is delivered, his service transaction is stored in RSDR and his information gets updated in RIDR and the deliverables i.e. digitally signed document is stored in RDR.

For example, if the service is given to him related to a particular parameter like Caste; this particular transaction is stored in RSDR and the digitally signed Caste Certificate would be stored in RDR and the caste parameter would be marked as verified in RIDR and all these information would be readily available for the resident as well as verifier at e-DisHa portal

and would be retrieved whenever verified from the SRIEDR by other applications.

The other way to update these four parameters; is to upload the scanned copy of the proofs into SRIEDR, but this would be treated as declared parameters instead of verified parameters and these scanned proofs would be stored in database and would be retrieved whenever verified from the SRIEDR by other applications.

IV. SALIENT FEATURES IMPLEMENTED IN E-DISTRICT APPLICATION

a) **Authentication :** Secured authentication mechanism has been adopted along with bio-metric authentication (optional) to access the services on the portal with the Single Sign On. A password policy has also been applied to avoid intrusion.

b) **Role based Authorization :** permissions are granted dynamically as per the rolls and rights to the users. Administrative module for providing permission to the users & maintaining the masters has been developed. Users can initiate the services, upload the documents, mark for verification, verify, approve or rejects, check status and access the various reports as per their authorization.

c) **Centralized Architecture :** A web based system and work on centralized architecture. All transaction information is stored at central server. In some cases, district level server is accessed to get the information/data. The databases and web application are kept at State Data Centre, which is available at intranet and internet both.

d) **Central Registration of Residents :** A resident has to be registered in SRIEDR to deliver any service through e-DisHa. The SRIEDR consist of three data models demographic data,

service data & document repository. A unique RIDR Id is generated and given to the resident. Gradually it will become an authentic database that will be used to verify the citizen related information. e.g. If any resident has taken the service of Caste Certificate from e-DisHa, then his caste information is stored in SRIEDR and any time it can be verified from the e-DisHa portal while taking other service where caste certificate is required.

e) **Citizen Profiling :** Resident's unique profile is maintained through this unique RIDR Id. Whatever information and scanned proofs provided by resident and every deliverables issued from the e-DisHa will be shown in the profile page and can be verified and downloaded at anytime anywhere by the resident as well as service provider. This is a unique concept, which have paved the way for establishing SRIEDR.

f) **Uploading of Citizen Documents :** After registration in RIDR, the resident related important documents like DOB certificate, Address proof, Caste proof etc. can be uploaded in PDF format in SRIEDR, after verification. These proofs once uploaded will not be required to submit again by the resident for any other service.

g) **Issuance of Digitally Signed Documents :** In e-DisHa, the issuing authorities issue the digitally signed documents to the residents using his digital signature.

h) **Central Repository of Digitally Signed Certificates :** The digitally signed documents (PDF) issued under e-DisHa are stored in the resident service data repository (RSDR) of SRIEDR, which may be retrieved any where any time for verification as well as downloading from the portal of e-DisHa (http://edisha.gov.in)

i) **QR Code inclusion :** Each receipt issued through e-DisHa portal contains the QR code that can be used to track the application status. Each certificate also contains the QR Code which can be used to verify the certificate.

j) **Verification of Citizen Information :** A link has been provided in the portal to verify the resident related information for third party verification. Also it can be verified through QR code printed on documents/certificates issued to him through e-DisHa portal.

k) **Status Tracking :** At the time of service request, an SMS alert & email is sent to the applicant which contains the details of application along with unique service id. Apart from this a receipt is also given to the applicant which contains the QR code. Applicant can track the status of his application either through QR Code scanner (Mostly available in smart mobile phone) or directly access the e-DisHa portal for the status tracking of the application at any point of time.

l) **Work flow Automation :** The whole work flow has been automated starting from service request initiation from CSC or e-DisHa centres up till delivery of services. Separate logins have been provided for each stake holders.

m) **Escalation Matrix :** Escalation matrix has been defined in the software. If action is not taken by any official on an application, that application automatically starts visible to the next level of official after a defined span of time, who can take action on that application.

n) **SLA for each service :** Service Level Agreement has been implemented for each service.

o) **MIS & Dashboard :** MIS reports are generated for all level i.e. State Level, District Level, Tehsil Level, SDA, SCA, CSC. Graphical Dashboard has been designed for higher authorities.

p) **SMS & e-Mail Integration :** SMS & e-mail has been integrated in e-DisHa portal. Alert is fired at two points to the applicant through SMS & e-Mail; Service Acceptance & Service Delivery.

q) **Mobile App for Verification :** Mobile app for android OS for verification of application have been developed and tested.

r) **Forms Availability :** Forms will be available at e-DisHa portal for downloading for the residents as well as users of the portal.

V. APPROACH TO POPULATE SRIEDR

The SRIEDR is subdivided into 04 sub-components namely SRDH demographic data elements (KYR), Data elements considered essential for SRDB (State Residents Data Base), documents submitted as proofs by the residents for availing a service, and the documents issued as part of service delivery. These data elements are shown in Annexure-I.

a) The UID based Aadhaar database has been referred as SRDH (State Residents Data Hub). The SRDH has been established in Haryana. The demographic data (i.e KYR data) of all residents, who have been issued Aadhaar numbers, have been provided by UIDAI for establishing SRDH to State Government. The KYR data elements of SRDH, as included part of SRIEDR, can be ported directly into SRIEDR database.

b) The NPR (National Population Register) – 2011 data contain Family Unique ID & also requisite information for each individual family member (like Name, relation with Head of Family, Sex, Date of Birth, Marital Status,

Education, Occupation, name of Mother & Father). Using this basic data of NPR, the SECC (Socio Economic Caste Census) Survey – 2011 has been carried out across Haryana and the additional data has been collected as per the approved forms/formats of SECC Survey, by visiting each household & directly entering in a tablet PC. The data elements related to residents, as available under the merged database of NPR & SECC data, are listed in Annexure – II. The merged data of NPR & SECC-2011 has been digitized and after due processing, this merged data has been imported into the State Residents Data Base (SRDB) structure, to avoid delay in building up comprehensive residents' database of the state. The NPR#SECC database is a draft data set, as a declared data and entered on as is where is basis only. It is yet to be verified, validated and certified.

c) The MDM (Master Data Management) tools have been deployed to populate and clean the merged data of NPR & SECC-2011, imported into SRDB structure, however, the accuracy rate is not very significant and a lots of organic interventions are required. During various interactions at state and national level also, it has been emerged that the authentic and accurate method of seeding Aadhaar numbers in SRDB / SRIEDR is through organic seeding only. Since the organic seeding of Aadhaar in various SRIEDR is very huge task and would take time, so till that exercise is completed, at every service request of the citizen, a provision has been made to enter the primary key of various documents issued to resident like Aadhaar Enrolment Id, Voter Id, Driving License Id, PAN, Passport #, Ration Card # etc and storing the scanned copy of these docs in SRIEDR.

d) Once the SRDB (State resident Data Base) is populated with SRDH and it is verified,

validated and certified, it will be declared as most authentic SRDB (State Residents Data Base). After this exercise, interlinking across various databases would be easy for verification purpose during rendering of any service to the resident, by avoiding submitting various documents again and again.

e) Using Software Tools / Web Services/MDM Tools/APIs, synchronization of departmental / sectoral databases alongwith changes in SRIEDR can be achieved. The search on SRIEDR can be either UID based search – tracking a single Aadhaar #, across various sectoral databases, returning same resident from various databases, or search by name of resident (where UID is not seeded), the MDM tool/web service returns the similar names from various databases, using which, unique KYR data elements can be populated in all such databases. In case of multiple names, the search criteria can be further extended to trim the search results. The conceptualized SRIEDR database architecture is shown in Figure-II.

VI. INTEROPERABILITY

a) The Resident's references across various schemes/ programmes/ departments are seen together. The SRIEDR is envisioned as a meta-database of all other line departments data (individual resident based and family based database)

b) Controlled, authentic & limited 24x7 access can be given to the resident to add or modify his/her data, with UID biometrics based authentication and can be validated by the resident himself, which can be taken as the authentic & certified database of residents, covering the life cycle of a resident from birth to death.

c) Once the death is triggered in SRIEDR, which is linked together, horizontally & the resident

is traced across line departments, all benefits across all linked schemes/ departments can be suspended.

d) A pool of web services can be created for two way communication with databases; e.g. a web services to carry the demographic information to the different applications and other is to update the service data in SRIEDR from different applications. For interconnection of databases, in the absence of UID seeding, one can connect to SRIEDR and get the key of other databases which can be used by application to search the record for verification etc.

VII.   CONCLUSION

SRIEDR is a Meta data repository for the residents, which can be taken as authenticated database, once it is verified, validated and certified / digitally signed. The SRIEDR data exposed as web services can be used by other e-Governance applications. Even, pre-populated application forms can be generated and given as an application for availing benefits of government services / schemes. The SRIEDR can become an authentic database of state residents, that can be used to verify the citizen related information from different applications of different departments and may be accessed 24x7 anywhere anytime by the residents as well as verifiers. The SRIEDR can be viewed as one of the major components of the Digital India Programme.

The views expressed in this paper are personal to the authors and do not represent the views of either the Government of Haryana, or the National Informatics Centre, Department of Electronics & IT, Govt of India

Theme:

Digital Governance- New Frontier

Sub Themes:

• e-Governance Leaders as Change Agents

• Integrated Service Delivery-Standards and Interoperability

Annexure-I: Data Elements of SRIEDR

1	Unique Id allotted to Resident
[A]	**KYR data elements of SRDH**
1	UID issued in Aadhaar
2	Enrolment ID (EID) issued in Aadhaar (if UID not available)
3	Name of the Resident in Hindi & English
4	Gender of the resident (Male, Female, Transgender)
5	Father's name in Hindi & English
6	Mother's name in Hindi & English
7	Date of birth of the citizen
8	A flag is maintained to indicate if Date of Birth (DoB) is (V)erified, (D)eclared, or (A)pproximate.
9	Residence Address : House name or number , Landmark, Locality or Colony
10	Census Village Code Directory Code
11	PIN

12	Correspondence Address		7	UID of Resident's Father
13	Mobile no., Landline + STD Code		8	UID of Resident's Mother
14	Email_id		9	UID of Resident's Spouse
15	Photograph of citizen		**[D]**	**Service Data & Document Repository**
[B]	**Additional Data Elements (KYR+)**		1	Service applied for like Caste, Income, Birth Certificate etc
1	Caste General, SC, BC, OBC, SBC		2	Digitally signed Document as issued
2	Marital status of resident. Never Married, Single, Married		3	Unique id of issued document
3	Spouse's Name		4	Various Keys, Indexes, linking attributes etc
4	Place of Birth of resident			

Annexure-II: Base Data Attributes available in NPR and SECC merged data (SRDB)

Section B continued		#	Parameter
5	Economic status of resident like AAY/BPL/APL	1	Type of House Hold
6	Date of Death of resident (whenever event happen)	2	Name of Person
7	PAN of resident	3	Relationship with Head of Family (Un-codified)
8	Voter Id number of resident	4	Gender
9	Verifier's RIDR Id is stored who have verified the proofs	5	DoB
10	Family Id alongwith resident Id of resident as recorded in SRDB	6	Marital Status
[C]	**Documents Submitted as Proofs**	7	Father Name
1	Proof of date of birth like birth certificate, Matric mark sheet etc.	8	Mother Name
2	Proof of Identity like Voter Id, Passport, Driving License, Id card etc.	9	Occupation (Highest Education Level in Urban)
3	Proof of Address like Voter Id, Ration Card, Electricity Bill, Id card etc. (As given in UID project)	10	Disability (codified)
		11	House ownership/Material/ No. of rooms (codified)
4	Document submitted as Proof of Caste like Caste Certificate etc.	12	Employment Type/ Income /Tax status
5	Proof of Special Category of resident like disabled	13	Monthly income of highest earning member
6	Proof of Death (if any) stored in Document Repository (DR) and linked with this id.	14	Main source of HH income (codified)
		15	Assets Ownership

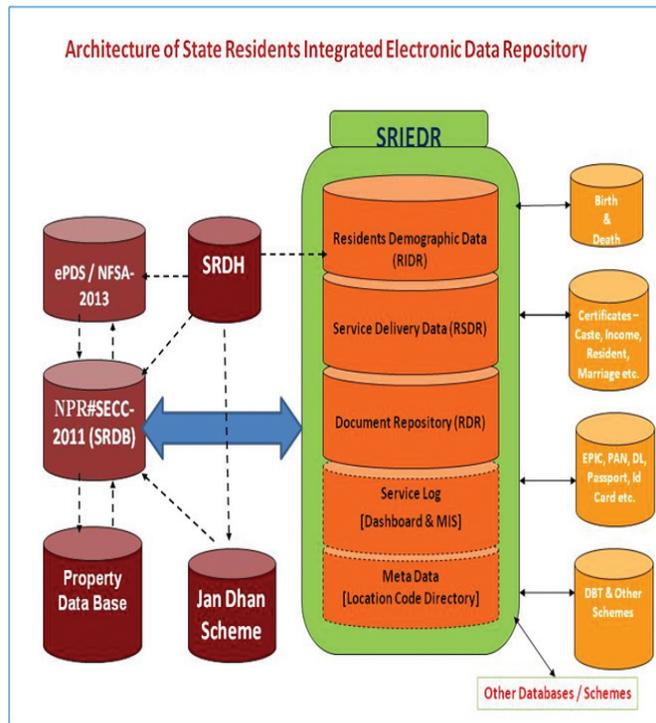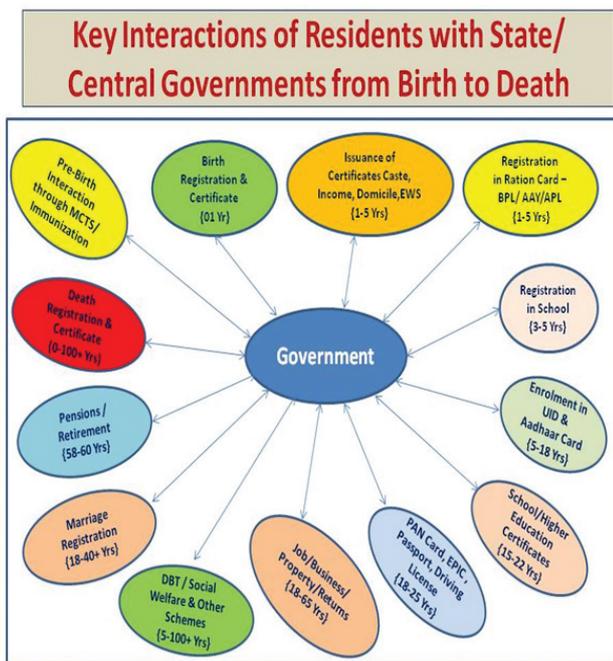| 1.	Refrigerator
2.	Telephone
3.	2/3/4 Wheeler
4.	Computer/laptop
5.	Mobile
6.	Air Conditioner
7.	Washing Machine
16	Land Ownership (Un-irrigated/ irrigated)
17	Other Assets
1.	Mech. 3/4 wheeler agri equipment
2.	Irrigation equipment
3.	Kisan Credit Card

Figure-II

Figure-I

Paper for 18thNational Conference on e-Governance

ON

Digital Governance-New Frontiers

Citizen Services in a Smart City – New Paradigm

By NilkanthPoman
(IT Head, Pimpri Chinchwad Municipal Corporation

1. ABSTRACT

As a growing city and considering changing requirements of the city, it was envisaged that major changes will be required in operation and management of its services. The vision formulated during 2007 was aimed at ensuring the economic development of the city along with improving the quality of life of the citizens of Pimpri-Chinchwad. The important areas identified were, providing universal access of municipal services to the urban poor, improvement in the standard of education and providing an efficient civic administration.

To effectively realize this vision, PCMC has embarked on the development of an integrated e-Governance Program that will result in improved transparency, efficiency and will lead to building citizen centric governance. PCMC has not only proposed to deliver online services but has designed its initiative to reduce the citizen's footfalls in Corporation's offices.

In spite of the mandate of proactive disclosure under Right to Information Act, getting complete and standard information from public authorities remains a challenge. On this background the Pimpri Chinchwad Municipal Corporation has undertaken an innovative step for dissemination of information related to various departments of Municipal Corporation as well as important departments of Central and State Govt.

The initiative named SARATHI (**S**ystem of **A**ssisting **R**esidents **A**nd Tourists through -elpline Information) was launched on 15th August 2013. The information through SARATHI is made available using multiple channels – book, website, call center, mobile app, e-book &pdf book. As the platform of call center is an interactive one, SARATHI is also working towards resolving complaints of the citizens. The innovative use of technology to disseminate the information in the form of FAQs as well as grievance redressal has become immensely popular with the citizens of Pimpri Chinchwad. Building Permission Management.

2.OVERVIEW

Within 16 months of its launch, a total of 3,27,616citizens have benefitted from SARATHI. Of these a total of 1,40,365 have accessed the information using the website while a total of 47,346 have used the call center to seek the information. Another interesting feature of SARATHI is that the citizens can get their grievances about municipal services redressed with just a call to the helpline. Of the total 69,366 calls received at SARATHI helpline, 22020 were pertaining to complaints of which 21255 (95%) complaints have been successfully redressed.

SARATHI which is benefitting an average of 679 citizens every day has been selected as a best practice under Right to Information at National level. Mr Sam Pitroda, Chairman National Innovation Council has recommended that SARATHI should be adopted by all the Municipal Corporations in the country. Pune Municipal Corporation has decided to adopt SARATHI.

Key Dates

S. No.	Date	Milestone
1.	30th March 2013	Decision to undertake the initiative
2.	15th August 2013	1st phase of SARATHI launched
3.	31st October 2013	2nd phase of SARATHI launched
4.	9th January 2014	Selected as Best practice under RTI
5.	26th January 2014	English version of SARATHI launched

SITUATION BEFORE THE INITIATIVE BEGAN

It is seen that seeking information from Government offices involves repeated visits, the problems of long queues, lack of uniformity in responses obtained and referrals from one office to another. It was realized that there is a need of a mechanism which would satisfy the information needs of the community related to services and facilities provided by Municipal Corporation and at the same time save the precious time of the administration spent in answering queries.department and send to Building approvals department.

ESTABLISHMENT OF PRIORITIES

It was decided to start an initiative with the objective of overcoming communication barriers and providing information expeditiously to the citizens. The entire initiative was given the name 'SARATHI' which in Marathi means 'one who guides towards the right path or one who drives you through adversities to find the destination'. SARATHI in English has been aptly given an acronym i.e. System of Assisting Residents AndTourists through Helpline Information.

FORMULATION OF OBJECTIVES AND STRATEGIES

S. No.	Objective	Strategy
1	Citizen friendly initiative	The content was designed in the format of Frequently Asked Questions (FAQs) instead of the descriptive information of the departments in the official language.
2	Cater needs of all sections of society	Provide multiple channels of communication using tools of Information and Communication Technology
3	Interactive Platform	Instead of an automated voice response system, an interactive call center was developed to provide an interactive, comfortable platform for the citizens. Backend operator system was established for directing and monitoring resolution of complaints.
4	Sustainability	Use in house capacity instead of outsourcing
5.	26th January 2014	English version of SARATHI launched

MOBILISATION OF RESOURCES

Infrastructure: SARATHI was made available through website, book, pdf book, e-book, mobile app & call center. Of this only call center required special infrastructure for which separate space has been earmarked in head office. A separate telephone line with ten hunting lines was sought so that calls from ten people could be attended simultaneously on number (8888006666). Special software was procured to ensurerecording of calls, call log facility and caller number identification etc.

Funds: The total expenditure of Rs 29 lakhs was incurred from the Municipal Corporation budget. The total expenditure for printing 4000 books was Rs 10.85 lakhs. The expenditure incurred in development of mobile application and e book was Rs. 4.55 lakhs. The development of special website and pdf book did not involve any costs. The total expenditure on call center has been Rs. 13.60 lakhs. The recurring expenditure is likely to be about Rs. 1,40,000 per month which would include the honorarium for thirteen call operators at the rate of Rs 10000/person/ month and Rs 10000 for other expenses.

Manpower: The development of website, mobile application, pdf book and e book was done by the technical experts of e Governance Dept. For the call center, professional call operators with experience were recruited on contractual basis through open competitive recruitment. They were trained and posted in two shifts, 7 am to 2.30 pm and 2.30 pm to 10 pm.Three computer operators from the Corporation were appointed at the backend for tracking the complaints and monitor the resolution.

• **PROCESS**

Core Committee: In order to work out the details of the initiative a core committee was formed consisting of the heads of all departments, representatives of the civil society& representatives of NGOs. This committee was led by the Municipal Commissioner. Weekly meetings of all the stakeholders were held on every Saturday for five months to discuss and finalize the details of the initiative.

Content: Information pertaining to the procedure for submitting an application for a service or a certificate, responsibility of grievance redressal and services and amenities provided by a department were included. A total of 774 Frequently Asked Questions (FAQs) were finalized for 45departments (Annexure I).Taking into account the needs of cosmopolitan population of the rapidly growing city, SARATHI was launched in Marathi and English versions and it is planned to start the Hindi version too.

Tools : In order to address the needs of different groups of citizens a multi pronged approach of delivery viz. through a Book, Website, Mobile application, e – Book, pdf Book and Helpline (Call Center) was designed **(Annexure II).**

A total of 3000 books in Marathi & 1000 books in English titled SARATHI were published. A department-wise list of all FAQs and answers has been displayed on the website of Pimpri Chinchwad Municipal Corporation i.e. www.pcmcindia.gov. in. A special in house website www.pcmchelpline. inwas developed exclusively for SARATHI to avoid congestion problems on main website. Afull-fledged Call Center (Phone no. 8888006666) has been opened to function as a helpline from 7 am to 10 pm. The free, downloadable tools of mobile app, e-book &pdf book have helped in reaching the young generatio

Dissemination: The initiative was widely publicized through local print media, advertisement hoardings, bulk sms (short message service) and display boards at municipal offices

Facility for lodging complaints and grievance redressal : As the platform of call center is an interactive one, it was decided to use this channel to register grievances of citizens and resolve them in a time bound manner. The SARATHI system has been integrated with the existing grievance redressal system. As soon as a complaint is registered at the call center, it is marked to the respective officer of the concerned department and a token number is automatically generated which is sent to the citizen via a SMS. Using this token number the citizen can track the process of resolution of the complaint

Monitoring and Supervision : A special cell consisting of the Assistant Commissioner (General Administration), Computer Officer and Wireless Officer has been formed to monitor and supervise the functioning of the helpline

- **RESULTS ACHIEVED**

A total of 1,40,365 citizens have accessed information through the SARATHI initiative in 165 days period from the launch on 15th August 2013. On an average 679 citizens are being benefitted from SARATHI every day. Of these, an average of 355 citizens are drawing the information from website, an average of 160 citizens are getting the information from the call center while the remaining 164 citizens are using the mode of book, mobile app, pdf book & e book. **(Annexure III)**

Of the total 69,366 calls received, a total of 47,346 (54%) calls were for seeking information, while a total of 22020 (46%) calls were for grievance redressal. Of these, a total of 21455(96%) complaints have been successfully resolved by the municipal administration.

The helpline is receiving complaints related to water supply, drainage, waste disposal, pot holes on the road, street lights, encroachment as well as issues related to garden, traffic, parking facility, veterinary department etc. **(Annexure IV).**

Along with the registration of complaints its redressal too has been streamlined. A color coding system has been developed for existing grievance redressal system which helps to monitor the pendency at each level. In this, the complaints are monitored; colour coded and assigned negative points depending on the duration of pendency viz. pendency of more than 30 days (red code, 10 negative points); beyond 21 days (yellow code, 5 negative points) and pendency beyond 14 days (green code, 2 negative points). In the weekly meeting the total negative points earned

by each department are calculated and action is taken in the form of a memo for more than 50 points, show cause notice for more than 75 points and a departmental enquiry for more than 100 points

- **SUSTAINABILITY**

With expertise in e governance, vast domain experience and adequate funds, the Municipal Corporation could independently design and implement the intervention successfully without any outsourcing. The internal technical expertise and capacity of the organization was utilized to design and implement the initiative. As a result, the corporation staff is more confident of running it independently and overcoming the problems confidently.

The weekly meetings of Core Committee continue to be held on every Saturday. In these meetings, the feedback received is analyzed and initiatives are taken to strengthen SARATHI. This has resulted in launch of second phase and English version of SARATHI

Financial : The website, pdf book, e – book, mobile app and book do not involve any recurring cost. The recurring expenditure is only Rs. 1,40,000 and is mainly for the Call Center.

Social and Economic: As the system has proved to be of equal use to all members of the society, SARATHI is reducing the disparity in access to information and grievance redressal resulting from differences in class, caste, age, sex, culture etc. People with a busy schedule, women, handicapped individuals and elderly citizens find this system very useful to access information and register their grievances.

Cultural : SARATHI has reached out to all sections of the society as it has been launched in two languages using six different modalities. The

modes of call center and book have helped ensure that common man who is not techno savvy has simple ways of access to SARATHI.

Environmental : People do not have to travel to offices to seek information or for redressal of minor grievances thereby reducing not only the travel costs but also problems associated with city traffic.

LESSONS LEARNT

Unmet demand : The response SARATHI is getting from the citizens indicates the huge amount of unmet demand for information in the society. For the community, this citizen friendly, need based approach using an interactive platform for grievance redressal ensures easy access to uniform standard information without any discrimination.

Multiple channels of communication : The multi-pronged approach is important as it caters to the needs of different sections of the society. The website, pdf book and e-book would be of much use to the educated and computer savvy generation while the call center is intended to help the people without access or skills required to use computers. The young population with the smart phones and i-pads in their hands can access SARATHI using the specially developed and freely downloadable mobile application and e - book. In addition, if any problem arises in any of the tools, the other alternatives would act as a backup.

Team Work : **One of the most important learning of the initiative is to have all the department officials i.e. right from head of the department to the field level officers on board and at same level. Streamlined backend process for redressal of complaints is an essential factor which has determined the success of the initiative. For the administration, SARATHI has helped check corruption, ensure accountability, transparency and enhance efficiency**

Ensure confidentiality : It is being observed that now citizens complain without any fear when they call on the helpline. Considering the fact that citizens would lodge a variety of complaints, care is taken to ensure the confidentiality regarding the caller details.

Updating the information : The information provided through the website, call center, mobile app, pdf book and e-book can be updated easily. The analysis of the calls received at the call center is helping the administration to update the FAQs

TRANSFERABILITY

At national level a replication of this initiative is possible because all Municipal Corporations, by and large, have similar authority as well as roles and responsibilities. The teams of officers from Pune Municipal Corporation and Kirkee Cantonment Board have already paid a visit to study the system. The Pune Municipal Corporation has decided to adopt the same.

SARATHI was presented at the Conference on Innovations in Urban Governance held at New Delhi on 26th& 27th August 2013, jointly organized by National Innovation Council and Ministry of Urban Development, Govt of India. The session on Service Delivery, during which SARATHI was presented, was chaired by Mr. Sam Pitroda, Chairman, National Innovation Council. He recommended that all the Municipal Corporations in the country should adopt SARATHI. **(Annexure VI)**

SARATHI was also selected as one of the nine best practices under Right to Information Act, by Dept of Personnel and Training, Govt of India during the national workshop at New Delhi on 9th January 2014

Curbing Unsolicited Commercial Communication in India

Dr. Shefali S. Dash, Mr. Inder Pal Singh Sethi,   Mr. Vivek Gupta, Mrs. Ramya Rajamanickam

National Informatics Centre, A-Block, CGO Complex, Lodhi Road, New Delhi – 110 003

Phone : 011 – 24305757, 24305724, 24305813, 24305932

Email : dash@nic.in, sethi@nic.in, vivek.gupta@nic.in, ramya.rajamanickam@nic.in

Abstract:

Telemarketing calls are a major cause of worry not only for people in India, but across the globe. Common man's life was difficult due to Unsolicited Commercial Communications (UCC) and absence of any protection to the consumer, when Telecom Regulatory Authority of India (TRAI) stepped in. As a change agent to curb the UCC, National Do Not Call (NDNC) registry was set up in 2007. To make this registry more effective and give consumers choices to partially or fully block UCC, new regulation "Telecom Commercial Communications Customer Preference Regulations, 2010" was introduced. Based on this new regulation, Na-tional Consumer Call Preference Registry (NCCPR) was designed, developed and implemented.

NCCPR maintains subscriber call preference database, blacklisted registered/unregistered Tele Marketers, UCC complaint details and action taken on them. It facilitates the Tele Marketers (TMs) to register them-selves, their telecom resources online and access the subscriber preference database for making permissible commercial communications. UCC complaints registered are monitored by TRAI for taking penal action as per provision of TRAI Act. This initiative is one of its kind in the country. Only very few countries in the world have implemented solutions to curb UCC.

Keywords: Telecom Regulatory Authority of India (TRAI), Unsolicited Commercial Communications (UCC), Access Provider (AP), Tele Marketer (TM)

1. Introduction

Mobile phones were a boon which came very late to In-dia, but the spam calls and messages came pretty quick. Not a day would pass without getting a message/call selling a credit card, insurance policy or a bank loan. The India is second largest telecom market in the world. The objective of National Do Not Call Registry (NDNC) and National Consumer Call Preference Registry (NCCPR) is to curb Unsolicited Commercial Communications (UCC). UCC has been defined as "any message, through voice or SMS, using telecommunications services, which is transmitted for the purpose of informing about, or soliciting or promoting any commercial product or service, which a subscriber opts not to receive, but does not include any transactional message; or any messages transmitted on the directions of central Government or State Government or agencies authorized by it". Before the existence of NDNC/NCCPR, the Telemar-keting calls were uncontrollable and the Access Providers (AP) had to handle such complaints manually. It became difficult to monitor such complaints and action without a system.

To holistically curb this growing menace and effectively regulate UCC, Telecom Regulatory Authority of India (TRAI) came up with National Do Not Call Registry (NDNC) in 2007. NDNC was designed to allow no calls/SMS to registered subscribers therefore, providing them with some relief from UCC. However, this regulation had some shortcomings like no mechanism for complaints handling, compliance monitoring, option to partially choos-ing some categories of commercial communication etc.

After having consultations with various stakeholders and holding open house discussion, TRAI introduced the new regulation named "The

Telecom Commercial Communica-tions Customer Preference Regulations, 2010" on 1st De-cember 2010. To implement the provisions of the regula-tion, NCCPR has been set up by National Informatics Cen-tre for TRAI at as change agent. The new NCCPR facilitate subscribers to opt for registration in either fully blocked or partially blocked category to enable him getting calls/SMS for his area of interest like banking, tourism, real estate, education etc. It was a challenge designing such a system

This initiative of NCCPR is different as it is one of its kind in the country. There is no similar project which con-trols and monitors UCC as NCCP does. Not only in India but in the world few countries like USA, Australia, Canada, United Kingdom, New Zealand and Pakistan have imple-mented solutions to curb UCC to some extent.

2. Challenges Faced

- Growing number of unsolicited calls / SMS to the tele-com subscribers

- To curb source of disturbance and inconvenience for telecom subscribers thereby respect and ensure the pri-vacy of people and to avoid undue harassment of re-ceiving unwanted calls.

- To bring all the stakeholders like DoT, TRAI, Banks, Access Providers, Telemarketers etc. together on one ICT platform to define the workflows and processes to implement the TRAI regulation to restrict UCC to af-fected telecom subscribers, through NCCPR.

- It was a challenge choosing a technology for the NCCPR, which is reliable, robust and scalable, and takes care of tremendous growth in the telecom sector with more than 957 million customers and also provid-ing voluminous NCCPR subscriber database to every Access Provider and Telemarketers for downloading to enable them to do local scrubbing before calling.

- Providing ease to citizens to register their number in NCCPR through a pan India common number irrespective of their telecom service provider was a challenge.

- The earlier implemented National Do Not Call Registry (NDNC) by TRAI was designed to allow no calls/SMS to registered subscribers, due to which lesser number of people opted for Registration. Tracking of complaints, imposition of penalty, ensuring depositing of funds with TRAI and reconciliation with banks was a chal-lenge.

- Resolve the disputes between OSP (Originating Service Providers) and TSP (Terminating Service Providers) for taking action and penalizing against subscribers on the basis of complaints received.

3. Features

3.1 Telecom Customers Registration

A customer (landline and mobile) who do not want to re-ceive commercial communications can dial or SMS to 1909 (toll free) and register in either of the two categories:

Fully Blocked Category : Stoppage of all commercial calls/SMS. For registering option using SMS, write **"START 0"** and send it to 1909

Partially Blocked Category: Calls are fully blocked, how-ever Subscribers can choose the type of SMS with one or multiple options from the list of seven categories they want from the Telemarketers' by setting the preferences. For 'partially blocked category', send SMS 'START' with one or multiple options from the list of seven categories. At present there are 7 preferences to choose from:

1. Banking/ Insurance/ Financial Products/ Credit Cards,

2. Real Estate,

3. Education,

4. Health,

5. Consumer goods and automobiles,

6. Communication/Broadcasting/Entertainment/IT,

7. Tourism.

For example: To receive messages relating to only Health products, send SMS **"START 4"** to 1909. Similarly, for receiving messages relating to Real Estate and Education, send SMS **"START 2,3"** to 1909.

Customer's request for registration on the NCCPR is af-fected within 7 days from the date of registration with the AP.
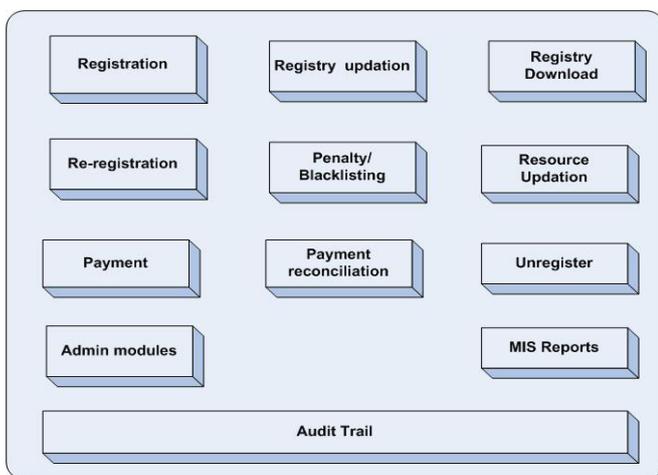

Fig. 1. A brief view of the functional components of NCCPR

3.1.1. Registration of UCC complaints

Customer should register the UCC complaints within 3 days of receiving the call with their respective AP either by Dialling the toll free number 1909 or Sending an SMS to 1909 as **"COMP TEL NO XXXXXXXXXX, dd/mm/yy,** Time hh:mm" Where XXXXXXXXXX is the telephone number or header of the UCC. Unique complaint number will be sent by the AP through SMS to the customer and will inform the action taken to the customer within 7 days. The status of such complaints can be viewed by the customer on the portal

3.2 Telemarketer(TM) Registration and Responsibility

According to the new regulation every any person or legal entity engaging in the activity of Telemarketing is required to register with TRAI and obtain a registration number for carrying out telemarketing activities. Single registration is required for all the locations pertaining to a TM. The Registration Fee - Rs 5000/- can be paid online (Netbanking/Credit/ Debit cards) and offline mode (DD/Cash). The validity of the registration shall be 5 years unless revoked earlier. The validity of the registration shall be 5 years unless revoked earlier.

3.2.1. TM Agreement with Access Provider

A separate number series 140 is allocated by Access Pro-viders (AP) to the TM through which all the marketing activity can be carried out.TM shall enter into a standard agreement with the AP before applying for any telecom resources. The TM shall not send any commercial commu-nications to any Customer whose telephone number appears on the NCCPR, except for sending SMS in respect of categories of preference opted by the customer .

3.2.2. Scrubbing and updating Customer Preference Registry

The TM should ensure to update their Customer Prefe-rence data regularly. They should scrub their calling list against the Customer Preference data before sending any SMS or telemarketing call. No UCC to be made between 2100 Hrs to 0900 hrs irrespective of customer registration with NCCPR. The TMs can deregister themselves if they have decided to not to do any telemarketing business

3.2.3. UCC Violation

Calls/SMS made by the TMs, not complying with the Provisions of Regulations are termed as violations. TM vi-olating the regulations are penalized between Rs 25000/- for first violation to Rs. 250000/- for sixth violation fol-lowed by blacklisting and debarring the TM for 2 years.

3.3 Role of Access Providers (AP)

AP shall provide toll free short code 1909 for Registration of number by customer, De-registration of number, Change of preference, Registration of complaints. AP shall ensure that no telecom resource is provided unless TM is registered with TRAI, signed the standard agreement with AP & Not blacklisted. Resource allocation to TM is made under 140 series.

3.3.1. Maintenance of Provider Customer Preference Register

The AP should maintain and upload Provider Customer Preference Register (PCPR) to NCCPR .They should ensure to keep PCPR updated by downloading incremental data from NCPR every Tuesday and Friday.

3.3.2. Complaint Handling

3.3.2.1. Handling complaints by registered TMs

Provision has been made for Complaint monitoring and blacklisting of TMs. The APs have to upload the complaints received online so that the number of violations can be monitored the TMs blacklisted accordingly. The defaulter TMs will face disconnection of telecom service and blacklisting in case of continuous sending of UCC even after being penalized till six times.

3.3.2.2. Handling UCC by unregistered TMs and by International numbers

Various types of complaint handling and blacklisting is being taken place in the portal. TRAI recently released 13th and 14th amendment which allows the blacklisting of unre-gistered entities who involve themselves in telemarketing activity. Also makes sure to blacklist the phone numbers who involve such entity for their telemarketing activity. International UCCs are also handled and blacklisting report uploaded in the portal for further monitoring.

3.3   NCCPR Data Synchronization

This module provides all functionality required to update NCCP registry. The system synchronizes NCCP registry on every Tuesday and Friday between 12.00 PM and 6.00 AM when the registry will not be available to the APs to upload new numbers. The synchronized data will be available for download from 7:00 AM of Tuesday till 11:59 PM of next Thursday and from 7:00AM of Friday till 11:59 PM of next Monday.

System generates CSV files containing NCCP full registry for respective service provider, NCCP incremental data and full data for all Access providers and Telemarketers. The APs and TMs should download this data so that the calling list could be scrubbed by them before making any call.

3.5 Customer Queries and MIS Reports

Telecom Customer can view TRAI Regulations, Regis-tration status of a telephone number, List of Registered TMs, Status of Complaint registered and Guidelines for Customers, Telemarketers, and Access Providers.

A number of MIS reports are available on the portal for TRAI to monitor the functioning of all the TMs and APs.

Fig. 2. Customer Registration Status check available for customer.

3.6   Payment Procedure

Telemarketers can pay the required registration fee online or offline. For making offline payment, portal generates bank challan using which TM deposits fee in the designated branch of bank. TM can also make payment of fee online. After making payments by TM, Banker uploads the file containing the details of the successful transactions (on-line/offline) in the predefined format in the portal to initiate the reconciliation process. NCCPR reconciles the payments made by the TMs for registration and APs for penalty de-duction. Bank are intimated about un-reconciled transac-tions.

4. Technical Details

Architecture design and software used in design and de-velopment of NCCPR are as below:

4.1 Technical Architecture

NCCP uses MVC (Model View Controller) architecture. Usage of this pattern isolates business logic from user inter-face considerations, resulting in an application where it is easier to modify either the visual appearance of the application or the underlying business rules without affecting the other components. In MVC, the model represents the information (the data) of the application; the view corresponds to elements of the user interface such as text, checkbox items, and so forth; and the controller manages the communication of data and the business rules used to manipulate the data to and from the model.
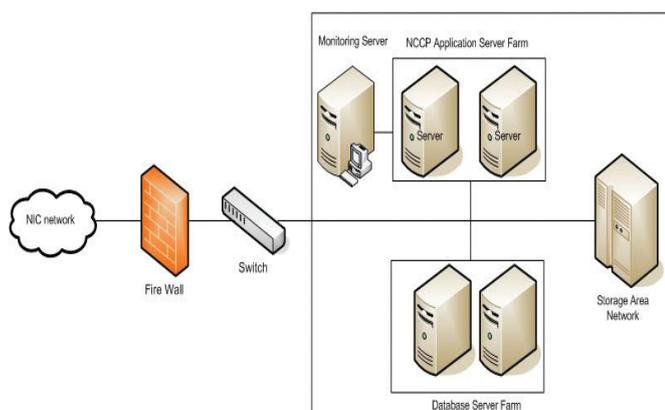

Fig. 3. Physical Environment of NCCPR

4.2 Technologies Used in each Layer

Presentation Layer: This is the layer where the end user interacts with the system. Presentation layer is developed using JSPs. Custom Tag Libraries and Struts 1.2 frame-work's Standard Tag libraries will be used in developing the JSPs.

Controller : The Controller receives the request from the browser, and makes the decision where to send the request. With Struts, the Controller is a command design pattern implemented as a servlet. The struts.xml file configures the Controller. It is a part Struts framework. Based on the re-quest, it invokes the corresponding Action Class.
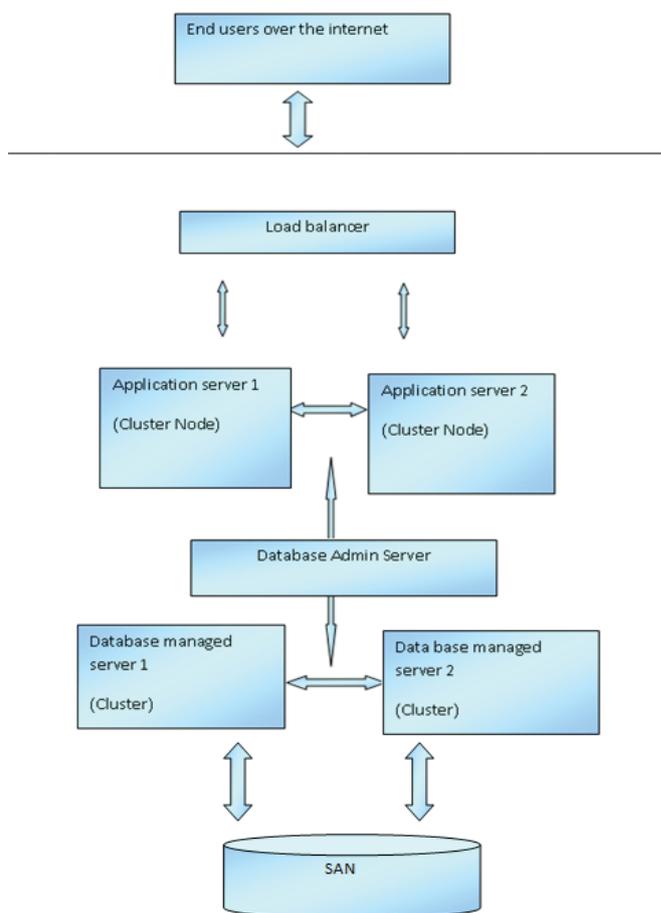

Fig. 2. Architectural representation of NCCPR

Business Logic: A Business layer, where the 'Value add' is in terms of business processing and validation. This layer is the core of the application. Business Delegate is standard java class, which decides

whether to invoke the session bean or DAO (Data Access Object). Service Locator is used to look up the Session Bean. Business Logic is implemented in Session Bean/DAO and container's Transaction Manager will be used for database transactions - persistence. There is a separate Session Bean for each func-tional area.

Data Persistence/Access: DAO (Data Access Object) would is used in this layer. This layer is important for the performance of the application to avoid the data faults and delay in the processing time of any query.

Application server: Application server is a JEE com-ponent providing services for application execution. This includes distributed transaction management, Messaging Service, Authentication and Authorization, thread manage-ment. Request from the end user is routed to application servers, which are in cluster mode thorough the load ba-lancer. Application servers in turn route the request to data-base servers which are in cluster. Admin server will manage the replication of the data between two data base servers. Clustering at application server level and database server level takes care of requirement of high availability.

4.3   Software Specification

More than 220 million customers are registered in this portal and to provide seamless support to their complaints, Oracle database in Linux environment was chosen. The specifications of all softwares used are given below:

Table 1. Specification of all software's used

Component	Software Used
Operating System	Red Hat Enterprise Linux 6
Load balancer	Apache http server

Application Server	JEAP (JBOSS Enterprise Application Platform) are an open source open standards application server. JEAP supports a wide range of Java EE and Web Services standards.
Application to be developed and deployed on Struts framework 1.1 and Eclipse as an IDE.	Struts are an open source open standards framework, in vogue today. It enhances the quality of software development by employing the Model View Controller pattern of web development. Eclipse is an open source Integrated Development Environment supported by the famous Apache foundation.
Reporting	BIRT - An open source technology platform used to create data visualizations and reports that can be embedded into rich client and web applications
Database server	Oracle 11g over RAC has been used. It is the most suitable RDBMS by considering security of data and capacity to store the large volume of data which is expected during the project period.

5. Benefits

Regulation : "The Telecom Commercial Communications Customer Preference Regulations, 2010" on 1st December 2010 was formed to curb UCC.

UCC : After the implementation of NCCP, the registered customers had a huge relief and are free from such UCC menace.

Registration for TM : The Telemarketers were made to register in NCCP if they had to do any telemarketing activi-ties.

Weekly updation of Database : NCCP provides the regis-tered customer data to Service Providers and Telemarketers so that the telemarketers scrub their data with the provided data and then only proceeds with any telemarketing calls.

Identification of Telemarketing calls made easy : To identify the Telemarketing calls and SMS the Service Pro-viders gives the telemarketers 140 series for voice calls and headers for sending SMS.

Complaint module : Complaint should be done within 3 days of receiving UCC and action taken and notified to the customer in 7 days since receiving the complaint.

Status of complaints : NCCP Portal has the feature to dis-play action taken against each such complaint when the user enters the complaint number.

Penalty Deduction : If a violation was caused, huge sum is deducted as penalty for each violation up to 6 violations.

Blacklisting : On 6th violation the Telemarketer number is blacklisted and resources disconnected.

Non-registered Telemarketer : A warning is sent for 1st violation of a non-registered telemarketer. And at second violation the number is disconnected.

International numbers making UCC : International num-bers identified and corresponding Indian unregistered TM faces disconnection.

Preferences/Category : A subscriber can choose the cate-gory from which the messages should be received and the same can be changed within 7 days.

Registered Telemarketers : Details of registered Telemar-keters can be viewed in the portal by all the users.

Customer Registration Status : The customer can view whether their number is registered or not and the prefe-rences opted by them through the NCCP portal.

Monitoring : NCCP portal facilitates TRAI to monitor all the above.

6 NCCPR Statistics

Following table presents statistical data showing relev-ance of NCCPR:

Table 2. Statistical Relevance of NCCPR

Number of	Number
Access Provider	19
Registered Telemarketers	8,225
Locations of TMs all over India	16,627
Allocated Resources	13,81,281
Customers registered	22,25,34,248
Customers in Fully blocked category	20,65,88,897
Customers in Partially blocked category	1,59,45,351
UCC complaints registered	10,06,956
Action taken cases for complaints	9,95,328
Penalty deducted from TMS	2,08,10,000
Telemarketers blacklisted	19

7 Key Learnings

From the implementation of NCCPR, the basic under-standings are:

- The customers do not wish to receive UCC unless they need it from a specific category.

- This is seen by the growth of registered customers in the registry on each synchronization of the database.

- The Telemarketers adhere to TRAI regulations and make sure they register themselves in the portal.

- The Service Providers provide the Telemarketers with particular series of numbers for telemarketing so that, this number is widely identified by the mobile or tele-phone users.

- Strict penalty and blacklisting has made sure UCC calls and SMS to decrease.

- The customers are also keen to know the status of their complaint regarding any UCC, by checking the same in the portal. Thus adding to the betterment of NCCPR.

- The proof of growing size of customers registered with NCCPR shows its popularity. The UCC has dropped down to a great extent after implementing the com-plaint module and charging penalty from the Telemar-keters. On the 6th violation the telemarketer number is disconnected and resources are removed.

- This is monitored by TRAI and users can view the status of the number, status of the complaint registered visibly in the portal.

8 Abbreviations & Acronyms:

AP : Access Provider

BIRT : An open source technology platform used to create data visualizations and reports that can be embedded into rich client and web applications

CSV : *Comma Separated Value*

DAO : *Data Access Object*

DoT : *Department of Telecom*

ICT : *Information, Communication & Technology*

JSP : *Java Server Pages*

MIS : *Management Information System*

MVC : *Model View Controller*

NCCPR : *National Consumer Call Preference Registry*

NDNC : *National Do Not Call Registry*

NIC : *National Informatics Centre*

OSP : *Originating Service Provider*

SMS : *Short Message Service*

TM : *Tele Marketer*

TRAI : *Telecom Regulatory Authority of India*

TSP : *Terminating Service Provider*

UCC : *Unsolicited Commercial Call*

Good Governance through
Social Media and Citizen Engagement

Parikipandla Narahar
IAS , Collector
New Collectorate , Sirol Road
Gwalior 474001
Ph 0751 2446200
Email dmgwalior@nic.in
p.narahariias@gmail.com

Sanjay Kr Pandey
DIO , NIC
New Collectorate , Sirol Road
Gwalior 474001
Ph 0751 2331817
Email pandey.sk@nic.in
mpgwa@nic.in

Abstarct

Democracy means involvement and participation of citizens in various decision making processes and policies . Ideal democratic government involves their citizens voice in various policy framing . Various elected bodies , legislatures , Council of Minister etc. are voices of the citizens .

Earlier, participation of common man in the policy making by the government was quite less as it was a unidirectional process in which the government worked for the welfare of its people without getting the actual feedbacks and suggestions of the masses.

Citizens and governments are both the stack holder in governance . Good governance is not created solely by the government , citizens participation is also essential for good governance .

Internet has changed the entire national and international scenario. With the introduction of internet by the government in its department vast positive changes have been observed. The government is nowadays using the various facilities offered by internet like social sites, social media in its day to day functioning. Some of them are mentioned as under-

i. Websites of various government departments provide all the required information directly to the people

ii. Sharing of information is also much cheap and easier after the invention of social media platforms, mobile technology etc.

iii. Awareness among common man has increased multi fold .the common man is now more concerned , aware and participates actively in current political and national issues.

iv. Social media is an effective medium for the government to communicate directly to its people.

Facebook, Twitter, Instagram, blogs and YouTube, whatsapp are platforms in which peoples are sharing their views in social media. These are part of the social media that are widely used today. During past few years social media is being used as popular medium to communicate . share information . Social media has great capability of two way instant communication . In past decade Television, News Papers , Radio were primarily means of news broadcasting to public . Government was effectively using these means of communication to educate and address citizens about their policies . With the invent of social media . News updates are no longer seen, heard and read on television, radio and newspaper alone. Social media is also playing an important part in news sharing . Interactive property of social media can be effectively used by government for policy sharing , good governance , accountability and grievances redressal.

Index Term

Methodology

This paper is based on social media initiative of District Collector , Gwalior . District administration is successfully using social media (facebook / twitter) for grievance redressal , Getting citizens opinion on policy formation on local issues   , Creating awareness about government policies and decision etc . Address of Collector Gwalior's facebook account is   https://www.facebook.com/narahari.ias

Social Media and Government

Sharing of information is much easier and inexpensive after the invention of social media platforms , mobile technology etc. Peoples are more aware and participate   in current political and national issues . Social media is an effective medium for government to communicate with their citizens . Using social media governments can

1. Establish two way communication with their citizens about formation of policies

2. Communicate its welfare schemes to select target group.

3. Establish a communication with citizens to bring transparency and accountability in Government functioning .

4. Some times Social media (WhatsApp) are also helping law enforcement agencies in speedy solving of crime , encroachement , traffic law violation etc.

5. Appeal to masses to join a movement for a cause

In past few years we have seen , how social media and participation of netizens deeply influence governance . Some of the examples of influence of social media in recent years are

1. *Arab Spring revolutions* in 2011 where citizen uses social media platforms like Facebook , twitter etc. to call and arrange protest and people shared their common issues through these social media plaforms .

2. The 2011 Indian **anti-corruption movement of activist Sh Anna Hazare** was also an example , how use of social media influenced public at large .

Now question arise whether we turn power of social media to provide good governance to citizens or not? Answer lies how effectively and innovatively elected governance use social media platforms to deliver message of good governance to their citizens.

The United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) provides that good governance has eight (8) major characteristics, which are the following: [1] **(1) it is participatory, (2) consensus oriented, (3) accountable, (4) transparent, (5) responsive, (6) effective and efficient, (7) equitable and inclusive, and (8) follows the rule of law.** It assures that corruption is minimized, the views of minorities are taken into account and that the voices of the most vulnerable in society are heard in decision-making. It is also responsive to the present and future needs of society.

Good governance is an idealistic situation for any country

The word governance meaning establishment of policies and rules by governing bodies or group of people . Citizens are supposed to follow rules and policies decided by government . In democratic system a group of elected people decide what is best for the society or citizens   and citizens are

bound to follow government directives . but in case of good and transparent governance citizens are also involved in decision making process . Citizens can express their views , desires and concern and government also gives weightage to its peoples opinion . So good and transparent governance its participatory in nature . In the age of social media participation of citizens in policy formation is rather easy . People can express their views and share their ideas in social media platform . Using social media platforms participatory nature of good governance can be effectively achieved . However social media in governance is relatively a new buzz work , there are some challenges in effective using of social media in the field of governance .

Challenges and Remedies

While democratic governments may use social media platform as an opportunity of two way communication with their citizens , but this model has also certain inherent problems . Some of these are -

Infrastructure Problem

Most of the users in social media platform are from urban areas . Relatively large user-base of urban area denotes that rural India still lacks good connectivity and internet infrastructure . So it may be sometimes assumed that social media is the face of urban India . In a recent survey of social media and internet users shows Social media adoption around 84 % .Here, the rural India , which still forms the major chunk of the democracy cannot be ignored.

Disparity

Another good example of disparity in social media is high presence of resourceful , IT literate group which dominates the social media . Similarly young population has higher presence in various social media platforms . This implies that a certain proportion of population is still not involved in such government interactive activities.

In a recent survey of facebook users revealed that highest number of users in facebook are in age bracket of 21-40 years while lowest number of active users are in 41 years and above .[2] Chart shows active users in various age brackets .
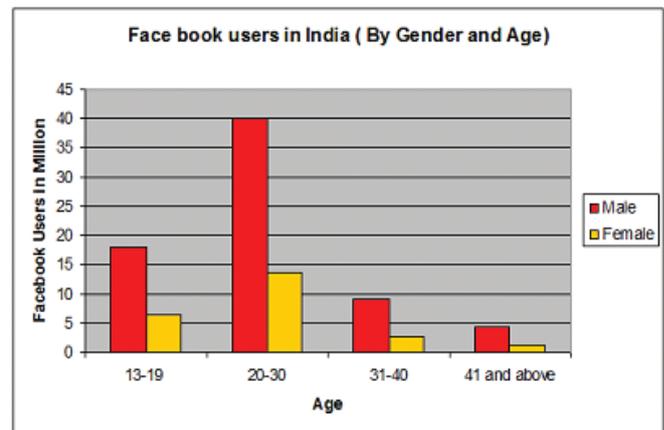

Figure 1 Facebook users in India

Remedies

I. However India is a developing nation. Infrastructure project including infrastructure development in the field of communication are in pipeline . NOFN (National Optic Fibre network) is a priority project of Government of India . NOFN aims to provide high speed connectivity to rural India . So in near future use of social media in rural India will also increase as rural population will also enjoys high speed connectivity .

II. Another important fact here that India is a young nation . Around 65 % population of the country is in the age group of 16 to 44 years . This population is most active group in social networking and social media sites . Government can easily communicates with this group in policy making , crowd sourcing and policy framing issues .

Still In a democratic system there is always a conflict between various group societies . So in present scenario social media is voice of more powerful , knowledgeable , resourceful group of peoples . So sometimes it does not truly represent voice of marginal , poor and side-lined group of society .

Small Presence of Government Departments in Social Media

Another challenge is small presence of Government departments in social media platforms .Only handful government departments are using social media platforms . Effective using of social media platform to interact with citizens is a challenging task for Government Machinery . In opposite to traditional website presence social media presence require two way social communication skills . Most of the Government Departments fails in this front , because this skill requires creation of interest (about content) among users , sensible dialogue with citizens etc .

Remedies

However , almost all the government departments is having web presence in the form of their website . So initially there should be provision of content sharing (in social media) in their official website . Content Sharing technology is now available for all the web platforms. Visitors can share the content of the website in social media platforms . For example job openings , new publications reports etc   available in the websites can be easily shared in social media platform .
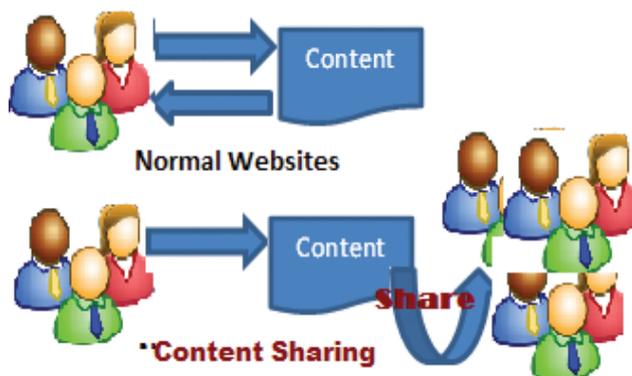
Content sharing in social media

Case Study -1

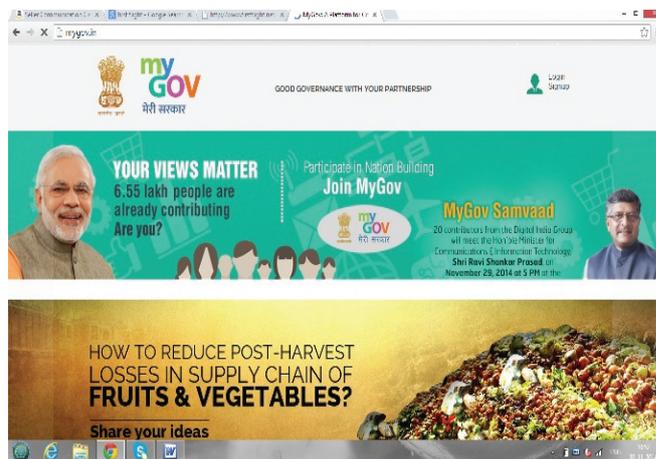## Crowd sourcing by Hon'ble Prime Minister of India (https://mygov.nic.in)

Figure 3 Home page of https mygov.nic.in

An excellent example of good governance through participation of netizen is crowd sourcing . Crowd sourcing is the process of obtaining needed services, ideas, or content by soliciting contributions from a large group of people, and especially from an online community, rather than from traditional employees or suppliers.

Crowd sourcing is a new phenomenon by virtue of which any government can ensure citizen's participation in democratic government . In crowd sourcing citizens can give their feedback (On Govt Policies) ,participate in open forums , give their suggestion on policy formation etc . Recently launched portal by Hon'ble Prime Minister of India , mygov (Http://mpgov.nic.in) is an excellent example of crowd sourcing . As per the data available in informatics mygov statistics as on 17.09.2014 is [3]

Total Number of Registered User	**324821**
Groups	**10**
Forums	**5**
Media Content Uploads	**32984**

This initiative of Hon'ble prime minister is highly popular among netizen . This type of initiative imparts the feeling to citizens that they are also part of Governance i.e. feeling of participatory governance . Huge participation of citizens in Logo competition of National Digital Literacy Mission ,

Prime minister Jan Dhan Yojna , Clean Ganga drive are example of crowd sourcing using this portal.

Case Study -2

Use of Face book by Collector in Good Governance

Resolving common grievances of citizens within time limit and transparent is one of the important task of good governance . In fact if grievances received by citizens and common people are resolved within time limit and transparent manner then most of the law and order related problems will be automatically solved .

It is a general assumption in public that Complaint , Demand made at higher levels usually takes much time to resolve . For example suppose a person wants to file a complaint about the illegal construction or encroachment he faces two challenges before his / her grievances resolved

a. Highly influential persons involved in such type of activities may harm him directly or by creating obstacles

b. Delayed justice , enquiry also effects person's willingness as a whistle blower ,

To resolve grievances received from citizens District administration Gwalior is using modern technologies like online Grievances acceptance using social media tools (Face book , Twitter) ,

Jan Sunwai , Online Time limit monitoring system etc.

District administration resolves these pitfalls in grievances monitoring systems using three online tools

Acceptance of Grievances , Complaint through face book , twitter

This is a novel concept introduced by district administration in redress of complaints . As social media is a new tool which creates mass awareness , information sharing and real time sharing of views between users , it can be utilized for welfare , social awareness and as a good weapon against red tapism in grievances and complaint redressing . Moreover, today most of the youth are linked with some sort of social media sites . These young citizens are most concerned about corruption , red Tapism . In recent years we have seen how social media can create mass awareness about burning issues . District administration Gwalior, is now using this innovative approach for grievance redressing , monitoring complaints and public awareness .

In this system any Face book registered user can submit information , complaint and burning issue to Collector . One good thing about receiving complaint from facebook is that user need not to share his true identity and his / her complaint is directly attended by Collector himself . Once complaint / demand accepted by collector Gwalior . A time limit has been assigned to resolve the issues and compliant has been forwarded to concerned department / OIC / Section . Now online time limit monitoring system takes care of disposal of demand / grievance . Time limit monitoring system is another useful component which assists in fast disposal of complaint .

Benefits of the new approach

1. Real time receipts of complaint / demands through social media sites

2. Large number of students and young generation is associated with social media site . So mass appeal and user base is available for feedback and opinion on development issues related at district level .

3. This is especially helpful if someone wants to

Figure 2 Face book account of Collector Gwalior

Jan Sunwai

Although modern technology , social media site etc. may be treated as effective tools in resolving demands of the citizens . Still traditional system of resolving demands cannot be ignored in good administration and governance . District administration arranged Jansunwai meeting (Grievances redressal system for Citizens) on every Tuesday . In Jansunwai citizens submits their Grievances / Complaint , demands to District Administration . Officials from important departments also available during JANSUNWAI Administration tries to resolve the grievances at Jansunwai venue itself . Time limits has been framed to resolved the grievances in time bound and transparent manner . For this computerized system is being used by district administration . This is how the system of Jansunwai works to resolve the demands in more transparent manner

report some incident as a whistle blower . The users identity will be hidden in the administrative process thus respecting his privacy. Now he can submit the complaint in social media site . His true id is only known to District Collector or other senior officer in administration .

4. Grievance / demand / complaint may be submitted online and their redressing and status also updated in online social media site . This saves lot of time and frequent visit to District Administration office .

So far 560 complaints have been received in resolved through his facebook account . District administration Gwalior is also using this face book account for creating awareness about Government Welfare Schemes , Government Policies etc.

- Recently during break of dengue . Collector Gwalior started an awareness drive in his facebook

- This type of proactive presence creates awareness among citizens . It also brings administration closer to citizens .

- Ever Tuesday District administration organize JANSUNWAI at district administrations office

- District Collector and officer from the other departments are available at Jansunwai

- Applicant submits his / her application to District Collector ,

- Online computerized JANSUNWAI system is operational at District Collectorate .

- Registration of grievance in Jansunwai computerized system . A computerized acknowledgement and time limit also given to each applicant .

- Once the grievance is properly registered , follow up has been taken during weekly time limit monitoring meeting headed by district Collector . All the departmental head are also available in the meeting .

- Since entire system is computerized and online, Time limit over cases , defaulters and non performing official can be easily identified in the system .

- Applicant can view status of application online

- SMS facility also available so that applicant may be informed about status of his/her application

- Complaint received through social media can also be entertained through this system .

Time limit paper managements System

Time Limit Paper Management system is also an online system , which ensures fast and transparent disposal of Complaint , Important papers . Beside accepting the complaint , grievances from Social Media Sites , Jansunwai etc. , often Collector receives large numbers of letters , applications directly from Government . Most of the time these matters seeks urgent interventions from Collector and his subordinate offices so that issue related to successful implementation of various Government welfare schemes and administration can be resolved in a time bound manner . In traditional administration system these type matters used to delayed at very steps . For example interventions or enquiry from various departments is required for successful implementation of Govt schemes . In online time limit monitoring system District administration had made whole process online . As soon as a letter is received at Collectors office , online entry is made and unique application id has been generated for the system . Once system is diarized using online software immediately it will forwarded to concerned department or section . Each letter has a definite time limit . Once the time limit crossed letter will automatically forwarded in default list so that District Collector may further take appropriate action against defaulter officials . In this system concerned department can also submit its reply online . At any time Collector can monitor performance of various departments and employees .

Using these three IT enabled solutions district administration is resolving compliant , grievances and time limit matter more efficiently and accountable manner .

Case study -3 Crowd Funding through Facebook (eg. Peoples Road)

Another example of good governance through social media is " Peoples Road" in Meghalaya . Mr Armstrong Pame , IAS , 2005 batch constructed a Road in Meghalaya.This Road is connecting road connecting Tousem subdivision to Tamenglong and Haflong . Mr Armstrong Pame and his brother used facebook for crowd funding to construct the road . Project was widely appreciated by Netizen Community and shows power of social networking site in crowd funding . Approximately Rs 40 Lakhs was collected through crowd funding and this project is an excellent example of good governance and crowd funding through social media .

Citizencop, Indore

Another good example for stopping crime through information sharing is CITIZEN COP [4] . Citizen Cop is an APP that may be used to report any unlawful activities to Police Department . Citizen Cop immediately report any incident to central police server . Citizen Cop task in three tiers

1. Report any Incidence to police department

2. Call Police

3. Send Message to Help

However many law agencies are now also using **whatsapp, telegram** messengers for incident reporting , Citizen's help etc . In fact penetration of smart phone in society and popularity of these social networking apps opens a new horizon for government agency to communicate with peoples .

Finally, the role of social media in the welfare activities and schemes by the government is quite clear. The government can use social networking for the smooth functioning of its machinery. Government can use social media to get the citizens views in the following ways [5]

1. To assess public opinion on an upcoming policy i.e mass participation

2. To crowd sourcing and ensuring citizens participation national movements .

3. To exceed expectations by knowing public concerns proactively

4. To estimate risk situations through monitoring social media current news within the country

5. To decide to make amendments in its policy during its implementation i.e. before failure.

Social media may be used by the government authorities to create awareness in citizens in

1. To overcome politically averse situations

2. To grievances redressal and transparency .

3. To relief measures and disaster management.

4. To rectify any policy immediately to face unexpected consequences.

5. To speed up investigations and assist in proceedings. (Example citizen cop & Whatsapp use by investigating agencies)

To summarize we are confident that social media is another boon provided by the internet and its usage under no circumstances can be ignored. It has been contributing in the smooth functioning of the government machinery since a couple of years and by overcoming the social and infrastructural challenges we can multiply its benefits in the administration and government functioning.

References

[1] United Nation report on good governance (Mr. Yap Kioe Sheng) http://www.unescap.org/sites/default/files/good-governance.pdf

[2] Social Media users and usage reports in India 2014 reports . (http://trak.in/tags/business/2013/08/03/facebook-stats-indian-teenagers-on-facebook-usa-03082013/)

[3] Informatics (IT Magzine published by National Informatics Center , New Delhi) Vol 23 No. 2 Oct 2014

[4] Progressive academic publishing (http://www.idpublications.org/wp-content/uploads/2014/01/PROACTIVE-AND-REACTIVE-IMPLICATIONS-OF-SOCIAL-MEDIA-EFFECTS-ON-GOOD-GOVERNANCE-Paper.pdf) Dr Fareeha Zafar . University of Derby , UK & Mr. Madiha Naseer University of Engineering and Technology, Lahore, PAKISTANProactive and reactive implication of social media effects on good governance .

Impact of Industry Partnership in Service Delivery Channels of Land Records in Himachal Pradesh

Ajay Singh Chahal, Sandeep Sood, Lalit Kapoor

State Informatics Officer, Principal Systems Analyst, Technical Director

National Informatics Centre, Himachal Pradesh, HP Secretariat, Shimla-171002 (HP)

ajay.chahal@nic.in, sood.sandeep@nic.in, kapoor.lalit@nic.in

94182-75076, 94184-53053, 94184-75044

Abstract- Land record keeping is one of the most important Government functions which affect all property owners both in urban and rural areas. Although similar to a bank account, it is more important, as a piece of land or house is owned by almost all members of most of the families. The computerisation of land records has been in progress in the State now for many years covering registration, record of rights, maps and resurvey of land using modern tools. Earlier, the service delivery in terms of record of rights and map copies was pre-dominantly through the Government functionaries from their offices. However, now due to ICT advancement and full computerisation, the State Government has authorized Citizen Service Centre operators to issue these documents on behalf of the Government. Besides, the digitization of maps and resurvey of land has been entrusted to private sector. This paper attempts to study the impact of industry participation in service delivery and suggest a model for better serving the citizens by identifying the kind of services suitable for private delivery channels. The role of technology in the entire process has also been analysed to justify focus on process re-engineering in governance process.

Keywords-land records, digital governance, citizen service, record of rights, cadastral map, industry participation, new frontiers, delivery channel, registration, HimBhoomi

I. INTRODUCTION

The growing use of information and communication technologies (ICT) is making its presence felt in the developing nations through knowledge societies and allowing people to participate in the governance process. One of the models of digital governance, proposed earlier, was interactive service delivery model whereby the Government services were extended beyond office complexes [1].

Gyandoot project in Dhar district of Madhya Pradesh was based on this model and later the LokMitra pilot project was implemented in Hamirpur district of Himachal Pradesh (HP) in the year 2001. LokMitra Kendras (LMK) in 25 panchayats were set up in the private sector in Hamirpur as extension counters of the Government for offering various services [2]. These LMKs were set up by inviting direct applications from unemployed youth. They functioned as private entrepreneurs and provided informative and assured services like University/School Education Board result copies, bill payments, lodging of complaints etc. Most of these LMKs remained operational for 9 years till their merger with the CSC scheme in the year 2010.

In the year 2010, the name LokMitra Kendra was given to the proposed 3366 Citizen Service Centres to be set up in the State under the scheme of DeitY, GoI under PPP model. The LMK operators are now appointed by short-listing two private firms through an open tender, which act as Service Centre Agency (SCA). This was the first step in allowing industry participation in service delivery model in a big way, thereby opening up new frontiers in digital governance. The land record services are being offered through these LMK centres and its service delivery channels are the focus area for studying impact of industry participation in Government service delivery.

Figure 1: Online service delivery transaction management portal at

http://admis.hp.nic.in/himbhoomilmk

The computerisation of land records (CLR) in all States was started in the year 1988-89 and it picked up speed in the years 1992-1996. The main objective of CLR scheme was to provide the computerized copies of Records of Rights (RORs or Jamabandis), at a reasonable price to the land owners. Funds were provided to the State Governments to ensure online management of land records [3]. The other objectives included speed, accuracy and dispute resolution, empowerment of land owners, preservation of records etc. Subsequently the National Land Records Modernization Programme (NLRMP) was launched by Government of India in August 2008, with the objective to modernize management of land records, minimize scope of land/property disputes, enhance transparency in the land records maintenance system, and facilitate moving eventually towards guaranteed conclusive titles to immovable properties in the country [4]. The NLRMP focus is on integration of land records with registration, mutation, digitization of maps, integration of textual and spatial data, survey/ resurvey and capacity building. The conclusive titling with title guarantee is the ultimate goal and different State Governments are in various stages of achieving it.

II. LRC IMPLEMENTATION IN HIMACHAL PRADESH

Himachal Pradesh has 15 lakh households and 89% of its population lives in rural areas with small land holdings. The literacy rate is 83.78% which is good and implies that the land owners are quite vigilant.

The computerisation of Land Records in HP has been a massive exercise over the last 20 years. Started as true replica of age old existing record of rights, it got integrated with the registration process and thereafter, a number of process changes have been affected. During the process of computerization, the HP Revenue department has carried out many amendments to simplify and provide value additions to the RoR entries like; removing internal fractions (dar-var) while specifying shares owned by co-sharers. Computerisation has also resulted in removing the constraint of maintaining record up to last 10 generations while maintaining Shajra Nasb . The computerization of land records has resulted in providing unique identification to each owner within a village/hamlet. The land has been broadly categorized as cultivable and uncultivable and the cultivable land is further categorized as rain fed and irrigated. It is designed to extract irrigation sources information and holding size based data. Himachal Pradesh is the only state to have computerized Shajra Nasb which acts as index of owners for the RoR.

---

[1]The word Jamabandi and Record of Rights (RoR) are used interchangeably (same meaning in Himachal Pradesh).

[2] Census of India 2011

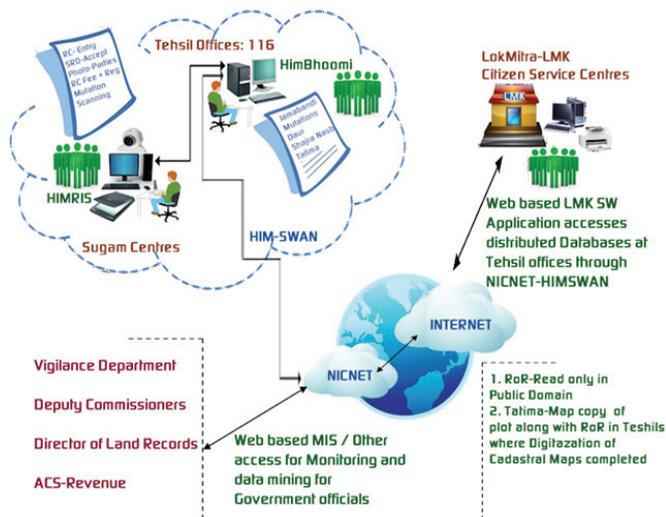[3] Shajra Nasb is the genealogy tree of a family

Figure-2: Conceptual diagram of NLRMP implementation in Himachal Pradesh [5].

After successful implementation in district Shimla where legacy data for 5 Tehsils was fed by the in house revenue officials, the job of one time legacy data digitization was outsourced to private entrepreneurs through tender process. The data fed by the outsourced agency was verified and got corrected by the concerned Patwari (village accountant) till both hardcopies, one prepared manually and the other print of electronic data, were fully matching. These were further sample checked by concerned Kanungo and Tehsildar before the records were consigned in the Revenue record room. Thereafter, the data is being kept up to date by feeding all the transactions taking place within seven days of passing of the order [6].

In the year 2008, Himachal Pradesh started the process of digitization of existing village map sheets by outsourcing the one time backlog digitization through private companies. This job is in progress in four districts and the remaining eight districts are being taken up through fresh tender. The work is likely to start in December 2014 for all these eight districts. As part of NLRMP, the second initiative is the resurvey of land using modern equipment i.e. Electronic Total Station (ETS) and Global Positioning System (GPS). The State has decided to procure modern equipment through tender process and as part of this tender the supplier will also carry

out survey of 15 villages per district. The vendor has the responsibility to train the officials of Settlement department during the survey activity. The modes of implementation and different software/ technologies used in LRC are given in Tables 1 and 2 below:

Table-1: Modes of Implementation

Function	Mode	Method
RoR (Jamabandi) backlog entry	Private	Hired data entry agencies by tender
Software	Government	In-house through NIC
Mutation	Government	Revenue officials
Registration	Government	Registration officials
RoR, Shajra Nasb copies issuance	Private and Government	LMK, Sugam and Tehsil centres
Digitization of Cadastral maps	Private	Open Tender
Data verification (textual & spatial)	Government	Revenue officials
Map updation	Government	Revenue officials
Survey, Resurvey	Private	Pilot outsourced
Capacity building	Private and Government	As per requirement

Table-2: Software and Technology

Software	Technology
HimBhoomi-RoR, mutation (attribute)	Client/ Server, MS Sql and VB, GIST SDK for Hindi language
HIMRIS-Registration	Client/Server, MS Sql and VB
Delivery of service RoR, Shajra Nasb	Web based application, ASP .Net, MS Sql, Unicode based

BhuNaksha (spatial solution)	PostGreSQL, Java
Survey/ Resurvey	ETS/GPS

A. Government Process Re-engineering:

The expansion of service delivery channels would not have proved to be so beneficial to the citizens had it not been for the Revenue department to carry out certain important process reforms. These are:

- Change of format and size of paper for printing of RoR copies: Earlier the Jamabandi was printed on A3 size paper with fixed 13 columns. However, the private entrepreneurs at LMKs could not afford expensive A3 size printers, whereas A4 size laser printers are quite economical and common. Therefore, the size of Jamabandi paper was reduced by Government and since lesser number of columns could be adjusted in A4 size and to enhance readability, the number of columns have been re-aligned and reduced to make the A4 size Jamabandi more legible. The revised format for Jamabandi with Map (Tatima) has also been approved for delivery through LMKs.

- Updation of computer records within 7 days of any transaction taking place in the field by the concerned Revenue official (Patwari/ Kanungo/ Tehsildar) [6]. This has ensured updated copies of RoR and Shajra Nasb being available at the LMKs.

- Integration of Registration with land records database at all Registration offices in the State has helped to keep a check on fraudulent registrations as the seller details are picked directly from the RoR database and after registration, entry is made in the remarks column of RoR. The State had also allowed immediate mutation at the time of registration in the year 2011 as a step forward towards conclusive titling. However, the said notification has been withdrawn in the year 2013.

- Authorization of LMK operators to sign, stamp and issue RoR and Shajra Nasb copies, provided these are verifiable, as per the software solution [7]. The software solution enables verification of every issued copy online.

B. Challenges:

The record keeping of land records is a very old system and close to the heart of land owners. All fights in history have been to acquire more land. The computerisation of these records and opening up of service delivery channels through industry partnership has been a challenge in itself because of age-old practices and rules. The revenue officials were not interested in opening the service delivery channels for vested interests. The other major issues are listed below:

- The hardware and software need to be upgraded at Tehsils. The different software/technologies used in LRC as given in Table-2 are being used and need urgent upgradation.

- Good and stable connectivity in all Tehsil offices continues to be an issue even after so many years as some of the Tehsil data is still not accessible for services delivery through LMKs and citizens have to visit Tehsils offices to get services for such Tehsils.

- Capacity building among all levels of Revenue officials is a cause of concern and good monitoring requires to be done under NLRMP. Training of officials on digital signature certificate (DSC) technology is a must in the light of the Information Technology Act 2008 (Amended).

- Some of the initiatives like Map copy with RoR are yet to be opened for service delivery through LMKs by the Government. The digitization of Musavis is progressing at a slower pace due to delay in verification/ processing of digitized data and not all Tehsils are covered so far.

- Resurvey work using ETS/GPS is yet to take a proper direction as the issue related to change in the measured plot area remains a bone of

contention both for the Government and the land owners.

- There is huge shortage of Revenue officials and many posts are vacant (Table-4). These hamper the work of updation of data.

C. Alternatives:

The service delivery under LRC relates to the delivery of copies of documents, requests for mutations/ division of land, registration of deeds, survey of land etc. The delivery of documents to citizens is best suited for industry participation through LMKs. The other alternative studied is the RoR distribution through Tehsil office or directly through Patwari. But this option is rejected out-rightly based on the data analysed as citizens are not comfortable now that they have an option to get Jamabandi copy through LMKs in the State. The corruption factor reduces when there is none or lesser contact of citizens with Government officials. There is no restriction of office times and availability of Patwari in the Tehsil or Patwarkhana.

Registration is another area where industry participation is possible by authorizing the LMK operators to apply for appointment for registration and submit the scanned copies of documents for scrutiny before the actual registration appointment. Such an initiative is proposed to be implemented in online mode in the State of Haryana . However, at present it has a drawback as it doesn't allow the fixing of appointment through private channels like CSC or LMKs. This implies physical visit of citizens to the Office complex where a counter is set up for the purpose. The better option is to allow individual to schedule appointment using web interface sitting at home and uploading the supporting documents. Keeping in view the large number of land owners or probable purchasers who do not use computer/ internet, the facility can be provided through CSC operators who are village level entrepreneurs. This is an alternative mode, where application and

---

[4]IT to check graft in land registrations, P.7, The Tribune, HP Edition, 23rd November 2014

documents could be submitted any time by the citizens from the CSC nearest to their home on payment of small fee. A similar approach could be followed for mutation and land division/ amalgamation as being done in Karnataka.

As of now, there is no alternative available in case of registrations but for RoR and Shajra Nasb copies, the citizens are visiting LMKs as they prefer the private channel more than the Government, for better and assured services.

III. ANALYSIS OF SERVICE DELIVERY CHANNELS

The CLR in HP has resulted in delivery of services to citizens in the form of delivery of RoR/Shajra Nasb copies and registration of deeds. While registration of deed continues to be with Government only, the RoR and Shajra Nasb copies were distributed through Tehsil centres only till the year 2010. In the year 2010, the web based interface allowed distribution of copies through Tehsil and Sugam Centres for individual Tehsils but in February 2011, the Government authorized the LMKs to issue certified copies of any Tehsil in the State. The year-wise number of transactions for these services is given in Table-3 below:

Table-3: RoR and Registration copies delivered

Financial Year	RoR Issued by Tehsils	RoR Issued by LMKs	Deeds Registered
2005-06	1816	0	0
2006-07	102521	0	22984
2007-08	49346	0	28022
2008-09	66786	0	35461
2009-10	150284	0	60710

2010-11	240948	537	87925
2011-12	220106	52055	66645
2012-13	216695	285451	61141
2013-14	215384	593307	59766
2014-15	228928	702685	58056

The above data is plotted in the line graph in Figure-3 to show the number of transactions through different service delivery channels and highlight the impact of Industry participation from the year 2010-11 onwards when the LMKs from the privates sector came into picture. The red line showing service delivery through industry participation jumps immediately after the Government authorized it in February 2011 and it keeps on growing exponentially whereas service delivery through Government channels remains either constant or drops marginally in these years.
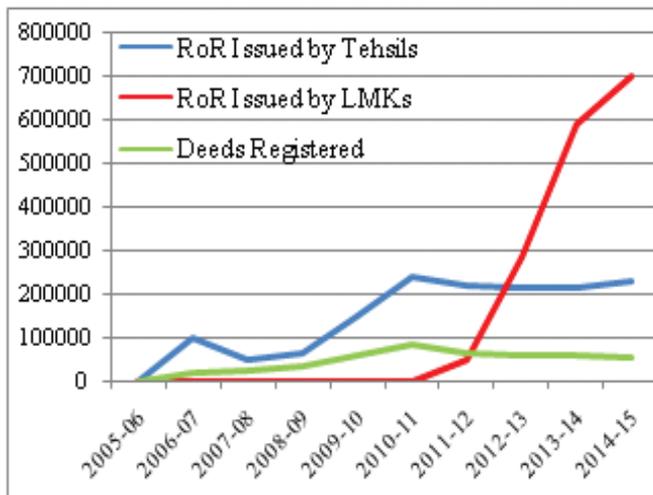

Figure-3: Line graph showing the year-wise impact of industry participation in service delivery channels

[5]Data as per the LRC MIS websites of HP Revenue Department at http:// admis.hp.nic.in/lrc (till 2010) and http://admis.hp.nic.in/himbhoomilmk (2010 onwards) and data for 2014-15 include projected values of November-March months.

During the collection of above data, the shortage of Revenue officials was observed at various levels. Since the requisite number of officials must be present in the system to better serve the citizens, the employee strength at field level comprising of Patwaris was also studied. The data related to the total number of posts, filled posts and likely vacancies due to retirements/ promotions, is presented in Table-4 .

Table-4: Year-wise number of vacant posts of Patwaris.

Year	Existing Vacancies as on 1-1-2010	Vacancies created due to retirements/ promotions	Cumulative Vacancies
2010	457	139	596
2011		127	723
2012		144	867
2013		146	1013

There is a total sanctioned strength of 2,450 Patwaris in Himachal Pradesh and the figure is unchanged since the year 2010. As many as 457 posts of Patwaris were lying vacant on 1-1-2010 and additional vacancies have been caused due to retirements and promotions as shown in Table-5. The total vacancy position is 1,013 at the beginning of the year which is almost 41% of the total sanctioned strength and no posts are getting filled over the years. Such a trend is likely to continue, although the Government is going to fill up many of the posts in near future as the work will suffer otherwise. The point here is that such a trend of lesser number of employees will continue, whereas the expectations of citizens from Government are increasing due to usage of ICT tools.

6 Data provided by the Director of Land Records and Consolidation, Himachal Pradesh

Therefore, in order to expand the ambit of citizen services, the departments need to add delivery channels through industry participation.

IV. KEY FINDINGS

The industry participation in land records service delivery channels is certainly a plus factor benefitting the citizens, as has been proved by the data analysed. The key finding of this study, with reference to the land records computerisation in Himachal Pradesh, are given below:

- Himachal Pradesh has a total population of 65 lakhs with 15 lakh households. The number of copies distributed through LMKs in the last three years is 16.6 lakhs, implying that almost every house-hold of the State has availed of the citizen service through LMKs. This has helped to empower the land owners, which is a basic objective of the NLRMP.

- The data for registrations is more or less constant over the years because this is under Government domain. The data for RoR shows a sudden jump when service delivery in standardized format from Tehsils was started in 2009-10 and then it remains constant. However, there is phenomenal increase in the number of transactions through LMKs immediately and it is still increasing as the citizens don't have to visit Government offices to avail of this service.

- Technology per se is not the crucial factor, but connectivity is a cause of concern. Without good and reliable connectivity, no service delivery is possible as some of the Tehsils in the State are yet to start the citizen services from LMKs. Private participation in providing connectivity to Tehsils is advisable.

- The availability of data in digitized format is actually the key to success of the land records computerisation in the State through industry participation. The data has been digitized through private channels whereas the ownership and further processing is with the Government

only. The data needs to be kept updated all the time, as has been done through the office order [4], only then the confidence of citizens and industry partners could be gained.

- NIC has been able to integrate the client-server based HimBhoomi software and data with the web-enabled distribution of RoR software because it has become subject expert due to its officials being associated with the LRC for the last 25 years. The RoR software has been recently integrated with the web-enabled BhuNaksha software for processing of digitized maps. The resurvey work using ETS and GPS is also proposed to be fully integrated in the existing framework although the base HimBhoomi software may also be converted into a fully web-enabled application by that time.

- The application of DSC and its acceptance among rural people is yet to pick up. The reason could be lack of sufficient knowledge about the technology behind DSCs. However, the existing LMK based signed and printed copies are more acceptable to all stakeholders.

- The infrastructure created under NeGP like SWAN and Citizen Service Centre (CSC-LMK) have been optimally used in this initiative. All Tehsils have SWAN connectivity which is used to synchronize the data of RoRs which is the base data being used to link to maps and registrations. The CSCs are renamed as LokMitra Kendras in the State and are appointed through the private operators (SCA) selected through open tendering.

- The number of Revenue officials in the Revenue department is dwindling over the years. There has been a decrease of 41% in filled posts of Patwaris since the year 2001. The overall strength of Government employees per hundred of the State population is witnessing a downward trend as employee/ population ratio has reduced from 4.67 in 2001 to 3.70 in the year 2014 [8]. This trend is likely to grow in

future too as Governments are less likely to hire permanent employees and hence, should lay stress on outsourcing service delivery channels.

V. RECOMMENDATIONS

- The suggested model for industry participation in Government service delivery channels is that the Government concentrates on governance reforms and back-end office automation and outsources the service delivery mediums with the objectives to better serve the citizens near to their homes at lesser costs and better service quality.   In order to improvise the service delivery in the State, certain important points emerge, which need to be addressed. These recommendations are listed below:

- The HP Revenue department needs to go in for extensive capacity building through private channels. The equipment being used in survey work is altogether a new technology and the usage of BhuNaksha software for processing of maps (land division, amalgamation) requires high level of ICT skills.

- Although DSCs have not implemented in this initiative, it will need to be incorporated, as per provisions of the Information Technology Act 2008 (amended), so that it meets the expectations of IT savvy citizens related to online service delivery.

- The Government should restrict its role to the backend processing part and expand the service delivery channels through industry participation.

- The Government must carry out process reforms and, if required, make necessary changes in the existing acts, rules, manuals to simplify the already established systems. All such notifications must be hosted on the concerned website so that citizens read these and become aware of alternate means of service delivery.

- The NIC has in-depth knowledge of the entire NLRMP requirements and should continue in its role as system integrator and software solution provider for all the services proposed to be delivered in near future.

- The reduction in total number of Revenue officials implies un-necessary over-burdening of existing officials with newer and specialized kind of jobs. The demands and expectations of citizens will continue to increase for new, accurate, better services. Industry participation in service delivery channels will have to increase to meet this kind of demand. The same day mutation office order was withdrawn due to shortage of employees. The fixing of date of registration deed and submission of papers along with a request for date/time of registration appointment through LMKs will help the Department in betterment of registration related service too. The Revenue officials should concentrate on process re-engineering, introduction of latest technological innovations in land survey work and back-end processing of RoR, maps, registration only while providing the outputs through Internet or LMKs.

- Digital divide exists in the State as rural population doesn't have access to ICT tools for accessing online citizen services. The private sector LMKs provide the necessary ICT infrastructure for addressing this issue. Therefore, Government needs to carry out reforms in sectors like employment enrolment, welfare pension schemes, applying for certificates, ration cards besides land records. These reforms should allow delivery of services through LMKs which are in the rural areas and will address the issue of digital divide.

- The kind of services which are best suited for delivery through the private sector i.e. LMKs in this case, include, but are not limited to:
    - renewal applications for driving license, arms license, ration card, passport

- applications for welfare pension, registration in employment exchange, certificates like caste, income, domicile

- fixing of appointments in Government offices where individual presence is required for processing of application, like land mutation, its division and registration, driving test, Aadhaar registration

- payment of taxes, Government receipts, bills already presented for payment etc.

VI. CONCLUSION

The industry partnership in service delivery channels, beyond the restriction of office timings and workplace, is highly acceptable to the citizens and, given a chance, they readily avail these services. The data proves this point that earlier the citizens would visit a Government office for a copy of Jamabandi in case of mandatory requirements only, now they are taking copies of Jamabandi just to reassure them of their land holding being safe in Government records. The will of the Government is another key factor in expanding the ambit of service delivery channels through industry participation. The private sector is willing to participate actively in providing Government services to the citizens at Government defined rates, but the number of such services, as of now, is less. In nutshell, the Government role should be to effect changes in rules and processes to enable service delivery through industry participation, the NIC should continue in its role as the integrator of services for software solution whereas the specialized technology dependant processes and backlog data entry effort should be outsourced through industry participation. The citizens are eager for better, cheaper and quality services at their doorstep and the industry is willing to partner with the Government in its endeavor.

REFERENCES

[1] Digital Governance Models, Vikash Nath, The Innovation Journal: A Special Issue on Designing Innovation, Volume 8 Issue 1, (January - March 2003) edited by Parthasarathi Banerjee

[2] LokMitra Kendras, Hamirpur, 2001 GoHP website at http://himachal.nic.in/images/lokmitra/lokmitra/lokmitra_hdr.htm#1 accessed on 17th November 2014

[3] Computerisation of Land Records, Department of Land Records, Ministry of Rural Development, GoI website at http://dolr.nic.in/dolr/comp_land_records.asp, accessed on 20th November 2014.

[4] National Land Records Modernization Programme- MIS, Department of Land Records, Ministry of Rural Development, GoI website at http://nlrmp.nic.in/, accessed on 20th November 2014.

[5] Best Practices in Land Records, pp.148-153, Department of Land Records, GoI website at http://dolr.nic.in/dolr/comp_land_records.asp, accessed on 22nd November 2014.

[6] Himachal Pradesh Land Records Manual, 1992, pp.143-44, para 8.4 (c) as amended, Computerisation of Land Records.

[7] Notification No.Rev-C(F)10-1/2009 dated 14th February 2011 issued by the Principal Secretary (Revenue) to the Government of Himachal Pradesh

[8] Census of Himachal Pradesh Government Employees, 2013-14, Department of Economics and Statistics P.X, Table-5, Number of Government Employees per lakh of Population.

AUTOMATION OF PADDY PROCUREMENT SYSTEM: A CASE STUDY

Dr. Spandita kar (Documentation Specialist & Manager Programme Implementation), OMEGA- A DFID and Government of Odisha Partnership Programme, Mr. Satya Priya Rath (Deputy Secretary, Finance Department, Government of Odisha)
Address- S-73 Maitri Vihar, Bhubaneswar, Mobile Number- +91-9338554005, +91-9437082270,
e- Mail: spandita@ipeglobal.com, satyaratha@gmail.com

Abstract

Decentralised paddy procurement system is adapted by Government of Odisha since Khariff Marketing Season (KMS) 2003-04 and has evolved from the scratch. Since adaptation of decentralized paddy procurement system a lot of challenges are encountered. There were lots of complaints raised by the farmers regarding lack of coordination between the field official, delay in payment, lack of infrastructural arrangement etc. To overcome these problems of the paddy procurement process, the Food Supply and Consumer Welfare Department in Government of Odisha decided to automate the whole process of paddy procurement starting from society/ Market Yard level to capture all transactions of the procurement operation including delivery of paddy to millers and payment of paddy cost to farmers through online account transfer. Web based application was developed and piloted in the market yard of Godbhaga in Bargarh district of Odisha during KMS 2012-13. Based on the success of the initiative, the State Government decided to introduce Paddy Procurement Automation System (P-PAS) in all the PACS/ societies involved in procurement. The objective of P-PAS is to improve transparency and enforce accountability in paddy procurement operation, bringing efficiency in working of societies involved in paddy procurement and making the procurement process more citizens centric.

1. Introduction

Odisha with an area of 155,711 square kms has a population of 41.94 million as per 2011 census, which accounts for about 3.75 % of the population of the country. The SC and ST population of the State is 17.13 % and 22.85 % of the total population respectively. More than 83% of people live in rural areas and depend mostly on agriculture for their livelihood. The State has about 64.09 lakh hectares of cultivable area out of total geographical area of 155.711 lakh hectares, accounting for 41.16 % of the total area. Paddy area during Kharif is about 42 lakh hectares & during Rabi is about 2.5 lakh hectares. Paddy is the main crop of Odisha and the State is surplus in paddy production. In order to minimize distress sale of paddy by farmers, the State Government procures paddy by providing minimum support price to the farmers. The State Government had been adopting a centralized procurement system till 2003-04 Khariff Marketing Season (KMS) when the entire paddy procurement system was decentralized. This process was adopted with objective to provide the facility at the nearest PACS/ market yard. Since adaptation of decentralized paddy procurement system by Government of Odisha, a lot of challenges are encountered. Lots of complaints were raised by the farmers regarding lack of coordination between the field official, delay in payment, lack of infrastructural arrangement etc. Government took initiatives to overcome these challenges and still many persists even today. To overcome the above problems of the paddy procurement process, the Food Supply and Consumer Welfare Department sought to automate the whole process at the society/ Market Yard level so that all transactions of the procurement operation including delivery of paddy to millers and payment of paddy cost to farmers through online account transfer.

Figures in Lakh MTs

KMS	Procur-ement in terms of Rice **for KMS**	PDS off take of Rice in **FY**	Rice Off take for **OWS** in **FY** (FCI)	Rice Off take for **all schemes** in **FY**
2008-09	29.89	17.992	2.782	20.780
2009-10	26.90	18.776	2.727	21.503
2010-11	25.06	19.964	2.627	22.591
2011-12	29.03	20.758	1.889	22.647
2012-13	36.72	21.771	1.893	23.664

2. The Problem Statement

• Delay in Payment to Farmers

• Lack of coordination among Agencies involved in paddy procurement

• Lack of transparency in the entire process

• Poor onsite facility/management in procurement centres

• Inadequate FAQ testing & weighment operations

• Monopoly of certain farmers and millers

• Inadequate managerial ability of Agencies such as PACS, MARKFED, NAFED, WSHG etc. to handle paddy procurement operations

• Issues such as poor quality of gunny bags used in packaging, return of bags by millers and poor quality of paddy brought by farmers etc.

[1]Other Welfare Schemes (OWS) covers non-PDS beneficiary or bulk consumers such as Jail, Government SC & ST Hostel, NGO based SC & ST Hostel, Welfare Institutions, Police Camps and non-PDS schemes such as Rice for Disable Persons (RDP), Rice for Olive Ridley Conservation (RORC) etc.

3. Paddy Procurement Automation System (P-PAS)

The Paddy Procurement Automation System is a computerized system for management of the procurement of paddy through societies. The system maintains a database of farmers along with Farmer's Identification detail. The software covers all the functionalities of a Paddy Procurement Center. Token slips generated from the software mentioning the schedule for the farmer under a Primary Agricultural Cooperative Society (PACS) to sale his paddy at PPC. Quality and weight of the paddy recorded in the software and auto generated Vendor Receipt issued to the farmers. Paddy Purchase Register generated on daily basis from the software. Loading advice for the vehicle of millers are also generated from the software automatically. The software generates Transit Pass for each vehicle to carry the paddy to the mills. Day-end Paddy Acceptance Note generated automatically for the millers to sign and submit to the District Manager. Paddy Dispatch Register, Miller Control Register are also generated using the software. The software also facilitates the District Central Cooperative Bank branches to streamline payment to farmers. SMS alerts are sent to farmers on information relating to the payment advice. Farmers can also check status of their payment on the internet. MIS reports at the level of PACS, DCCB branches, DCCB head office, District Manager's office, OSCSC head office, Administrative Department are also made available in the software. Implementation of the software intended to improve efficiency of the PACS to manage paddy procurement processes, induce better transparency in paddy procurement system and to ensure timely payment to the farmers.

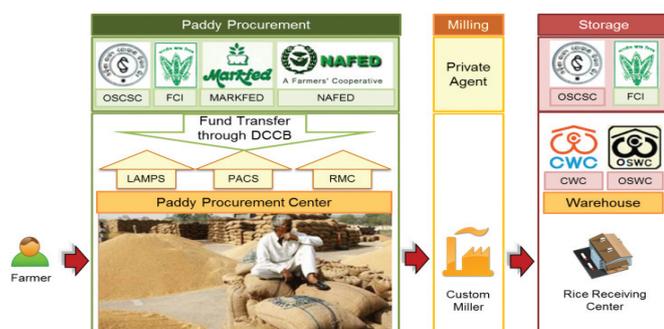I. Movement of Paddy During Procurement in Odisha.

3.1   Functionalities of the System

Odisha State Civil Supplies Corporation Limited (OSCSC), Marketing Federation, and National Agricultural Cooperative Marketing Federation are engaged as state agencies for paddy procurement in Kharif or Rabi Marketing Season each year. About more than 90% of procurement is carried out by only OSCSC. OSCSC engage Primary Agricultural Cooperative Society (PACS), Women Self Help Group (WSHG), Pani Panchayat (PP) as commission agent to procure paddy directly from the farmers of respective Gram Panchayats (GP). Paddy procurement centers (PPC) are opened at PACS level. In case desired infrastructure is not available with PACS then a few PACS are tagged to a Market Yard to use its infrastructure.

At the beginning of paddy procurement season each society prepares Paddy Assessment Register considering marketable surplus paddy of each farmer. The society issues Advance Token to each farmer at the beginning of the marketing season. As the farmer appears at the PPC with paddy on the scheduled date, the quality of the paddy is assessed as per FAQ (Fare Average Quality) norms in the presence of the miller's representative. Weight of the paddy within FAQ norms is taken and the farmer is provided with a vendor receipt as proof of sale. Procured paddy is loaded onto the carrier of registered miller and Gate Pass-cum-Transit Challan is issued. At the end of a day Miller Acceptance Note is prepared for each miller mentioning total quantity of paddy they have received during that day. Processes of Paddy Procurement are shown in figure below.

II.   Process Automation of Paddy Procurement

At the end of a day, the PACS submit report on quantity and value of paddy purchased on the day to the DCCB (District Central Cooperative Bank) Branch, where the PACS have an account. PACS generates Separate payment advices for farmers having their account at DCCB, PACS and Other Banks. Accounts of farmers having account in the DCCB branch get credited directly by the DCCB branch. Payment advices of farmers having account in other banks are processed and submitted to Nodal DCCB branch along with credit notes. Nodal DCCB branch send the payment advice along with a cheque of required amount to the linked core banking branch where paddy procurement fund is parked. Linked bank credits the account of farmers through NEFT. The information on available fund is intimated to PACS by DCCB Branch on daily basis.

PLANNING PROCESS	PROCUREMENT	TRANSFER TO MILL	PAYMENT TO FARMER
Preparing Paddy Assessment Register	Welcome Slip to Farmer on Arrival	Welcome Slip to Miller's Carrier	Preparation of Payment Advice
Registration of Farmers at Society	Quality Assessment of Paddy	Loading Advice	Direct Credit to Farmers at DCCB
Issuing Advance Token to Farmers	Weighing of Paddy	Gate Pass	EFT to Farmers at CBS Bank
	Issuing Vendor Receipt to Farmer	Millers Acceptance Note at Day-End	SMS Alert to Farmer on Credit

I. Fig: Paddy Procurement Process

3.2   Benefits from Project P-PAS

a. Common Platform : P-PAS provides common platform for State agencies procuring paddy, namely OSCSC, MARKFED, NAFED, TDCC, & Food Corporation of India; all can use the same software to procure paddy from the farmers. So far only PACS under OSCSC are using the application.

The banks involved in paddy procurement such as Odisha State Cooperative Bank, District Central Cooperative Bank branches and linked CBS bank branches can also take benefit.

b. Efficiency and Ease of Operation : Keeping books of accounts of PACS as well as of Market Yard (Paddy Procurement Center) accurately become very convenient on the part of the staffs of PACS and Market Yard. The records are made readily available for verification by authorities at any point of time. Quick updating of records helped the procuring agents to ensure timely payment to farmers. Less time and effort is spent by the PACS and farmers at PPCs in comparison to earlier system as paper work is negligible.

c. Error Free Transaction : Chances of errors in recording information are eliminated due to Computerisation. The process automation modules available in the software reinforce recording and verification of correctness of data on real-time basis. The information is fed to the system once and is reproduced or used by the system again and again.

d. Effective Monitoring : Paddy procurement transactions are recorded on real time basis. The MIS reports are automatically updated and made available to the officers at different level on near real time basis to make the monitoring effective. The system could make the summarized information on the transaction occurred at the Market Yard during a day available to the concerned officials through SMS alerts.

e. Better Coordination : P-PAS ensures better coordination among all the stakeholders by making the information available to officials of FS&CW Department, OSCSC, Registrar of Cooperative Societies & his field functionaries, Banks, PACS/ LAMPS etc.

f. Optimizes Fund Flow : Information relating to procurement of paddy at PPC level is visible to the procuring agencies at the top level. Information relating to provisioning of fund by the procuring agencies is visible to the PACS/ PPC level. Such transparency of information optimises the fund flow mechanism.

g. Increased Farmers' Participation : Participation of Farmers has increased and their satisfaction is ensured due to advance token system, on-the-spot Vendor Receipt and quicker disbursement of payment due to P-PAS. The delay in payment has been reduced to a greater extent after introduction of Paddy Procurement Automation System. As the application gives stress on farmer's convenience, it is expected to improve his experience over time.

4. Conclusion and Recommendation

Benefits derived through this P-PAS rollout to automate paddy procurement process in all PPC are found satisfactory and has been appreciated by stakeholders at all levels. Government of India also appreciated implementation of P-PAS. However, there are areas of improvement in the system to make it more effective.

a. Awareness Campaign : Many farmers are still not aware of the benefits of the P-PAS. Awareness campaign needs to be organised before each marketing season. It can be done through leaflets, helpdesk and individual SMS regarding schedule of sale for each registered farmer.

b. Coordination among State agencies : It is observed that MARKFED and other agencies are not yet availing the benefits of P-PAS. All paddy procuring State agencies should start using the software. The State agencies should invest in some basic infrastructure. One laptop/ desktop computer, one laser printer, one 2 KVA with 4 hour battery backup inverter and internet connectivity is required to be deployed at each PPC they are engaged with.

c. FIC Database : It is proposed that field officials at society level should take up initiative as detailed above to create FIC database by using the software available on http://foododisha.in on priority basis as that would reduce the repetitive efforts being done every season.

d. Rectifying Errors in Farmer's Name : It is observed during pilot implementation that there were spelling mistakes in the name of Farmers on FIC database used in Paddy Procurement Automation System. It is suggested to compare the given data with Cheque Issue register of PACS and MARKFED for correcting the errors. Finally, the corrected list of Farmers may be validated with list available at the Bank.

e. Provision for adequate Infrastructure at Societies/ PPC : It is found that there are many Societies/ Paddy Procurement Centers which do not have essential infrastructure such as office space for computers, furniture & other equipment. Many do not have space for parking of vehicles, pindis for unloading paddy bags or covered space for storing paddy from rain & sun. Availability of electricity & power back up system such as power generator and inverter is lacking in most PPCs. These are basic & essential infrastructure items necessary at each society/ PPC to even think of implementing P-PAS. That apart, each society/ PPC needs to have computers, UPS, Inverter, laser printer and internet connection etc for implementing P-PAS.

References

[1]   Central Vigilance Committee on Public Distribution System (2009), Report on Computerization of PDS Operations, 2009, http://www.pdscvc.nic.in/

[2]   Chaudhuri, A. R., and E. Somanathan, "Impact of Biometric Identification Based Transfers", Economic and Political Weekly, XLVI (21): 77-80.

[3]   Dreze J. and R. Khera (2010), "The BPL Census and a Possible Alternative", Economic and Political Weekly, XLV (9): 54-63.

[4]   Department of Food and Public Distribution, (2002), Report of the High Level Committee on Long-Term Grain Policy, Ministry of Consumer Affairs, Food and Public Distribution, Government of India.

[5]   Dhand, Vivek Kumar, Dinesh Kumar Srivastav, A. K. Somasekhar and Rajeev Jaiswal (n.d.), "Computerization of Paddy Procurement and Public Distribution System in Chhatisgarh,"

[6]   http://www.csi-sigegov.org/egovernance_pdf/26_ 216-223.pdf

[7]   Dutta Bhaskar, and Bharat Ramaswami (2001):'Targeting and Efficiency in the Public

[8]   Distribution System: Case of Andhra Pradesh and Maharashtra', May 5-11, Economic and Political Weekly, Vol XXXVI, No 18, 1524-32.

[9]   Economic Advisory Council (2011): "Report of the Expert Committee on NFSB", Government of India, New Delhi, http:// eac.gov.in/reports/rep_NFSB.pdf.

[10]   Government of India, (2011), Economic Survey 2011, Ministry of Finance.

[11]   Himanshu and A. Sen (2011), Why Not a Universal Food Security Legislation?, Economic and Political Weekly, XLVI (12): 38-37

[12]   Jha, S. and B. Ramaswami (2010) "How Can Food Subsidies Work Better: Answers from India and the Philippines", Economics Working Paper 221, Manila, Asian Development Bank.

[13]   Jha, Shikha and P.V. Srinivasan, (2004), Achieving Food Security in a Cost Effective Way: Implications of Domestic Deregulation and Reform under Liberalized Trade, MTID

[14]   Discussion Paper No. 67, International Food Policy Research Institute, Washington, DC.

[15]   Khera R., (2011), "Trends in Diversion of Grain from the Public Distribution System", Economic and Political Weekly, XLVI (21): 106-114.

Conundrum of India's Employability Gap

Tejbir Singh Soni, Knowledge Manager, Centre for Good Governance (CGG) , (Dr MCR HRD Govt. Of Telangana), Road No. 25 Jubilee Hills, Hyderabad - 500 169 # 097037 58408

email soni.tejbir@gmail.com

---

[1]The views expressed in this paper are of the author and do not necessarily reflect views of his organization.

Abstract -

Often it has been said for India that it has bypassed the normal growth pattern which any developing or transitional economy follows by skipping from agrarian to service sector and mildly addressing the manufacturing sector which has huge potential for employment. The service sector, which is much celebrated here and India has a leadership position, is facing challenges of employability. IT and BPM contributes an aggregate revenue of USD 108 billion and employ approximately 3 million people majority of whom are skilled. However with a supply of approximately 5.5 employable people in the labour market what has been mentioned is that Indian labour market has shortage of "right talent". This necessarily calls for a deep reflectionabout the nature of reforms need to be made to address the issues of over-supply and low-employability along with under-employment and mismatch in supply for the industry. The paper attempts to cite some of the models, both e-learning and standard, being pioneered by the state and business sector to cater to this employability gap. The paper concludes by suggesting a long term focus on the educational and vocational curriculum and also the shift in focus from Service sector to Micro-Small and Medium Enterprises.

Keywords: Make in India; Employability; e-learning; Demographic dividend; New Business Model.

Introduction

"Make in India" is the buzzword that has been a major policy decision taken by the new union government precisely keeping in mind the "demographic dividend" that India has and the need for directing investments in labour intensive manufacturing sector. The usual economic growth pattern of any industry is from primary i.e. agriculture sector to industrialization or manufacturing i.e. secondary to post-industrialization or services sector that is tertiary. But what is unique about

India's growth trajectory according to M.H. BalaSubrahmanya "the problem for Indian economy lies in missing the industrial bus." This transition from agrarian to service driven growth bypassed the industrial development which had "propelled GDP expansion in economies like China."

The general problem associated with this growth pattern is that a major chunk of people employed in agriculture sector, still in India, are under disguised employment and those that are employed in service sector require professional degrees and perseverance for professional growth. The major chunk which remains are the people who are not employable in technical terms precisely for the reason that they lack the technical skills required to perform the task. Although most of them may be academically qualified to do the task they are not having adequate skills to do the jobs required by the jobs.

Manufacturing sector is the one that has leveraged the economy of developing nations like China which have adhered to the regular trajectory of growth and that has ensured adequate absorption of the employees. "Make in India" campaign has the potential for addressing the employability gap and reaping the benefits of demographic dividend conditional to the fact that the people are being imparted not just knowledge rather skills that would be found wanting in the jobs.

It was being felt that the National Policy on Skill Development of 2009 should be revised keeping in view the requirements of the time. This is just one of the policy initiatives by the new government at the centre which is aimed at seeking 50th position in World Banks "Ease of Business Index" ranking. The current ranking of India in this index is 134. Notwithstanding the fact that ease of business is a function of systemic factors if the skill development policy is adequately revised it has the potential for not just reaping the benefits from "demographic dividend" by ensuring jobs for them but also ensuring a sustainable economic growth for the nation per se.

[2]Nanda, Prashant K. (n.d.) Modigovt to revise national skill development policy - Livemint. Retrieved November 22, 2014, from www.livemint.com/Politics/TWjYw5qzFD5v6E6xqJfjtK/Modi-govt-to-revise-national-skill-development-policy.html

[3]World Bank. (n.d.) Growth of the Service Sector . Retrieved November 23, 2014, from www.worldbank.org/depweb/beyond/beyondco/beg_09.pdf

[4]Inamdar, Nikhil . (n.d.) India - a 'bypass' nation | Business Standard News. Retrieved November 23, 2014, from www.business-standard.com/article/economy-policy/india-a-bypass-nation-114031700160_1.html

[5] Mehra, Puja. (n.d.) Make in India vs. Make in China - The Hindu. Retrieved November 22, 2014, from www.thehindu.com/sunday-anchor/sunday-anchor-make-in-india-vs-make-in-china/article6533575.ece

Rationale for Skill Development

Less than 15% of graduates have the skills necessary to be employable in industry – NASSCOM. Skill development has the potential for enhancing the effectiveness and contribution of labour to the overall production. It forms part of an essential strategy for taking the growth rate to a higher trajectory. More importantly skill development enhances the self-confidence and the acceptance of individuals in the society and ensures that there is a sustainable livelihood at her/his disposal.

These changing demographic profiles indicate that India has a unique 20 to 25 years' window of opportunity called "demographic dividend". If adequate skills are being imparted to individuals in this sector it could have a multiplier effect in not just ensuring the growth of the economy but also ensuring sustainable livelihoods for individuals.

Despite the fact that about 12 million people joining the workforce every year in India almost 25 % of the youth population is jobless. There has been a significant shift observed in India since mechanization came into vogue. Mechanization has entailed a significant shift in labour market from being unskilled to being highly skilled. Along with this there has been shift in the employment pattern from agricultural to manufacturing and service sector. These two factors would necessarily want that the labour force is adequately skilled to meet the demands of the market.

It is important at this juncture to know the skill sets that would make the individuals more employable. Employability is the proficiency of an individual to synergize knowledge, skills and abilities that would help him better perform his job. It has been witnessed that there is a gap between whatever the academic institutes prepare the candidates for and what is expected out of them in job interviews. Academic institutes focus on imparting knowledge and even the assessment is done for knowledge only but when it

comes application of knowledge most of the candidates know nothing about that.

The gap between academically qualified and employable for corporate jobs is quite high as is being pointed out by many industry studies which highlight that although around a million are academically qualified but only 10 % of them are employable. To add on to this some of the employable in this 10 % have barely crossed the threshold for evaluating the employability. This 10 % roughly turns out to be 1,00,000 and considering that IT sector has vacancies for 1,25,000 fresher's every year and non IT has approximately 1,50,000 every year there is a huge demand supply mismatch of the employable candidates. Further it has been a general observation that a significant quantum of money and time has been invested by corporates for training and making the fresher's ready for the job.

According to the IDFC India Infrastructure Report 2012 in India only 2 % of the workers are formally skilled and approximately 93% of works are working in the unorganized sector. To stark contrast of this are the figures from South Korea where about 96 % of the workers get formal skill training; the numbers in Japan are 80 %; Germany 75% and UK 68%.

The number of Industrial Training Institutes (ITI's) and the polytechnic in India 5500 & 1745 respectively fall far short if we compare the same with the numbers in China 500,000. If we ignore the numbers and focus on the quality of training it has generally been observed that the ITI's didn't upgrade in accordance with the structural changes happened with the Indian economy. Since what has been highlighted is that the share of agriculture to GDP has decreased from 41 percent in 1970-71 to approximately 17 % in now but on the same lines there hasn't been a decline in the proportion of population working in this sector since even today about 60 % of the population depends on agriculture

[6]The Planning Commission Approach to the 12th Plan. (2014) Enhancing Skills and Faster Generation of Employment. Retrieved November 20, 2014, from www.12thplan.gov.in/12fyp_docs/9.pdf

[7]Sir Dorabji Tata Trust And Allied Trusts. (n.d.) Caring for What Matters Annual Report 2012-2013. Retrieved November 23, 2014, from www.dorabjitatatrust.org/pdf/SDTT_AR_2013.pdf

[8]Menon, Rajeev. (n.d.) Article: 3 tips to enhance employability — People Matters. Retrieved November 20, 2014, from www.peoplematters.in/article/2014/06/05/skilling/three-tips-to-enhance-employability/6014

[9]Menon, Rajeev. (n.d.) Article: 3 tips to enhance employability — People Matters. Retrieved November 20, 2014, from www.peoplematters.in/article/2014/06/05/skilling/three-tips-to-enhance-employability/6014

[10]Kalpana Pathak. (2014) Gulf between job seekers and employability widens | Business Standard News. Retrieved November 20, 2014, from www.business-standard.com/article/companies/gulf-between-job-seekers-and-employability-widens-113093000889_1.html

for livelihoods. This in economic terms is referred to as 'disguised unemployment'.

Bridging the Employability Gap: Efforts by Government

Ironically we find in India simultaneous presence of shortage of skilled manpower and massive presence of unemployed 'educated' individuals. Keeping that in mind the Government of India had launched Mission on Skill Development.

Government had launched a scheme 'ITI adoption scheme' with the objective of upgrading the vocational training system so that it matches the demand of the industry. This up gradation of ITI's would be undertaken in Public Private Partnership (PPP) mode.

The 11th Five Year Plan also mentions the importance of skills and knowledge as drivers of economic and social growth. This stands more important for a country like India where there is a bulging youth population what has been mentioned as 'demographic dividend'.

Kerala Government acknowledging the gap in skill set and the potential to tap demographic dividend and check unemployment has initiated State Skill Development Project. The government has a proactive Additional Skill Acquisition Programme (ASAP) with the intention of improving the employability of students from arts and science. In this gesture ICT Academy of Kerala (ICTAK) would be providing support to provide training related to soft-skills; English; accent; grammar and IT related subjects. There is also a curative aspect to that by the name of Additional Skill Enhancement Programme (ASEP).

Bridging the Employability Gap: Partnership with Industry

The genesis of welfare state during the dawn of independence was based on the premise that the primary responsibility for uplifting the downtrodden and socio-economic development of millions was that of the state. The socialist philosophy and the state regulated economy was revised drastically during 1990's when the economy was being opened and there was greater role of private sector and more competition.

The ends of the Indian state being the same i.e. socio-economic development of all and eradicating hunger and poverty of all however the means for attaining them have changed since now it has been widely recognized that the responsibility lies with not just the state but also the non-state actors like the private sector; civil society; media etc.

It is a reiteration of the role if we remember what was being advocated by Mahatma Gandhi by his principle of "Trusteeship". This principle talks about having faith and taking responsibility for nation building. As is self-understood by the word we do not own the wealth but are trustees of that wealth. The primary function of trustee shall be to administer wealth for the prosperity of the society as a whole. It essentially stems from the theory of distributive justice.

Acknowledge the paradox of supply of unemployed yet educated youth and the demand for skilled manpower greater need exists for private sector to help in informing a better policy to address the need for skilled workforce. There have been various initiatives by the private sector with respect to the same which is being mentioned in the subsequent section.

There have been further variations involved in just following the principle of strict egalitarianism in which there is equal distribution of goods and resources irrespective of the initial endowments of the members of the society. It has been realized just and fair distribution should necessarily consider the difference amongst the members of the society and the distribution should be tailor made in accordance.

[11]FICCI. (n.d.) FICCI | Activities | ITI adoption scheme. Retrieved November 21, 2014, from www.ficciskillforum.org/activities/iti-adoption-scheme.html

[12]Planning Commission, Government of India. (n.d.) Evaluation of Industrial Training Institutes (ITIs) through Public Private Partnership (PPP). Retrieved November 21, 2014, from www.planningcommission.gov.in/reports/sereport/ser_iti2608.pdf

[13]Staff Reporter. (n.d.) ICTAK to help improve employability - The Hindu. Retrieved November 24, 2014, from www.thehindu.com/news/cities/Thiruvananthapuram/ictak-to-help-improve-employability/article6448838.ece

[14]Bader, Godric. (n.d.) Gandhi on Trusteeship: A transforming Ethic. Retrieved November 23, 2014, from www.worldbusiness.org/wp-content/uploads/2013/07/pr1295gb.pdf

with this difference (Difference Principle – John Rawls).

Bridging the Employability Gap: Efforts by Business (E-Courses & Standard Classroom Courses)

1. Seven IIT's; Infosys; Tata Consultancy Service along with NASSCOM have started a Massive Open Online Course (MOOC) that would offer free online courses and would attempt to cater approximately 1-1.5 Lakh students focussing that they acquire the skills that would make them more employable.

2. WIPRO has launched e-learning programme for skill development in the domain of finance and accounts which would cater to under-graduates. This is aimed at enhancing their employability.

3. A joint venture between National Skill Development Corporation (NSDC) and IL&FS by the name of IL&FS Skill Development Corporation (ISDC) has been set up with the objective of providing training to approximately 2 million people over the next 10 years.

4. One of the successful models worth replicating is being executed by MarutiUdyog in India the company is "adopting" ITI's for building talent of the employees. The company has employed approximately 500 ITI graduates with the Maruti Service Network.

5. Tata trust, in consonance with the philosophy of trusteeship, has been focussing on the theme of 'employability' by undertaking action to ensure that the people from the districts which has the least human development achievement get skill and enterprise development training with the overall objective of ensuring that they have a sustainable livelihood.

6. Similarly two batch mates of Indian Institute of Management, Ahmedabad (IIM-A) started an enterprise by the name of iStar Skill Development which focuses on training for financial services industry.

7. There have been efforts by corporate houses like Tata who have come forward with training programmes like 'Rojgar' which would focus on training the most vulnerable section of the society the Scheduled Caste and the Scheduled Tribe. On the same lines IT Giant WIPRO has come forward with Wipro Integrated Skill Enhancement Program (WISE PRO) which intends to impart communication and soft skill training for undergraduates. WIPRO intends to scale the training to approximately 5000 students by the end of 2014 financial year.

8. India has approximately 600 million people below the age bracket of 25 in India and only about 13 % of them i.e. 80 million people are employable. Acknowledging this Godrej Industries Limited (GIL) has taken an initiative to provide training in core skills to people from underprivileged students.

9. In the year 2007-08 government initiated the process of up gradation of 1396 ITI's through Public Private

[15]Stanford Encyclopedia of Philosophy. (n.d.) Distributive Justice (Stanford Encyclopedia of Philosophy. Retrieved November 23, 2014, from www.plato.stanford.edu/entries/justice-distributive/

[16]Bhattacaryya, Rica. (2014) Seven IITs, Infosys, TCS, Cognizant and Nasscom team up to provide free online courses - Economic Times. Retrieved November 25, 2014, from www.articles.economictimes.indiatimes.com/2013-07-19/news/40681617_1_seven-older-iits-nptel-andrew-thangaraj

[17]Wipro. (n.d.) Wipro - Press Releases > Wipro Launches Skill Enhancement Program for Finance & Accounting Students. Retrieved November 25, 2014, from www.wipro.com/newsroom/Wipro-launches-skill-enhancement-program-for-finance-and-accounting-students

[18]IL&FS. (n.d.) IL&FS Skills Development Corporation Limited. Retrieved November 25, 2014, from www.ilfsets.com/skilldevelopment/isdc/

[19]Bhattacharya, Saumyaand Pande, Shamni . (n.d.) Making 500 million people employable - Business Today- Business News. Retrieved November 20, 2014, from www.businesstoday.intoday.in/story/indias-skill-revolution-training-people-to-make-them-employable/1/13909.html

[20]Bhattacharya, Saumyaand Pande, Shamni . (n.d.) Making 500 million people employable - Business Today- Business News. Retrieved November 20, 2014, from www.businesstoday.intoday.in/story/indias-skill-revolution-training-people-to-make-them-employable/1/13909.html

[21]TRF and TBSS join hands on employability programme aimed to benefit 25 youth - TRF - Tata group. (n.d.) Retrieved November 20, 2014, from www.tata.co.in/company/releasesinside/TRF-and-TBSS-join-hands-on-employability-programme-aimed-to-benefit-25-youth

[22]M Saraswathy. (n.d.) Wipro launches Skill Enhancement Program for undergraduate students | Business Standard News. Retrieved November 20, 2014, from www.business-standard.com/article/companies/wipro-launches-skill-enhancement-program-for-undergraduate-students-113090200302_1.html

[23]Godrej Industries Limited. (n.d.) CSR Policy Godrej Industries Limited. Retrieved November 21, 2014, from www.godrej.com/godrej/godrejindustries/pdf/CSR-Policy.pdf

Partnership with the simple objective of improving the quality of vocational training to ensure better employability.

10. CII in association with TCS and Government of Uttar Pradesh had initiated a faculty development programme for teachers of ITI's in UP for ensuring better Employability Skills.

11. CISCO Networking Academy Initiative partners with around 190 educational institutions in India with the objective of delivering Information and Communication Technology Skills with the objective of ensuring better employability of youth in India.

12. Livelihoods Advancement Business School (LABS) an initiative of Dr Reddy's Lab is a short 3-4 months training course designed by industry experts and professionals. The course is intended to impart technical skills. There are classroom sessions which are supplemented with practical training.

Conclusion

To ensure the success of "Make in India" which would necessarily result in creation of jobs and making India a manufacturing hub. This would require a closer look into the educational and vocational skills being imparted to the candidates. Need exists to contextualize the curriculum and to dovetail with the private sector to better design and implement the curriculum. Focus needs to shift from the provisioning of simple education to skills enhancement and employability. Further the use of ICT in imparting skill education as cited by theexamples in the previous section would have deeper reach. It would have a myriad of benefits not just for the individual undertaking skill training rather the economy as a whole.

One potential area which could reap several benefits for a country like India is the Micro, Small and Medium Enterprise sector. It contributes 8% of GDP; and employs close to 8 crore people; contributing to

45 % of manufacturing output. Providing skills that would make people more employable for this sector would be one great achievement since the absorption of MSME sector is quite wise and its impact would be significant. Further skilled personnel could also start up their enterprises and be entrepreneurs.

[24]Directorate General of Employment & Training (DGE&T) Ministry of Labour & Employment. (n.d.) Upgradation of 1397 Govt. ITIs though PPP Introduction:: Directorate General of Employment & Training (DGE&T. Retrieved November 24, 2014, from www.dget.nic.in/content/innerpage/introduction.php

[25]Dr. Reddy's Foundation. (n.d.) Livelihoods Advancement Business School. Retrieved November 24, 2014, from www.drreddysfoundation.org/pdf/LABS_Brochure.pdf

[26]Singh, Charan . (n.d.) Made in India, by small enterprises - The Hindu. Retrieved November 25, 2014, from www.thehindu.com/opinion/op-ed/made-in-india-by-small-enterprises/article6446662.ece

Bridges and Barriers in Digital Service Delivery

Praful Gharpure

PMP®, Six Sigma Black Belt ASQ®, ITIL ® Consultant

Tata Consultancy Services, Mumbai

+91-9920715633

praful.gharpure@tcs.com

ABSTRACT

Government of India recently launched "Digital India" and "Smart City Initiatives". Both these programs align with the vision to make all Government to Citizen (G2C) services accessible to the common man in his locality, through common service delivery outlets and ensure efficiency, transparency and reliability of such services at affordable costs to realize the basic needs of the common man.

Today technology has opened avenues for achieving things which were impossible to think of two decades ago, however there is a need to align this Digital service provision with end user expectations and leverage the information available across different applications efficiently to transform the service provision. This is an important step in our journey towards Smart Cities leading to Digital India vision. The discussion in this paper outlines the "Bridges" and "Barriers" in the journey towards Service Provision in Digital Form.

1. Background

Government of India recently launched "Digital India" and "Smart City" Initiatives. Both these align to a common goal for a transparent, expeditious, economical service delivery. By definition a smart city is one that has digital technology embedded across all service delivery functions which authorities extend in both Rural & Urban areas. Once the service provider agencies attain a level of maturity in terms of digital service delivery the overall vision of Digital India shall become a reality.

All these services anchor upon the end user who is the citizen i.e customer of the service.

During life cycle every citizen passes through different phases where in there are needs for services of varied nature cutting across many different types. Illustration 1 provides a glimpse of the same.

Illustration 1

The providers of these services map to different departments under the respective administrative setup. The intent of Service in Digital Format is to accelerate the existing processes by automating the same and making them accessible to the end-user.

One of the key aspects missing in all the work so far is the "Reach" of these initiatives to the common man, the part of making the processes accessible to end-user is at infancy stage in majority of cases. However these digital services have a potential to transform the service delivery process if coupled with interdepartmental information sharing. It shall also lead to value enhancement for both process owner departments and the customer of the process who is the citizen. The current discussion in this paper intends to highlight the Opportunities i.e.

"Bridges" and the challenges i.e. "Barriers" in the provision of the services online.

2. System Inclusion – Digital way

In our country any e-governance initiative can be effective only if it proliferate to rural areas, be it be e-learning, e-governance, e-health, e-agriculture the key requirements are accessibility, connectivity, an affordable cost, ease to avail service. In event of short coming on any of these fronts the intent of the program to "Reach" is not fulfilled leading to masses deprived from the benefits and subsequently "Excluded" from the system.. The initiatives like Digital India can make this much needed "Reach" to the last mile in an effective way in order to enhance the user base of the schemes. Once the citizen avail the scheme they get included in the system thus makes them eligible to continue to get benefit irrespective of their physical location. Illustration 2 below lists opportunities for inclusion of segments along with causes for its exclusion.
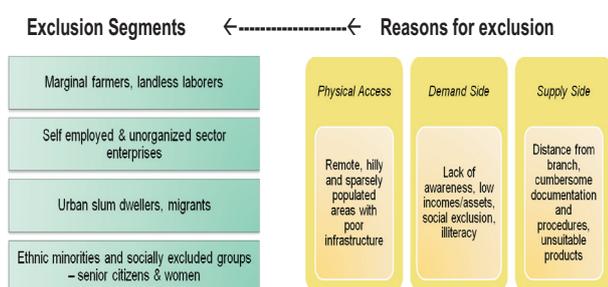
Illustration 2

IT implementation in India has been happening in bits and pieces. Though IT has found place on the agenda of all segments of service provision but what it lacks is an integrated approach to its rollout and effective sharing of IT infrastructure / Information to minimise the rework to economise on costs. The key factor for this to happen is to have a Single / Common /Unique Identity of the end user with all the segments of services. The UID based benefit transfer is one key step in this direction.

3. Bridges to Digital Service Delivery – Miles Covered .

The ground work for the service delivery in digital format is reasonably in place with IT implementation across majority of departments providing citizen services. The need of the hour is to bring these services under one single delivery channel for user to avail those. It is equally important to provide seam less navigation and maintain the linkage of identities created for a user with each provider.

To channelize the interdepartmental information exchange the Identity management across service providers is a key requirement. Such an exchange of information has to be based on identity mapping.

Federated Identity Management is an avenue towards the same. Federated Identity Management is holistic identity solution for faster and secure sharing of information with partners and providers. It facilitates replication of the same identity information across partners; it enables the formation and administration of a single identity per user – across enterprise boundaries there by forming a circle of trust. Illustration 3 provides a graphic representation of the concept of Circle of Trust.
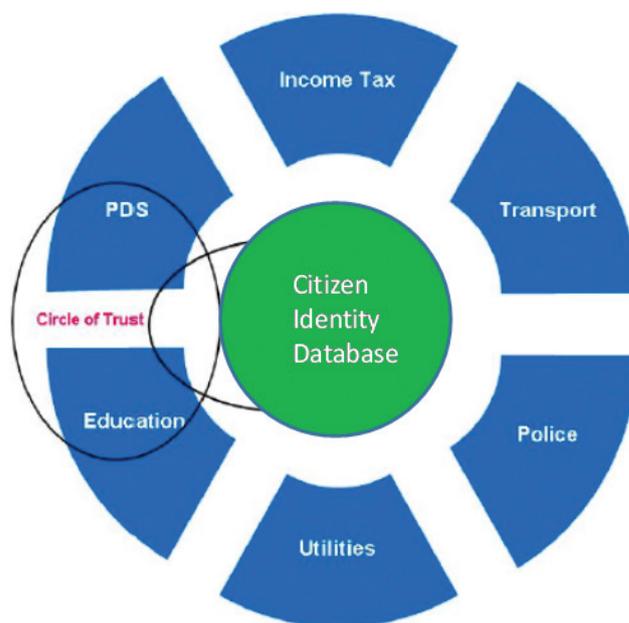

Illustration 3

In concept of Circle of trust, if a user logs to a site say a Bank Account to request for a change in address and needs a record to validate and update information. The site shall have a link to State Electricity Board website on which the user may or may not have an account. User can reach out to the website using link on Bank / portal page; with first login the user credentials shall be validated or he will be required to create login if not done already and opt for federation. On completing this, his identity on two accounts shall be linked facilitating the required validation from address field of electricity bill to update the bank account address. In a way the existing information can make mostly used functions digitally doable like

1.   KYC status updating

2.   Address verifications for services

3.   Signature Verification

4.   Electronic verification of records

5.   E-Notary of documents
…………and many more

Once established the identity provider and Service Provider within a circle of trust can leverage the information in their respective system to exponentially transform their service catalogue extending wide range of services which can be availed by end user through his choice of identity instrument like Ration Card / UID Card /PAN Card / Driving Licence etc . Illustration 4 gives graphical.
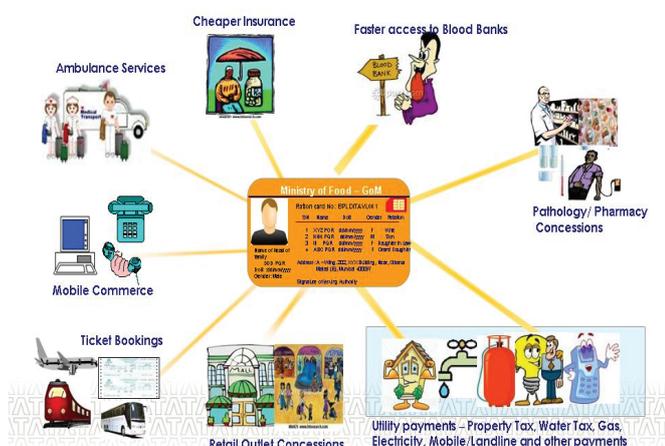
Illustration 4

The concept of identity management shall not only benefit the end user but the service provider as well in event that certain validation is needed in fulfilling the new service requests. Table 1 provides indicative list of information that can be exchanged within service provider department / agencies serving as bridges for information flow to enhance service delivery process.

Table 1 – Inter departmental Information Exchange

Department	Information exchange	Dependent department
Regional Transport Office	Vehicle accident data	Police
	Vehicle insurance data	Insurance agencies
	Claim details information	
	Owner Details (address)	MTNL
		Electricity Dept
Municipal Corporations	Property record	City survey
	Owner identity	MTNL
		Electricity Dept
		RTO
		Insurance agencies
Department of Stamps	Property details	City survey
		Corporations
	Owner details	MTNL
		Electricity Dept
		RTO
Electricity Dept	Information for new connection	Corporations
		City survey
		IGR
	Owner details	MTNL
		RTO

The benefits of above mentioned mechanism of information exchange can be many, few of those are listed below.

•   Simplified integration between one department and other department's web sites with services.

•   Improved business compliance by helping reduce security risk exposures

•   Improved end-user experiences through extended single-sign on

•   Expanded business reach for service providers by creating new revenue generating opportunities

•   Simplified security administration in cross-enterprise business processes by delivering security as services

•   Delivery of policy based integrated security management for web services.

4. Barriers to Digital Service Delivery – Challenges

The challenge faced by the champions of IT initiatives in India is the limited scope of expansion of the Service Catalogue to cover a varied range of services. The underlying cause for this is the silo style of IT implementations by service provider departments wherein individual processes are automated. As a result the individual service provider is interacting with same set of users independently multiple times, the key link of interdepartmental information exchange is missing and is left to the end-user to bridge by manual means leading to rework at the customer end.

There are challenges when we think of a common service delivery channel and define process to cover all services. The primary reason being the fact that the IT implementations are carried out at process level of a provider. The service / user information from other providers for the same user has to be provided by user himself leading to multiple handoffs of the data and manual effort on part of user and the departmental staff. As a result the users go through series of rework loops for the want of information and information updating subsequent to any transaction carried out .Illustration 5 depicts the key services in urban areas and the nature of duplicity in the transactions.
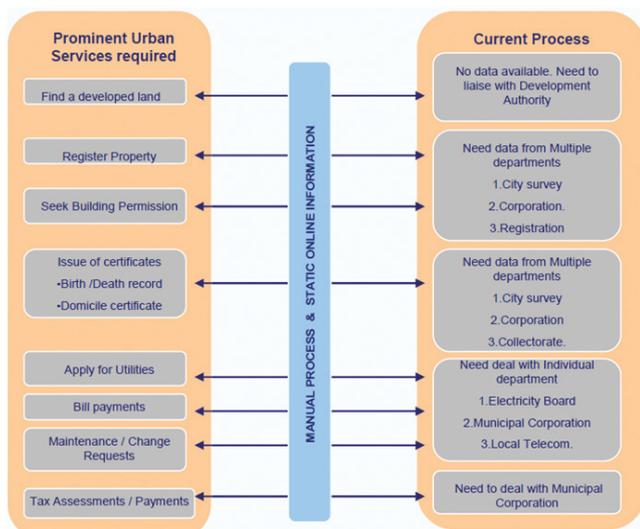
Illustration 5

Considering the fact that the IT solutions at various service providers are at different levels of maturity, it is important to leverage the existing infrastructure already in place and build over the same. It is equally important for extending the service where in a user gets to use the service himself or through an agency without being forced to visit to departments for its service fulfillment. Following are the challenges that stand out in implementation of such a framework.

1. End user Identity management and Mapping

2. Infrastructure capacity.

3. Compatibility of IT systems/databases/platforms of different departments with each other.

4. Scalability of existing applications.

5. Information exchange mechanisms.

6. Geo referencing of assets.

7. Ability to carry out financial transactions.

For a common man the accessibility of information of a service is itself a challenge to begin with, availing of the service comes as the next challenge. The issue of system exclusion mentioned in discussion earlier relates to this challenge.

The result of a survey in UK reveals interesting feedbacks from end user which supports the above argument. Table 2 below gives some of the key observations captured.

Table 2.

Source : Service Design Principles – A Pocket Guide : Cabinet Office Govt of UK 2007

For a basic service delivery process on which a common man is dependent the answers to above questions are key to the attainment of end user satisfaction on delivery of service. The above discussion brings out some key aspects of current

online service delivery which have led to poor end user satisfaction and reduced faith in online system

The provision of common service centres / village level entrepreneurs schemes have been put in place to overcome such challenges, however the concept of speed money comes to mind of the end user when it comes to G2C / G2B services which often dilutes the very purpose of digital service delivery initiative The end-users who do not avail the services the form set of these users which gets excluded from the system of digital service world.

5. Bridging the Barriers to Digital Service Delivery- Miles to go

Role of Information & Communication Technology (ICT) has been proved beyond doubt in urban areas where the electronic service delivery has picked up rapidly in recent past. One of key benefit ICT can bring in is the creation of information gateway between Rural and Urban areas thereby delivering the services extended by urban centers to rural area residents at their door step.

The Vision of digital India is based on 3 broad areas

• Digital Infrastructure as a Utility to Every Citizen

• Governance & Services on Demand

• Digital Empowerment of Citizens

These are planned to be achieved with nine key pillars most important ones are Information, connectivity, service oriented applications, channels of delivery, with multiplier effect inducing ones like employment in IT and provision allied services to key primary ones. In event Digital Service delivery is seen from a service management perspective, where in a Citizen gets a channel of requesting a Service, the fulfilment of the same needs to be achieved with information exchange to deliver the service and provide support assurance to the end customer, the citizen. The concept of "Open Government" can

be partially translated into reality by empowering citizens to demand services they need. Illustration 6 depicts the same concept graphically
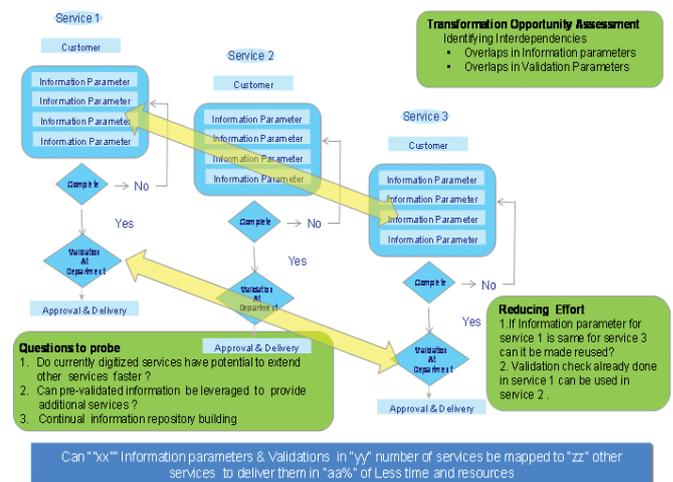

Illustration 6.

As indicated in above illustration, there is a need for an integrated approach for the service delivery in digital format backed by strong and efficient service support set up.

The Digital Service Delivery is primarily concerned with the proactive and forward-looking services that the service provider departments require from its ICT provider in order to deliver to Citizens. It needs to be focused on the need of citizen as the Customer of the ICT services. The Service Support is focused on the Users of the services and is primarily concerned with ensuring the access to the appropriate services to support the business functions.

Service management in IT world has effectively leveraged the best practices across globe in effective service delivery and support. These are known as ITIL framework. ITIL® is a set of best practices intended to facilitate the delivery of high quality information technology (IT) services. The acronym ITIL® (IT Infrastructure Library) is a Registered Trade Mark of the United Kingdom's Office of Government Commerce (OGC).The ITIL® processes aim at achieving high financial quality and value in IT operations. These procedures are supplier-independent and have been developed

to provide guidance across the breadth of IT infrastructure, development, and operations.

The concepts of ITIL processes can be adopted for provision of G2C and G2B services intended to be covered under the vision of digital India. The IT infrastructure provision for the same is already based on these concepts. .The same approach need to be extended. Illustration 7 depicts the framework for the same.
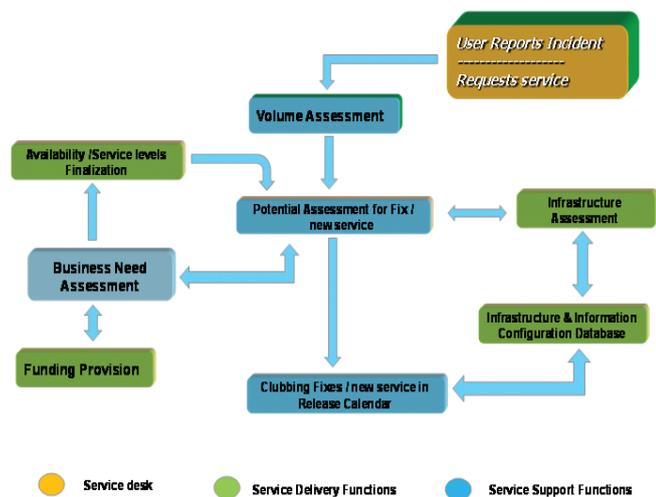

Illustration 7

The IT solutions deployed across globe use the ITIL principles of service delivery and management. The framework supports the key functions which align with the Digital India focus areas described in para 5 above ,following are some major ones. Illustration 7 above depicts the same graphically.

a. Provision of central help desk allowing end user to report incident / request a new service. This allows citizen to request a service of their choice.

b. New service is assessed for need and viability –Technical / Financial for solutions.

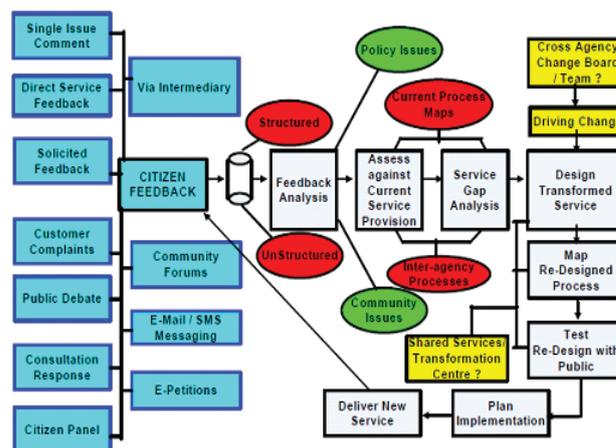c. Incidents are seen if repeat ones, then taken as problems for permanent resolution.

Illustration 8

d. New service request if viable then based on infrastructure new/existing is clubbed in rollout schedule to put in use.

e. Each infrastructure item is mapped and termed as configurable item. The changes are documented and updated for each such item. This is similar to physical assets in service provisions like roads / water/power lines treated as configurable item and mapped based as geo referenced objects.

f. The infrastructure is assessed for usage for one / multiple services optimising the overall setup.

g. The process thus aids to gather citizen view of services and plan for the same, the concept of release calendar makes option of structured rollout of similar services together.

h. This can even streamline the current procurement process (tendering) by documenting scope as per end user requirement.

i. The consultants working with government also can get necessary inputs to help refine their detailed project reports.

j. Citizen can get the service of their vision

and for which they are even willing to pay making the service delivering organizations financially stronger.

In current times with various channels for communication with end user are possible, the authorities / state govt as apex body can centralise the channelization of end user views to get consensus for new service provision or upgrades to existing service through IT as medium. The concept has been effectively used in IT based Citizen Service delivery processes in Europe, Australia and Canada. One of such approach of service refinement is depicted in Illustration 8.

6. Conclusion

The underlying cause of barriers for digital service delivery is the silo style of IT implementations by service provider departments. While we work on action plans towards initiatives like Smart Cities, infrastructure and solutions already in place, needs to be fully leveraged to complement the tasks to be undertaken in future.

In other words e governance operating frameworks like ITIL is needed to support interoperability across service delivery channels, within a tier across different domains, to complement digital delivery functions. The investment made in digital service delivery initiatives will provide the desired benefits with bridging the barriers like the one cited in this paper.

Establishing digital Governance for administering subsidy to the beneficiary through (DBT) process: An overview of Odisha Agriculture Department

R.S Gopalan, IAS

Director,

Directorate of Agriculture & FP, Odisha,

Unit-V, HOD Building, 751001,

Ph: 0674-2395532

diragri.or@nic.in

Sarita Sahoo

Scientist-D

National Informatics Centre,

Sachivalaya Marg, Unit-IV,

Bhubaneswar, 751001, 9437464228 (M)

s.sahoo@nic.in

Abstract:

The recent Agricultural reforms in the state of Odisha have led to a shift away from a state dominated system to a privatized system in which the agricultural inputs i.e. fertilizer, seeds and agricultural implements are now being delivered by the private sector. However, the incidences of fraudulent activities have become common and have emerged as a great problem. Attempts have been made at different levels to make Agriculture department more effective, transparent and accountable through the use of digital Governance and implement the agricultural policy in its' true spirit and remove all the problems faced at different stages of implementation. Such programme needs transparency at every steps and delivery of Govt. support to the farmers effectively with greater efficiency. It has envisaged National Informatics Centre, Odisha and state agriculture dept to develop an Information Communication Technology (ICT) enabled project named as "e-Farm Mechanization, e-JALANIDHI, e-PTS(Pump set tracking system) " to facilitate AGRICULTURE-ONLINE which focuses proper implementation of auditing and delivery of subsidy and creation of database at the state level to monitor for the benefit of the farming community as a whole. Its focus is on the increasing value in the Dept. of Agriculture and enhancing its relationship with its minimum agenda of e-Governance i,e. integrating the Govt. function (G2G), integrating agribusiness partner (Implement vendors, Executants & Pump set dealers) (G2B), concerning farmers (G2F) , empowering employees, enhancing Govt. productivity & values and maintaining transparency in the system . This workflow automation system facilitates accuracy, clarity, completeness and controlling changes and communicating to relevant stakeholders. The output of the project is very encouraging , farmers get the implements in a transparent way, quick supply of implements at the farm level has become reality. Farmers also gets best deal by negotiation with the vendors , fast disposal of subsidy to the beneficiary and pattern of assistance is directly credited to the registered bank account of beneficiary through RTGS/NEFT.

Keywords - Agriculture, ICT, e-JALANIDHI, e-PTS, e-Farm Mechanization, NeGP-A, WCF, RKVY, NFSM, pattern of assistance, subsidy

1. Introduction

Agriculture sector is the main stay of Indian economy. Today India ranks second worldwide in farm output production. Agriculture and allied sectors contributes around 16% of GDP and employ 52% of the total workforce and it is still the largest economy sector which plays the significant role in the overall socio-economy development of the country. Hence, it is very important to develop this sector by use of ICT for improvement of quality agricultural policy delivery system to increase the productivity so that 4% growth rate in agricultural sector can be achieved . The vision 2020 document of the Dept. of Agriculture, Odisha envisaged that "The tools of

ICT will provide networking of agriculture sector not only in the country but also globally and the state govt. dept will have reservoir of databases "and also bring "farmers, researcher, scientist and administrator together by establishing agriculture online" through exchange of ideas and information. As the agriculture is in the state sector, Govt. of Odisha has evolved new agricultural policy 2013 to increase productivity through better input delivery system with Govt. initiatives. Implementation of such programmes needs transparency at every steps and delivery of Govt. support to the farmers effectively with greater efficiency. It has envisaged National Informatics Centre, Odisha and state agriculture dept to develop an ICT project named as "e-Farm Mechanization, e-JALANIDHI, e-PTS

(Pump set tracking system) " to facilitate AGRICULTURE-ONLINE which focuses proper implementation of auditing and delivery of subsidy and creation of database at the state level to monitor for the benefit of the farming community as a whole. Its focus is on the increasing value in the Dept. of Agriculture and enhancing its relationship with its minimum agenda of e-Governance i,e. integrating the Govt. function (G2G), integrating agribusiness partner (Implement vendors, Executants & Pumpset dealers) (G2B), concerning farmers (G2F) , empowering employees, enhancing Govt. productivity & values and maintaining transparency in the system . In recent times, Self Propelled and Power Operated machinery have replaced many farm activities formerly carried out by Human and animals. Mechanized agriculture is the process of using agricultural machinery to mechanize different agricultural operations, ensuring timely use of inputs, thereby increasing production & productivity. Off late the rapid industrialization in the state and launching of different employment generation program by the Govt., agricultural workers have shifted for off farm activities forcing the farmers to opt for mechanization. Govt. of Odisha is helping the farmers to procure different farm implements / machinery by providing huge amount of subsidy.

But the process of service delivery was manually maintained with procedural delay causing hardship not only to the stake holders but also affecting the efficiency of the Govt. machinery. To overcome this problem, Agriculture dept., Odisha introduced the on-line system by reengineering manual process in complete manner. The system helps in expediting the entire process effectively, efficiently in a transparent manner benefitting all the stake holders.

Digital Governance in Agriculture dept, Odisha establishes a relation between Government & citizen of the state for which farmer/citizen can participate with the online system directly to avail the farm implement /Pump set/ PLIP. Attempts have been made at different levels to make Agriculture department more effective, transparent and accountable through the use of digital Governance. Now the MMP (Mission mode project) of NeGP-A (Agriculture) looks forward for rapid development of Agriculture across the country through the use of e-Governance application .The Agriculture Department, Govt. Of Odisha has successfully implemented digitization process in twenty applications which are highly acclaimed at the highest level from the Ministry of Agriculture & Co-operation, Govt. Of India. We may cite some of the best practices like e-Farm Mechanization, e-JALANIDHI, e-PTS(Pump set tracking system) , Input (Fertilizer, Pesticide & Seed) licensing system & Input Management system which are successfully implemented since last ¾ year.

2. Background:

The manual system of input delivery and subsidy delivery in the department of Agriculture, Odisha was facing the problem of weak enforcement of the regulatory framework, rule of law, accountability and lack of control of corruption – the main components of lack of good governance - are the underlying reasons for this problem. Input and subsidy monitoring process was time consuming and not very effective to track at each points in the manual process. The disbursement process

was taking months together. The beneficiaries were moving from pillar to post to get their dues. Multiple transactions involving huge paper work getting the process more difficult and tedious. With this background a team was constituted, Scientists from NIC and officer of lying Dept. to take up a project for effective monitoring of delivery system and transfer benefit directly to the farmer and expedite the release of fund to the dealers after due check in a transparent, cost effective and in efficient manner.

3. Purpose & Priorities:

Good Governance should be participatory, transparent and accountable in characteristic. This provides a framework within the system so that the voices of the poorest farmer of the state and most vulnerable are heard in the decision-making processes while allocating resources with a high subsidised price. The development, deployment and proliferation of the new and emerging ICT application herald new opportunities for farmer's growth and development by getting the farm implements/ PLIP in a fair means way. Govt. Of Odisha initiated the farm improvement programme with a intention of helping the large / marginal / poor farmers of Odisha by providing the implements/ PLIP / Pump set in a transparent manner with subsidy in RKVY, NFSM, Workplan & state plan scheme. The main purpose is to facilitate the planning and tracking of project components, stakeholders and resources and keep a tab on the automated system. This workflow automation system facilitates accuracy, clarity, completeness and controlling changes and communicating to relevant stakeholders.

3.1 Priorities

Dept. of Agriculture, Govt. Of Odisha was guided through a priority setting and resource allocation process, from project conception to implementation. The following steps have been taken into consideration priority wise:

- First and foremost priority of the initiative was to deploy the application in a secured environment as it involves the release of subsidy amount which is a very risk factor for the Dept.

- Manage the demands of stakeholders in fast process rather keeping it in pipeline.

- Setting of target immediately as per demand flows from farmers.

- Reports can be generated and shared at any point in the process enabling the decision maker/ legislators to obtain information at the click of a mouse.

- Designed the monitoring system for subsidy release process for the concerned officers of Directorate for which Dept. has full control over this issue.

- Farmers should not be deprived for getting implement/PLIP/pump set.
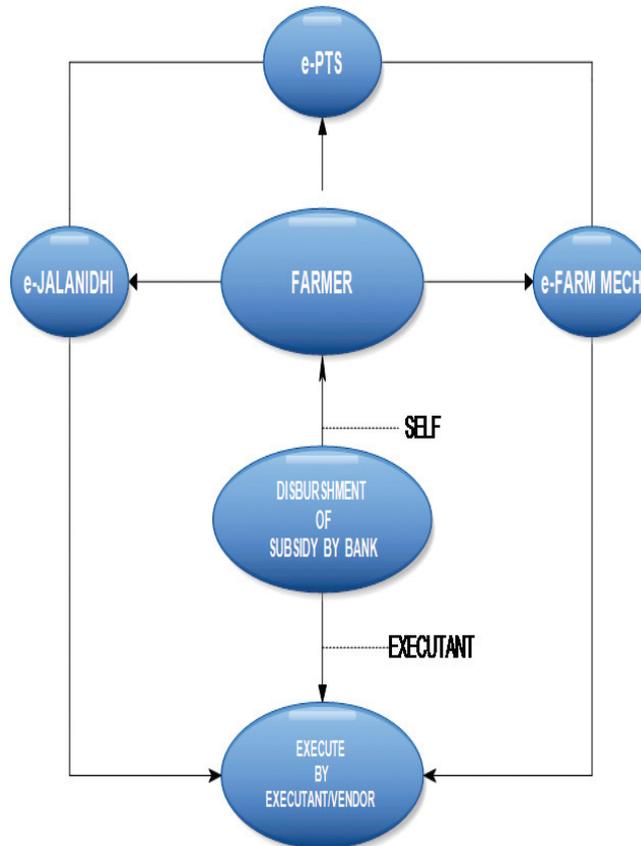
4. Stakeholder Participation:

Good governance encourages public trust and participation that enables the online services more powerful for all the stakeholder those are closely associated with the e-Gov programme of the Dept.
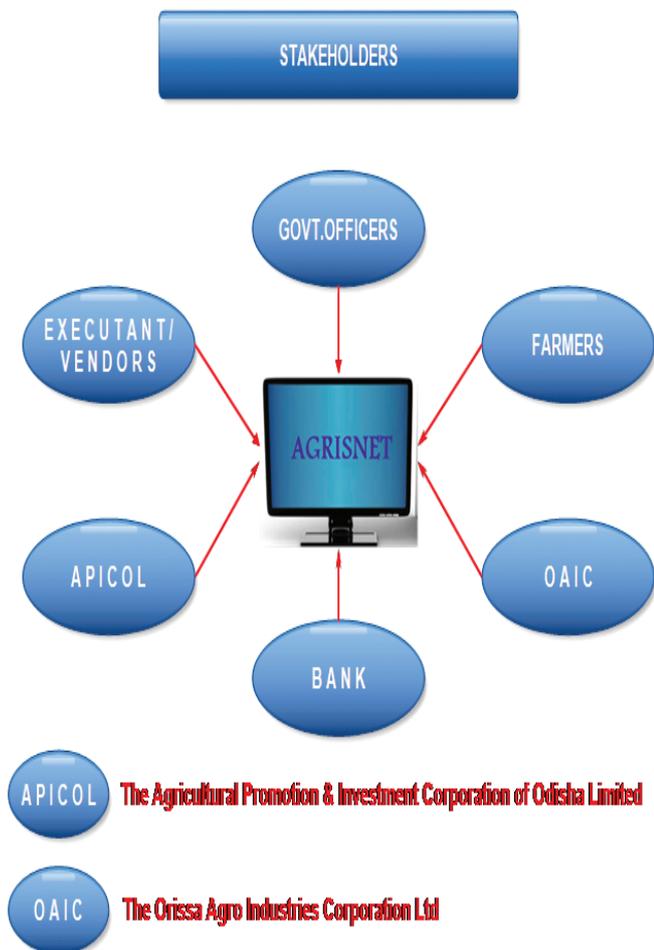
It is ensured that Dept. fulfils its overall purpose, achieves its intended outcomes for farmer, and operates in an effective, efficient and ethical manner. This principle guided all governance activity of the organization. Agriculture Department, Govt. Of Odiha has its own purpose for providing good quality services and achieving best value for farmers. The ultimate goal of Dept. is to establish reciprocal relations between all stakeholders that are based on mutual trust and led by transparency. This system shares and disseminates the factual and accurate information which prevent any misleading information for the stakeholder participated.

4.1 Stakeholder

✓ Directorate of Agriculture and Food Production, Odisha- Target set, Overall monitoring

✓ 30 Deputy Director Agriculture- Set the target for the block and agriculture district.

✓ 649 Nos of Assistant Agriculture Officer – Online permit generation for the farmers in pump set and Go Ahead letter for jalanidhi scheme .

✓ 97 Nos of District Agriculture officer – Online permit generation for Farm machinery system.

✓ 97 No. of Asst. Agriculture Engineers – Online verification , Uploading the joint photograph of himself, implement & farmer

✓ 137 Nos of Executants./ 800 implement vendors/35 Manufactures for pump set/ 300 dealers for pump set- Execute the project/ sale the pump set and implement, Online submission of completion certificate, generate subsidy claim certificate

✓ Axis Bank and Bank of India- Online verification of documents with the physical copies, release the subsidy thru RTGS/NEFT directly to the registered bank account of beneficiary.

✓ Farmers from all over the State- Beneficiary of the system.

5. Reforms Initiated

Governance reforms to improve existing system where in a huge set of documents were being produced for availing pattern of assistance to get any farm improvement equipments. The system is e-green governance compliant as because of it requires only three papers for submission at bank

for disbursement of subsidy through DBT process. The system also promotes the effective participation of any farmer irrespective of farmer class (i.e. Small, large, marginal, tenant, women, share croppers & lessees).

6. Strategies adopted for bringing transformation:

In this Good Governance system , efforts have been made for creating awareness among the farmer for full participation with the initiative , Department train the farmer and build their capacity. The problems in the prevailing system was analyzed and identified by the Dept. With the technical support of National Informatics Centre, Odisha , system study was held with active participation of the stake holders and technical team of the agriculture Department, Govt. of Odisha The design model was pretested and stake holders feedback was accessed and necessary modifications was taken at different levels for smooth functioning of the system. Department adopts 'Demand-side' and 'Supply-side' strategy for deploying the e-Gov initiative. Demand-side aims at strengthening the ability of farmer, as a result it enhances the agricultural growth. supply-Side" strategy aims at strengthening the capacity of the Govt. to supply services effectively and efficiently and to be more responsive to farmer's priorities and needs which measures the dimension of good governance.

7. Positive Impact:

✓ Stakeholders participation is highly encouraging.

✓ Farmers get the implements in a transparent way.

✓ Quick supply of implements at the farm level.

✓ Farmer gets best deal by negotiation with the vendors.

✓ Quick disposal of subsidy to the beneficiary.

Subsidy amount is directly credited to the registered bank account of beneficiary through RTGS/NEFT.

8. Increased efficiency of outputs/processes

l No	Factors	Before	After
1	Time devote towards monitoring by Dept.	100 %	20 % (it became easy to monitor the project at any place)
2	Time consumed by the farmer to get a permit	80% (He had to go to the office again & again to check the status of permit)	20% (no need to go to office as online status enquiry facility are used by the farmer at his place and he is spending this time in agriculture work
3	Travel cost of farmer	Run after the officer/ vendor. Over burden with travel cost.	Drastically less only Once to get the permit (No need to spend money towards travel as time limit & SMS is imposed in the system so all the stake holders are alerted to do his job
4	Target achieved	40%	95%
5	Work Interference	Overlapped	The system has a clear and discrete time bound function for all the stake holders. Every action leads to another action.
6	Vendor participation	Average	Outstanding participation in the business. As beneficiary gets the subsidy in 3 / 4 days and has no doubt of retaining outstanding dues with Govt.
7	Subsidy held up	Without any reason. Corruption level was high.	Everything is clearly mentioned in the system for the held up. Corruption is minimized.

8	Paper used	Many sets of paper for different tables.	Drastically reduced. Only one set having 3 / 4 papers .
9	Travel cost for vendor	Run pillar to post for getting subsidy	No need to come to Bank for taking subsidy. Documents submission thru post / courier and get subsidy amount in his account after verification of his documents.
10	Manpower	20% manpower (govt. Officers) were engaged for releasing the subsidy.	Now Bank has taken the responsibility to release the subsidy to the beneficiary.

9. Innovativeness and reliability

This digitization programme provides innovative edge to the Dept. by using Mobile technology (alert SMS / OTP at each point of execution) which is particularly a positive impact in this area.

e- Jalanidhi project, there is a mandate for all the beneficiary to take the photograph before and after the execution with the GPS location (Longitude and latitude). GPS cameras are provided to the officer of Dept. to check the fraud location . Online bill for farmer share and subsidy is being generated as per the measurement given by Asst. Agriculture Engineer which cannot be tampered

e-PTS project, the entry of pump set engine numbers have been restricted for all the stakeholder to check duplicate engine numbers and there is no scope to alter the engine no. Only the provision has been set for entering pump set engine no by the authorized manufacturer. SMS & SMTP mail services of NIC are integrated at each point of the system to alert the stakeholders.

From the huge databank of farmer, Dept. could easily get detail information of the services availed by any farmer.

10. Effectiveness of outcomes

There is a great hike of permit / Go-Ahead letter issued in favour of farmers of Odisha through this online system since financial year 2011. Now Dept. achieves the goals/ target for disbursing the subsidy amount within the stipulated period.

Total Permit/ Go ahead letter issued to farmers and Subsidy released statistics after the initiative implementation.

Project	Final Year	TOTAL PERMIT	TOTAL SUBSIDY
e-FARM MECHANI -SATION	2011	20757	1279930842
	2012	26388	1495948235
	2013	33433	2414848274
	2014	22155	849591247
	Total	102733	604,03,18,598
e-JALANIDHI	2012	3453	91786655
	2013	9914	293245475
	2014	6749	52136259
	Total	20116	43,71,68,389
e-PUMPSET	2012	14960	103588301
	2013	32702	204121656
	2014	9935	16019085
	Total	57597	32,37,29,042

Conclusion

Digital Governance should be tailored for the participation of the stakeholder in the decision making process. Information at each stage is critical for the success of the performance in the governance

in the system. There was huge variation in the performance when manual system was in operation , monitoring was not effective which frequently led inconsistencies in implementation. The present process has created significant opportunities at each level to implement properly which is flawlessly monitored at the head quarters. Further, it has created awareness and accountability among the officers of the Department. The work is of paramount importance since this has made the real difference in performance in the governance of direct benefiting by transfer of subsidy to the beneficiary. The value for timely and appropriate delivery has increased the confidence of the farming communities on the Govt. Dept. The public/Govt. and the private/corporate sector are able to responds to the growing need of agricultural input information demand . The contemporary revolution in mobile/ communication and GPS location at the field level has tremendously helped in the minimization of fraudulent activities at the field level. Agriculture Department, Govt. of Odisha feels to design the future strategy and system to provide 'Information to the farmers at any time when they need' by using push/pull technology so that communication can be possible between the farmer and vendor / executants . Now it is the high time to think for an integrated approach " one stop solution in a single window system" which should cater to the problems faced by farmers in using ICT applications , such as accessibility, acceptability & information related to extension part of agriculture in their language. The initiative of integration of regional language have been taken into consideration to render all the services to the farmer community in Odiya language. There is a requirement of inclusion of digital signature for restricting the fraud signature of the permit issuing officer. As a result farmer needs not to come for permit at officer place. Now the farmers / implement dealers data are being shared through WCF (Window communication foundation) service to other applications for better

interoperability and consumed by Farmer Portal (http://farmer.gov.in) of Ministry of Agriculture, as well as e-Taal of Govt. of India.

Reference:

[1] Agricultural Resources Information System (AgRIS): An e-Government Programme for fostering agricultural growth, poverty reduction and sustainable resourceuse in India*"A Step towards establishing a location-specific e-Government model for the Poor" Madaswamy Moni.

[2] Good governance is perhaps the single most important factor in eradicating poverty and promoting development" **said Kofi Annan, 1998.**

[3] Strengthening rural Governance, Institutions and citizen Participation using ICT, Cory Belden (World Bank) and Regina Birner (University of Hohenheim)

Riding The Mobility Wave - Are We Ready For m-Governance?

Raghu Ramakrishnan

Tata Consultancy Services

A61-A, Sector 63

Noida, Uttar Pradesh, India 201301

91-9810607820

ramakrishnan.raghu@tcs.com

raghuramakrishnan71@gmail.com

Arvinder Kaur

University School of Information

& Communication Technology

Guru Gobind Singh Indraprastha

University, Sector 16C

Dwarka, Delhi, India 110078

91-9810434395

arvinder70@gmail.com

Gopal Sharma

Tata Consultancy Services

A61-A, Sector 63

Noida, Uttar Pradesh, India 201301

91-9958444833

gopal1.sharma@tcs.com

gopalsharma1972@gmail.com

Abstract

There is an increasing recognition of the need for leveraging mobility for delivery of informational and transactional e-Governance services to Indian citizens. Towards realizing this objective, the Government of India has embarked on the ambitious National Mobile Governance Initiative. The number of smartphone users in India is also rapidly growing. This implies that websites of various government agencies need to be mobile ready either as Mobile Websites or Mobile Applications. To gain acceptability on a large scale, these need to more responsive and friendly as compared to a classical web application given the limitations imposed by mobile devices like small screen size, varying bandwidth and costs associated with data transfer. This paper analyses a number of e-Governance websites to understand our readiness to ride the mobility wave. The results of this study show that there is an urgent need to include support for mobile devices as a key non-functional requirement. This support is in terms of tailored content for basic functionality and responsiveness.

1. Introduction

An efficient, transparent and accessible governance system is a vehicle of growth and prosperity for any country. A country as large and diversified as India realizes the need for such governance and has used Information & Communication Technology (ICT) effectively to bring in the required socio-economic changes through its e-governance programs.

The rapid economic evolution and increasing digital literacy has made a compelling case for the government departments to adapt different digital means to render citizen services. The growth of smartphone subscribers in India has brought mobility or m-governance as a new paradigm of the National e-Governance Plan. Mobile governance uses mobile devices like smartphones and tablets as a platform for delivery of public services traditionally delivered using desktops and laptops [GUID2014]. This thrust on leveraging mobility has resulted in the national mobile governance initiative Mobile Seva comprising of technologies like push and pull SMS, IVRS and Mobile Applications. This thrust has resulted in more than 1350 departments using mobile an instrument to deliver public services. There are 315 Live Applications with more than 200000 downloads from the government m-Apps store [MSEV2014]. The world of computing has witnessed four stages of evolution ranging from dumb terminals, intelligent desktops, web applications and mobile devices [SUME2013]. This evolution has seen applications alternating between the client and server side. The booking of

tickets in Indian Railways is a classic example of this evolution comprising of dumb terminals of the Passenger Reservation System in the late 80s, the web application for booking tickets on the Internet to its mobile application IRCTC Connect.

Research has found that mobility is all set to become a significant platform for conducting business and providing a wide range of informational and transactional services in the coming years. The total number of world's population using smartphone is expected to be one-fourth of the world's total population by this year and by 2017, this number is expected to grow to one-third [EMARK2014]. The mobile and web measurement firm comScore has found that in US the time spent on online retail activity using a mobile device was 55% [IRET2013]. The deployment of mobile as one of the pillars of SMAC (social media, mobile, analytics and cloud) is being advocated to bring in a second sunrise in the field of e-Governance [SATY2014].

Mary Meekers in her detailed report on Internet Trends has discussed the following key findings [MARY2014].

• India has 177 million smartphone users as compared to 1.7 billion smartphone users in the world, which is 10% of its population. This is a 55% increase over the number of smartphone users in India in 2012, but still behind US and China.

• The mobile traffic as a percentage of Internet traffic across the globe is increasing by 1.5 times. It is approximately 25% and expected to grow further.

The Ministry of Communication and Information Technology, Government of India has published two artifacts - best practices in the area of localization of mobile web applications and broad guidelines for delivery of public services through mobile devices

[GUID2014]. The first artifact also refers to the W3C specifications in the area of graphics, multimedia, device adaptation, forms, user interactions, storage, sensors and hardware integration and network [LOCA2014].

The authors had analyzed a number of websites related to the e-Governance domain in India and recommended the need to add performance as a critical requirement for a government website [RAGH2014]. The goals of our study are as follows.

• To gain an insight into the mobile readiness of e-Governance websites

• To gain an insight in the composition of these websites and their suitability for mobile devices

• understand how these websites load on various mobile devices using 3G connectivity option.

The W3C Mobile Web Best Practices specify best practices to be used for applications developed for mobile devices [MWBP2008].

The rest of the paper is organized as follows. Section 2 gives a brief description of web page performance. Section 3 describes the methodology. Section 4 provides the results and findings of this study. Section 5 provides the summary, limitations of our study and suggestions for future work.

2. Application Landscape

The Internet applications for carrying out business transaction can be grouped into three categories - Desktop Websites, Mobile Websites and Mobile Applications (or Mobile Apps).

Desktop Website: The Desktop Website runs in a web browser of the user's desktop. Desktop Websites work on the thin client thick server paradigm.

These applications are popular because of the wide availability of browsers and the ease of maintaining them without the installation and distribution effort. Desktop Websites are designed keeping in mind the large screen size of the user.

Mobile Website: The Mobile Website is a mobile ready version of the Desktop Website which runs in a web browser of the user's mobile device. Mobile Websites work on the thin client thick server paradigm. These applications are designed keeping in mind limitations on a mobile device like small screen size, navigation, speed and cost of access (the charges levied by the mobile service provider).

Mobile Application: The Mobile Application is client side software that is downloaded and installed on the user's smartphone. These applications can be downloaded from various application stores or are pre-installed on the smartphone by the manufacturer.

The business transactions for all the three categories of applications are typically provided by the same backend.

Figure 1 shows Desktop Website, Mobile Website and Mobile App of Ministry of External Affairs, Government of India (http://mea.gov.in/)
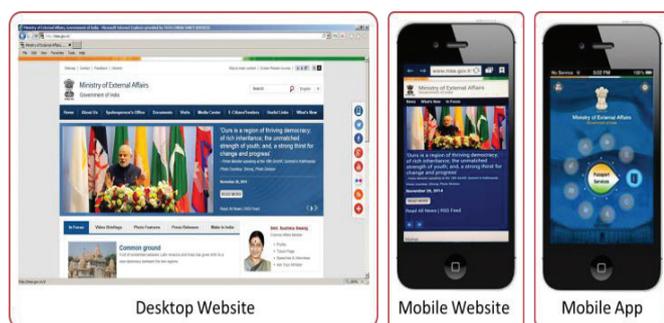
Figure 1: Application Landscape of Ministry of External Affairs

The publically available tools Websitetest1 from Yottaa and W3C mobileOK Checker2 from W3C is used in this paper for measurement of the mobile readiness of the e-Governance websites. This tool reports the failures per severity and failures per category. These tests are based on a smaller set of the Mobile Web Best Practices and cover areas where it is possible for a machine to automatically verify the result [MOKT2008].

The Websitetest tool allows us to test a website using the following options.

• On one or more devices (e.g. Samsung Galaxy S4, Apple iPhone5, Apple iPad4) from a number of locations and at different connectivity options like Wifi, 3G, 4G and LTE.

• On one or more browsers from a number of locations and at different broadband connectivity options like 1.5 Mbps DSL.

The mobileOK Checker carries out the tests defined by the mobileOK Basic Tests 1.0 specification on a website to find out its level of mobile-readiness. This tool reports an

---

1 http://www.websitetest.com/
2 http://validator.w3.org/mobile/

overall score, failures per severity and failures per category as per W3C Mobile Web Best Practices. The severity levels are Critical, Severe, Medium and Low. The categories include design for one web, reliance on web standards, staying from known hazards, device limitations, navigation, graphics and color, size, network use, help and guide user input and display of information in a concise manner [MWFC2008].

3. Research Methodology

This section describes the methodology used in this study. The tests in this paper were done using the mobileOK Checker and Websitetool described in Section 2.

This paper analyzes mobile performance and readiness metrics of 25 Indian Government websites that includes 16 Central Government, 6 State Government and 3 Local Government web sites providing a mix of informational and transactional public services. These websites cover areas like Taxation, Elections, Post, Railways, Health, UID, Company Affairs, Immigration, Passport, Personnel, General Public Welfare and State Citizen Services. These websites were selected using the following information sources.

- Government of India Web Directory by National Informatics Center (http://goidirectory.nic.in)

- National Mobile Governance Initiative website (https://www.mgov.in)

- Electronic Transaction Aggregation and Analysis Layer website (http://etaal.gov.in/etaal/)

- Web Analytics website (http://www.webanalytics.gov.in/)

- AppStore (https://apps.mgov.gov.in/index.jsp)

The websites were selected by considering attributes like public visibility and usage in the area of e-Governance as measured by the transaction counts. The Alexa3 rank of these websites was also taken into account in the selection process. This rank provides indicates the popularity of a website which in turn helps understand the usage patterns.

Figure 1 shows the jurisdiction wise distribution of the sample whereas Figure 2 shows department wise distribution.
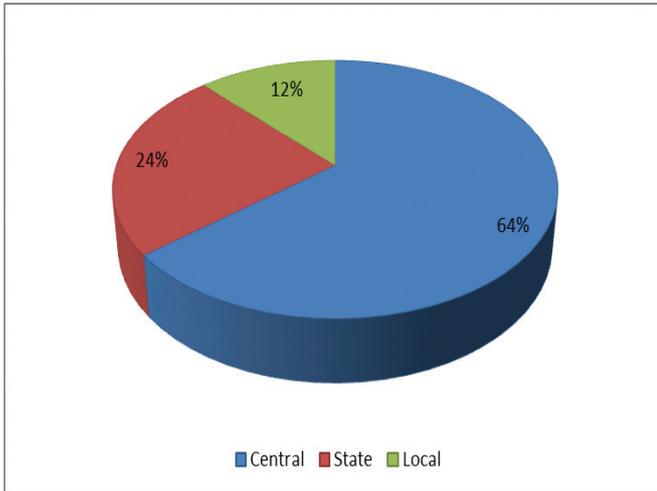
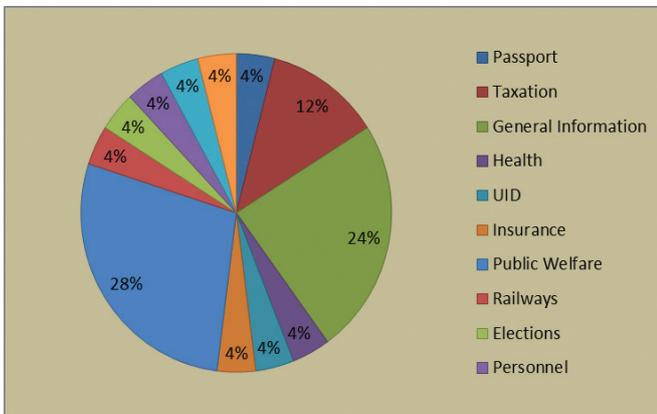*Figure 1. Jurisdiction wise distribution of the sample websites*

Figure 2. Department wise distribution of the sample websites

Multiple Mobile Devices: Each website was accessed ten times on two mobile devices Galaxy S4 running Android 4.2.2 and iPhone5 running iOS5 and a tablet iPad running iOS4. The connectivity option used in these tests was 3G with settings 1.6 Mbps download, 786 Kbps upload and latency of 300 milliseconds. The tests were carried out over a period of five days on the Websitetest instance hosted in Singapore starting from 25th of November 2014. The instance hosted in Singapore was selected from four hosting options in Asia namely Singapore, HongKong, Sydney and Tokyo as the instance appeared to be more stable.

Desktops: Each website was also accessed ten times on Microsoft Internet Explorer and Google Chrome from the Websitetest instance hosted in Singapore. The connectivity option used in these tests was 1.5 Mbps download, 384 Kbps download and latency of 50 milliseconds. The tool does not provide an option to specify a user defined setting for bandwidth or latency.

Table 1 summarizes the devices, connectivity setting, locations and cycles used in the tests.

Host	Connectivity	Location	Runs
Galaxy S4	3G (1.6mbps / 768kbps, latency: 300ms)	Singapore	5
iPhone 5	3G (1.6mbps / 768kbps, latency: 300ms)	Singapore	5
iPad	3G (1.6mbps / 768kbps, latency: 300ms)	Singapore	5
IE9	DSL (down: 1.5mbps, upload: 384kbps, latency: 50ms)	Singapore	5
Chrome	DSL (down: 1.5mbps, upload: 384kbps, latency: 50ms)	Singapore	5

Table 1. Devices, connectivity setting, locations and cycles used in the test.

The following data was collected for each website from the measurements done using the Websitetest instance.

• Time to Interact (TTI)

• Time to Render (TTR)

• Number of requests

• Page Size

• Page Score

The following data was collected for each website from the analysis done using the W3C mobileOK Checker instance.

• Failures per Severity

• Failures per Category

• W3C mobileOK score

In addition the data related to availability of an m-dot website or a mobile application on any one of the mobile platform was also collected.

The total number of data points collected was 625. This included 5 measurements, 5 scenarios and 25 websites.

4. Results & Findings

This section describes the results and findings of this study.

Finding 1: The response time of websites measured on mobile devices is higher than the response time measured on desktops. The response time of websites on mobile devices does not meet the expectation of four seconds or less.

Figure 3 : shows the Time to Interact measured for the sample websites on Galaxy S4, iPad4, iPhone5 and desktops running Google Chrome and Microsoft IE9. Figure 4 shows the percentile values of the Time to Interact.
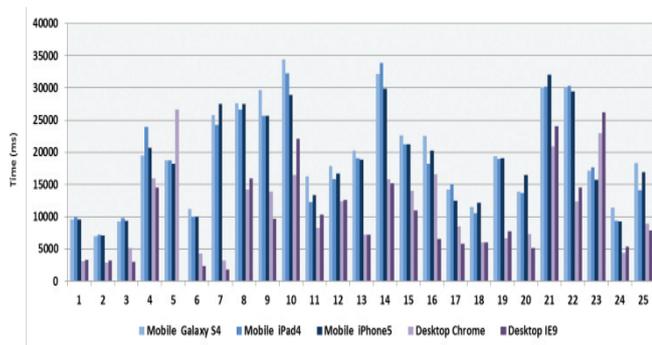
Figure 3. Time to Interact for the sample websites
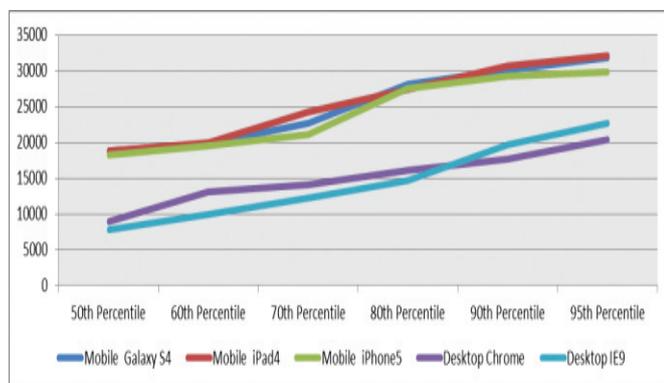
Figure 4. Time to Interact for the sample websites (percentiles)

- The median time to interact for websites on mobile devices Galaxy S4, iPad4 and iPhone5 is 18783, 18192 and 18232 milliseconds respectively.

- The median time to interact for websites on desktop using Chrome and IE9 is 8967 and 7764 milliseconds respectively.

- The response time of the website 5 and 23 on the mobile device is lesser than its response time on the desktop. The time to interact for website 5 on mobile devices Galaxy S4, iPad4 and iPhone5 is 18783, 18779 and 18232 milliseconds respectively. The time to interact for website 5 on desktop using Chrome is 26584 milliseconds. The measurement using IE9 generated erroneous results. The time to interact for website 23 on mobile devices Galaxy S4, iPad4 and iPhone5 is 17133, 17673 and 15697 milliseconds respectively. The time to interact for website 5 on desktop using Chrome and IE9 is 22977 and 26205 milliseconds. This is because these websites have a leaner mobile website which is automatically served to the mobile device resulting in reduction of the response time.

- The response time of the website also exhibits variation between different mobile devices.

The above finding implies that the response time of a website on a mobile device with 3G connectivity is much slower that its response time on browser on a desktop with DSL connectivity. This is because the content of these websites have not been suitably tailored for mobile devices. This tailoring can be complete or partial.

Finding 2: A significant number of websites are not mobile ready.

Figure 5 and 6 shows results generated by W3C mobileOK Checker on the websites.
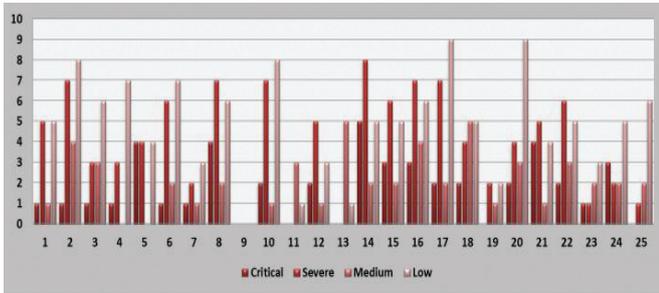
Figure 5. Critical, Server, Medium and Low failures related to MWBP for the sample websites
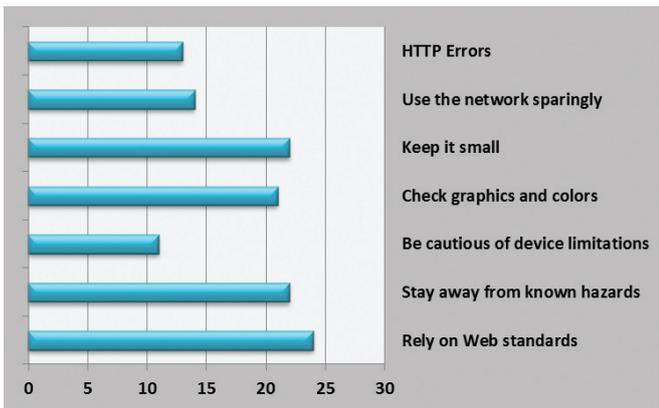

Figure 6. Non complying MWBP categories for the sample websites

- Out of the 25 websites evaluated using mobileOK Checker, 20 of them reported one or more failures of critical nature, 22 of them reported one or more failures of severe nature, 22 of them reported one or more failures of medium nature and 24 of them reported one or more failures of low nature.

- The number of websites not complying with categories Rely on Web Standards, Stay away from known hazards, Device limitations, Check graphics and colors, Keep it small, Use network sparingly and Http errors are 24, 22, 11, 21, 22, 14 and 13 respectively.

- Out of the 25 websites studied, only one of them had a Mobile Website and three had a Mobile Application offering a limited set of functions. This translates to 4% and 12% respectively. The data related to availability of a Mobile Website or a Mobile Application was inferred by checking the Desktop Website4. This is shown in Figure 7.
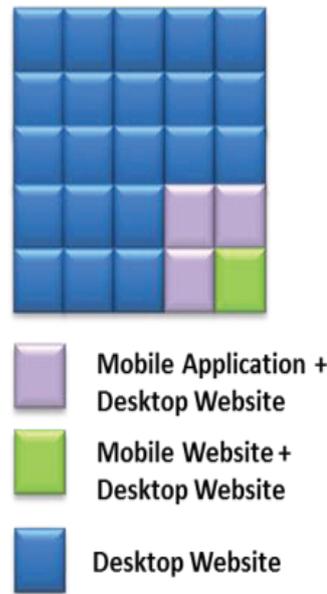

Figure 7. Distribution of sample websites in terms of Desktop website, Mobile Website and Mobile Application

The websites had a higher page score when accessed on a workstation than when accessed on a mobile device. The websites 5 and 23 had similar page scores

---

4 Websites typically indicate availability of Mobile Apps or Mobile Website in their home page.

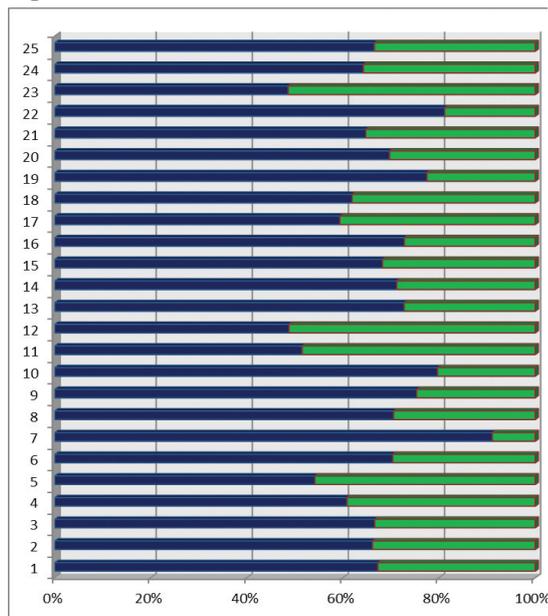in both scenarios as their content is tailored for both desktop and mobile access.

Figure 8. Page score for the sample websites when accessed from a desktop and a mobile device

The above findings imply a very low level of mobile readiness in the e-Governance applications.

Finding 3: The website characteristics like page size and number of requests result in performance issues on mobile devices.

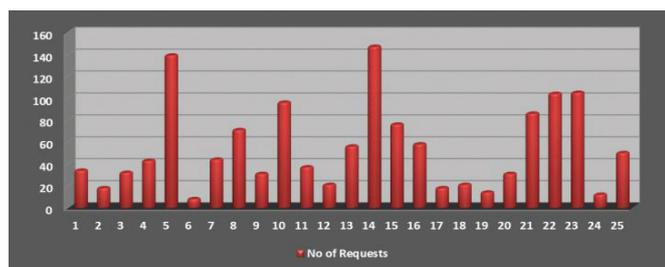Figure 9 and 10 shows the page size and number of requests for the websites.

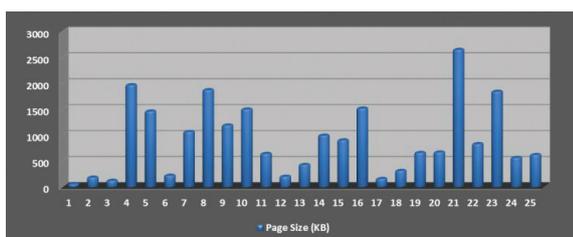Figure 9. No of requests for the sample websites

Figure 10. Page size for the sample websites

• The median page size is 669 KB and the median number of requests in a website is 43.

This implies that the website has not been tailored for opening on a mobile device.

Recommendations : The following is list of strategies to be adopted for ensuring mobile readiness of e-Governance programs.

• Strategy 1: Include mobile readiness of Internet accessible citizen facing e-Governance websites as a significant non-functional requirement. This will ensure that mobile readiness is implemented proactively as part of design.

• Strategy 2: Tailor content of Desktop Website to create a Mobile Website for use in mobile devices. This strategy also includes evaluating compliance to Mobile Web Best Practices using tools. The restrictions imposed by certain key practices like page size may need to be modified if required.

• Strategy 3: Plan and carry out single user performance test of the Mobile Website using different mobile devices and applicable connectivity options.

• Strategy 4: Create a roadmap for development of a Mobile Website and/or Mobile App to augment the existing web application. The functions to be made part of the same must be those with repetitive usage or provide additional value to the end user. For example railway ticket is a repetitive task.

5. Conclusions

The objective of this paper is to understand the current state of mobile readiness of websites in the e-Governance domain. This assessment is also important given the recognition of m-Governance as a thrust area by the government. The affordability of smartphone, increase in the number of smartphone users and country wide availability of quality cellular services is also driving the need to use mobile for delivering government services.

We analyzed 25 websites which provide informational and transactional services to our citizens. These websites were measured for responsiveness on mobile devices and also evaluated for compliance

to a subset of best practices recommended by W3C for mobile websites. It was found that there is significant work to be undertaken for most of these websites to become mobile ready. The strategies suggested in this paper can be included in the existing guidelines related to the delivery of public services through mobile devices. This will ensure that new applications being developed as mobile ready by design.

The possible threats to the validity of our findings include limitations or errors introduced by the tools used for carrying out the measurements. The number of websites forming part of our study may also be a source of error.

The future work in this area can be in the area of energy consumption and responsiveness of mobile applications.

6. Acknowledgements

The authors wish to acknowledge the help of their colleagues Vikash Vardhan and Vijay Negi for their efforts in carrying out multiple test cycles and collecting the raw data.

7. References

[1]   [EMARK2014] "Worldwide Smartphone Usage to Grow 25% in 2014". Accessed on 30 Nov 2014 at http://www.emarketer.com/ Article/Worldwide-Smartphone-Usage-Grow-25-2014/1010920

[2]   [GUID2014] "Guidelines for Delivery Channels for Provision of Public Services through Mobile Devices". Accessed on 30 Nov 2014 at https://egovstandards.gov. in/system/files/PublicReviewDocument/ Guidelines_for_Delivery_Channels_for_ Mobile_Ver1.0.pdf

[3]   [IRET2013] "It's official: Mobile devices surpass PCs in online retail". Accessed on 30 Nov 2014 at https://www.internetretailer. com/2013/10/01/its-official-mobile-devices-surpass-pcs-online-retail

[4]   [LOCA2014] "Best Practices for Localization of Mobile web applications in Indian Languages".Accessedon30Nov2014athttps:// egovstandards.gov.in/sites/default/files/

Mobile_Localization_GuidelinesV1.0_0.pdf

[5]   [MWBP2008] "Mobile Best Web Practices". Accessed on 30-Nov-2014 at http://www. w3.org/TR/2008/REC-mobile-bp-20080729/

[6]   [MWFC2008] "Mobile Best Web Practices Flipcards". Accessed on 30-Nov-2014 at www.w3.org/2007/02/mwbp_flip_ cards[MARY2014] "KPCB Internet Trends 2014", Kleiner Perkins Caufield & Byers. Accessedon30-Nov-2014athttp://forbesindia. com/blog/technology/mary-meekers-internet-trends-2014/

[7]   [MOKT2008] "W3C mobileOK Basic Tests 1.0". Accessed on 30-Nov-2014 at http://www. w3.org/TR/mobileOK-basic10-tests/#bp_ test_reference

[8]   [MSEV2014] The National Mobile Governance Initiative. Accessed on 30 Nov 2014 at https://www.mgov.gov.in/

[9]   [SATY2014] J. Satyanarayana, "Andhra Pradesh bites the e-gov pill". Accessed on 01-Dec-2014 at http://www.financialexpress. com/article/economy/andhra-pradesh-bites-the-e-gov-pill/

[10] [SUME2013] Sumeet Puri, "How Rich Internet and Smartphone Apps are Driving a Return to Client-Server Architecture". Accessed on 30 Nov 2014 at http://www.solacesystems.com/ techblog/how-rich-internet-and-smartphone-apps-are-driving-a-return-to-client-server-architecture

[11] [RADW2014] "STATE OF THE UNION: Mobile ECommerce Performance", 2014. Accessed on 30 Nov 2014 at http://blog. radware.com/applicationdelivery/applic ationaccelerationoptimization/2014/10/ report-2014-state-of-the-union-for-mobile-ecommerce-performance.

[12] [RAGH2014] Raghu Ramakrishnan, Arvinder Kaur and Gopal Sharma, "High Performance e-Governance Websites - A Game Changer in Efficient Public Service Delivery", 17th National e-Governance Conference. 2014.