Case Study on

MONITORING OF THE

MID DAY MEAL SCHEME

IN UTTAR PRADESH

Cloud Telephony and IVRS based Daily Monitoring System

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Instructions for the Teacher / Instructor/ Facilitator

1. The case study is in four sections but forms an integrated reading. The first section is introductory and deals with the problem identification. Second section focuses on the innovation and the third on the implementation details. Last section deals with impact and the futuristic. Questions which may be discussed in the training sessions have been given in Annexure–III.

2. The case study is regarding monitoring a grass root level and a very fundamental social sector scheme in the education sector. The scheme has implications on nutritional health of school going children, their literacy and their enrolment and attendance in the school. Thus, the scheme is very fundamental to our social well-being and its successful implementation very crucial. .

3. The success of the implementation of the scheme is dependent upon the effective monitoring of the scheme at the highest level besides its regular monitoring at intermediate and lower levels. The effective monitoring of the scheme is dependent upon the nature, quality, reliability and timeliness of the information being generated by the system and made available to the decision makers.

4. This case study is about the innovative use of ICT (cloud telephony and cloud computing platform and IVRS technology) and through that making a dent in the condition of the scheme that hitherto existed. The objective of the initiative was to generate qualitative, reliable and timely information regarding implementation of the Mid Day Meal Scheme. This has been done to improve its real/ near real-time monitoring at the highest and lower levels.

5. This kind of intervention of latest available technology in generation of MIS of a grass root scheme is a paradigm shift from the traditional method of generation of MIS and monitoring system. The traditional system of generation of MIS and monitoring is multi-layered, vertical, hierarchical, decentralized and diffused system. The information of schools serving / not serving meals, in the traditional method, go from teacher to principal to gram sevak to block development officer to education officer to District Magistrate to Secretary and then to Government of India.

Under the new system, the MIS and monitoring becomes horizontal – flat two / three layered, centralized and integrated system. From teacher to web to Secretary to Government of India on a real time basis leaving all intermediate channels. From decentralized it becomes a centralized system of MIS, monitoring, control and decision making.

6. The limitation of the traditional system and the advantages of the new system of MIS and monitoring to the society is beyond any doubt. However, the change from multi-layered, hierarchical, MIS, monitoring, administrative system and old administrative behavior to new system of MIS and monitoring entails a new administrative psyche which may call for change in the present administrative behavior.

7. As regards the learning Objectives of the Case Study, the challenge before the teacher / instructor of this case study is to inculcate among the participants / students who are future (and current) administrators, the use of latest technology in solving administrative problems and challenges, the spirit of new technology which leads to more sharing of information on social schemes with public, flat organization, real time information system, quick decisional making and almost real time monitoring. Most significant aspect of this case-study is empowering stakeholders involved in implementation of a welfare scheme and thereby ensuring effective implementation of that scheme. This is a major shift from the tradition administrative behavior and therefore, a major challenge for the instructor.

8. Some suggested answers to the questions posed in Annexure III of the case are given in appendix to this so as to guide the facilitator for giving a direction to the discussion generated out of the case readings by the probationers/ trainees.

Appendix

Limitations of the traditional MIS of the Scheme

An analysis of information flow in the traditional method showed up the limitations with the existing MIS of the scheme:

1. **Spatial Limitations**

   The school wise report was not available at district level. The information for number of children availing meal was available district wise not school wise. But decision making is required on different aspects of the scheme. For this, it was not possible to get the segregated information below the district level.

2. **Temporal Limitations**

   Monitoring of the scheme was possible only on monthly/quarterly basis, not on daily basis. The time lag in getting information was the major hurdle in taking corrective action since the periodicity of this information was quarterly or at best monthly.

3. **Dependency Limitations**

   There was dependence for the information on the sender and the information flow was multi-layered – from school to block to district to division to state level and then to Government of Inda.

As a result of above limitations the following problems arose:

I. Data Manipulation Problem

Time lag in data flow led to scope for data manipulation and chances of excess physical and financial reporting.

II. Monitoring Problem

Physical inspection was based on random selection and not on real exception basis.

III. Problem in Corrective Actions

It was found that ignorance about schools which did not serve cooked meal at block / district level led to non-intervention for ensuring service delivery. Non-availability of systematic mechanism for furnishing of

such data on a regular basis was the gap in traditional system of MIS which needed to be bridged.

Thus, the limitations of the MIS were hierarchical flow of information, different information for higher ups and people due to non-availability of reports in public domain, data at source not available at all levels, non- availability of exception reports, no authentic information about the school not serving MDM, non-availability of system of alerts and non-availability of beneficiary feedback. This led to bogus/ inflated/ advance reporting and consequent corruption, delayed reporting, monitoring of scheme only on monthly/quarterly basis not on daily basis, delayed corrective measures due to lack of information of problem areas immediately, physical monitoring on random basis, lack of transparency as information was on percentage basis, unavailability of knowledge of status of implementation to public, difficulties in social audit and low level of community ownership.

Pros and cons of SMS vis-à-vis Voice based systems

The following comparison between Voice and SMS based systems for remotely collecting data over telephone shows that the Voice based application of technology has an edge over the SMS based system for addressing the same or similar problems and so has contributed in success of our Initiative when it became operational:

Feature	Description	SMS	Voice
Cost Effectiveness	Price Per outgoing SMS from server can be 3-4p while that of voice call is 50p – 75p. However the cost of sending the SMS from remote users is also high at about 50p.	✓	
Usability for multiple data points	Capturing Multiple Data Points, (more than 5) SMS is more suitable because of the offline nature of it.	✓	
Flexibility	Making changes to SMS based system is more difficult compared to VOICE where new questions along with instructions can be added at anytime.		✓
Interactivity	The VOICE based system can be interactive based on the input by the user.		✓

	It can detect the invalid input by a user and prompt for re-entry. Secondary questions can be asked to the user if required. SMS based system can tell if the message has been delivered till the user's phone but not if the message has been read by the user. VOICE based system can tell the number of seconds for which the user listened to the message thereby providing a read receipt.		
Toll-Free	In VOICE sender of info need not pay any cost while in SMS cost is to be paid especially in case the SMS lands on a different network.		✓
Multilingual	VOICE based system can be in a language that the user is comfortable in. For a culturally diverse country like India this is an important feature.		✓
Training Efforts & User Friendliness	Training of people on the system is a significant cost. Research by Stanford in India* shows people are more comfortable with VOICE than with SMS.		✓
Control on Initiative	VOICE based system for data collection is proactive with Server having the ability to pull data. The SMS based system is passive with Server waiting for data being pushed by remote side.		✓
No Dependence on Make / Model of Phone	VOICE based system is agnostic of the make and model of the phone on the remote side. While SMS can also be sent from any make or mobile, typically the SMS based models have a Mobile Phone Application which captures the data and sends through SMS. This creates a lockdown to phone make (if not model).		✓

Obstacles encountered and how they were overcome

- Mammoth size of the State of U.P and huge no of schools (1.52 lakh) was an obstacle in the sense that covering all such schools by calls during one day was very difficult – overcome by design wherein Outbound Dialing Solution (OBD) using PRI (Primary rate interface) lines was devised to send multiple calls simultaneously and pull the data from the teachers.
- No previous model available – overcome by various brainstorming sessions with stakeholders, techno groups etc regarding design and implementation aspects, a Detailed Project Report was also developed for inviting proposals.
- Implementation of such a system implied traversing unknown territory due to the risks involved – overcome by completely outsourcing the system.
- How to ensure that teachers would own the system! - overcome by way of consulting all the major teachers' unions and incorporating their suggestions in the system. Also, a Government Order was issued by the State Govt. making it mandatory for the teachers to give data through the DMS.

Strategies used to overcome the abovementioned obstacles and implement the initiative

Optimal utilization of public resources for the welfare of the people aimed at improving the functioning of a government organization by increasing efficiency and effectiveness of processes were involved in the service delivery. This, in turn, involved the fundamental rethinking and radical redesign of governmental processes to achieve improvements in critical contemporary measures of performance such as cost, quality, service and speed. This kind of Government Process Re-engineering was done for bringing about the desired transformation and positive impact while developing and establishing the initiative. The strategies adopted for this were:

- Wide scale brainstorming and suggestions seeking from all staff and field functionaries;
- Involvement of all the teachers' unions and incorporation of their feedback/ suggestions;
- Video conferencing with all the District Magistrates and District Education Officers;
- Discussion with few teachers selected from different parts of the State;
- No cost to teachers was a paramount strategy for designing the initiative;
- Use of data 'pull' technology vs. data 'push' so that the system is able to extract information from the teachers;
- Application of SIP model of service delivery (Software as a Service – SaaS, Infrastructure as a Service – IaaS and Platform as a Service – PaaS) under cloud comuting framework so that standardization and updating of technology is not an issue;

- Complete outsourcing of the system with following features:
    - Complete risk passed on to vendor;
    - Pay per data instead of pay per call;
    - No investment for hardware, software, training etc at the client level;
    - Training, mobile no. collection, updation, call center, publicity also responsibility of vendor;

Key development and implementation steps

In view of the initiative being unique, the **key development steps** mainly related to the design aspects and can be summed up as under:

- Given the huge number of schools from where data was desired to be captured on daily basis, the first major step was zeroing-in on a suitable and viable technology for the System.
- Secondly and largely attendant to the first was arriving at a solution wherein the sender of data i.e. the teacher in this case need not spend a single penny so that the focus remained on monitoring of the Scheme instead of reimbursing the expenses incurred by the teachers for giving data. This was necessary to ensure meaningful participation of lakhs of teachers in the initiative.
- Also significant in this regard was focus on 'pull' rather than 'push' method of data capturing so that data is captured from maximum teachers and it was not left to their will to send it on their own.
- Further, this had to be done within the given timeframe after the meals are served and before the school is closed for the day.
- Bridging gaps in traditional monitoring system necessitated attention to carefully designing necessary MIS and exception reporting structure and alerts etc.

Key implementation steps were:

- Foremost implementation step was selling the idea to the teachers and making them own it. All the teachers unions were consulted so as to convince the teachers about the benefits of the System by way of demo etc.
- Other such steps were codification of all the schools, trainers-training, preparation, design and printing of about six lac operational manual and its distribution before onsite demo, onsite/ on-line demo/teachers' training in about 900 blocks and town areas of the State, collection of teachers' personal phone numbers.
- The feedback given by the teachers was accounted for in the development of the system. Thus, the acceptance and user-friendliness played crucial role in the

search for a system that could fit in terms of requirement, design and viable technology.

- Development of the data-base and purging it, devising mechanism of call system and call escalation, on-line verification of the mobile numbers of almost 4.5 lac teachers, devising mechanism of updating of database in case of change of teachers' place of posting or mobile numbers, establishing call-centre for personalized attention to teachers query etc have been other major landmarks.
- It has also been ensured that at the end of the month, the data keyed-in by the teachers is verified in black and white by them.

Analysis of Process workflows – before and after reengineering

As - Is	To – Be
School-wise report was not available at the district/ state level	School-wise report directly upto State level
Monitoring of the scheme was possible only on monthly/quarterly basis, not on daily basis	Monitoring on daily basis
The time lag in receiving the data from school to state level may leave scope for data manipulation/ distortion. Consider the case when the average attendance in any school is about 55-60%, and the MDM register has recorded the data as 80-90%. This was a pointer that only accurate and timely information could help clarify such situations.	Data capturing on real time basis and accurate and timely information to be made available to each stakeholder
The chances of data manipulation may lead to excess physical / financial reporting thus making a dent on the scarce resource available for development of the State and welfare of the society	Checking the leakages and optimal utilisation of resources
Due to time lag in the conventional system of data flow, remedial action/ measures may get delayed and may jeopardise the efficacy required of the system given the sensitive nature of the scheme	Immediate intervention so as to enhance efficiency and efficacy of implementation of mid day meal scheme
Non availability of exception reports	Availability of exception reports
In case of delay in information from some schools, data for such schools available only in the next month;	Data to be available
Physical inspection/ monitoring of the scheme presently based on random selection basis and not on exception basis	Physical inspection/ monitoring of the scheme on basis of exception reports

Innovative aspects and Benefits of the New System

Increased efficiency of outputs/processes and effectiveness of outcomes is entailed in the following advantages that result from the system:

- Real time reporting of Mid Day Meal data of schools to block, district, and state level;
- Identification of schools / pockets / regions where the mid-day meal was not served;
- Availability of this information to various levels of official analysis and for effective remedial actions;
- Alerts to the officials at various levels for making necessary interventions;
- Creation of a media to reach the functionaries of schools and blocks;
- Direct & instant info mechanism from grass-root to the State without intermediate levels;
- Percent basis of consumption pattern done away with (since exact data was not available at district level in conventional system of information flow);
- Instant info leading to check on distortion/ manipulation of data;
- Apex levels e.g. the State Government and Government of India can directly monitor without any reports from levels below as information is on the web
- Transparency & neatness of data resulting into truthful information;
- Elimination / reduction in leakages leading to large savings;
- Real time performance evaluation is possible;
- ICT based Social audit is possible;
- The process innovation brought about in the system of info-flow through data 'pull' technology primarily consists in the fact that in the system so designed and installed, there is no dependence on the respondents to initiate the provision of data from their end. Control of information flow is in the hands of the user of information instead of the sender;
- It has been ensured that the data-providers do not spend a single penny to deliver the data since they have only to receive the call and respond to it;
- The teachers feel assimilated in the process of governance, they also feel empowered.
- Sanitised, authentic and objective data for policy and planning inputs.
- Much improved control over implementation of the scheme;
- Interactivity and ease of use to the users provided on account of the simplicity of the system described below:
  - ❖ IVR calls from a virtual number;
  - ❖ In case, one misses out replying to the IVR call, one needs to give a missed call to the same no;
  - ❖ The System to call back on its own within few minutes of missed call;
  - ❖ "0" info means the meal not served;
  - ❖ Helpline/ Toll free No. for help and info on various aspects of the Scheme and the DMS;

- ❖ Out-bound call centre for follow up with the data provider in case data was not given;
- ❖ Information availability on internet for access of information by the Block and District Education Officers/ DMs/ Commissioners/ Secretary, Basic Education Deptartment., U.P. and for making pinpointed interventions which were otherwise not possible.

Quantitative and qualitative impact of the new system

On account of the State level data available in sample reports given in annexu e II of the case, following impact matrix can be worked out:

	No. of Schools data received from	**No. of schools meal was not served**	**Percentage**
Jun, 2010	33,067	11, 771	35 %
Jul-Sep, 2010	1,00,519	28,284	28%
Apr-Jun, 2011	1,36,519	18,180	13%
Apr-Jun, 2012	1,46,234	10,863	7%
Sep-Oct, 2012	1,45,260	9,577	6.5%
Apr-Jun, 2013	1,39,722	7,118	5%
Aug-Sep, 2013	1,47,416	5,370	3.6%

The matrix below shows the qualitative difference made in the delivery of public services on account of the changes perceived in the re-engineered processes:

	Status before the implementation of the initiative	**Status after the implementation of the initiative**
Key result areas		
Information about schools not serving MDM	No authentic information available	Exact information available daily
Information about number of children availing MDM	Compiled district-wise information available on monthly basis	School wise information available on daily basis
Immediacy of intervention	Not possible	Possible
Policy Input	Vague	Objective criteria
Key performance indicators		
Periodicity of information	Monthly/quarterly	Daily
Level from which information made available	District	School i.e. the actual level of implementation
System of alerts	Not available	Alerts available to higher ups for remedial action
Quality of data	Compiled monthly	Real time data
Transparency	Information often based on percentage basis	Transparent, actual information available on public website
Socio-economic impact parameters		
Knowledge of status of implementation to public	Not available	Available
Social Audit	Not possible	Possible
Level of community ownership	Low	High
Beneficiaries' feedback	Available, if at all, through hierarchical system	Directly available to decision makers

With the help of the Daily Monitoring System, the gaps apparent in the traditional system of information flow have been bridged and monitoring of the mid day meal scheme which is the basic objective of the MDM Authority did not remain an objective-out-there to be attained; it has, rather, become embedded in the process of data received through the system.

Sustainability and transferability

Acceptability of the initiative by the school teachers is the biggest force behind its sustainability. Teachers are a happy lot since they fulfill their responsibility of informing the higher ups through this system in case meal was not cooked – an information which was otherwise likely to be curbed before launch of this system if the number of such schools in a block or district was sufficiently large. The teachers also feel assimilated in the process of governance since their information is directly accessed by the highest levels of the decision makers in the Government.

Sustainability in socio-cultural economic terms is ensured since School Management Committees with majority of non-officials are going to be roped into the System soon, so as to enhance credibility of data and make the MDM scheme more and more community owned.

As regards the financial and institutional sustainability, Government of India has overseen its performance for more than a year now and is convinced of its success. The funds meant for the management and monitoring of the MDMS are sufficient to incur the expenditure of the initiative. Moreover, the Solution is built on revenue generation model; accordingly user charges can be levied, if and when it is so decided, for giving info to public. However, this would depend on the nature of programme and services for which the initiative is being used and accordingly appropriate decision can be taken in this regard.

Replicable Aspect:

The initiative can very well be applied anywhere in the world - nationally or internationally - especially for monitoring huge government/ public welfare programmes/services by way of data collection directly from the grass root level and a customized web based MIS and DSS. Some such examples can be

- Development programmes with one to three parameters
- For info of daily collection of revenue directly from grass root/ village level viz. for Excise, Commercial/Entertainment Tax, Mandis etc
- For daily no. of F.I.Rs, no. of Challans by traffic police, monitoring Health programmes etc
- The initiative can also be successfully used in private sector e.g. for knowing the sales data or for market survey (e.g. sale/ demand of Coke vs. Pepsi) directly from rural retail outlets.

Lessons learnt

1. The System is a kind of mirror for the decision-makers in so far as it projects a picture in front of them which was just not available to them otherwise; or, if at all any rudimentary information was available, it was available in bits and pieces only and the canvas of intervention was very small.

2. Simplicity of the system and ease of use to the user have been the hallmark of the immense success of the initiative, impelling the Government of India to replicate this model in the entire country.

3. The most important lesson learnt is that remarkable improvements can be seen in implementation of welfare programmes if we have transparent and neat data on immediate basis.

4. Appropriate technology is best suited instead of mere aping. Context specific use of ICT (e.g. interface of computer and mobile telephone in case of DMS on account of ground level reality of status of computerization in rural India and strong presence of mobile phone in rural India and use of IVRS and cloud telephony technology for data pulling in view of vast expanse and huge no. of grass-root level mobile phones from where info was sought) ensures its success.

5. Successful demonstration of a unique and novel method of monitoring scheme implementations in far and geographically spread areas involving large number of personnel can be replicated across schemes and sectors. The DMS allowed for improving Mid Day Meal Scheme implementation in Uttar Pradesh and provides for a model which can be replicated across schemes and sectors.