

Integrated E-Muster Implementation for NREGA – A Case Study from Madhya Pradesh

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Abstract – The objective of this Paper is to highlight the importance of ICT for efficient and transparent implementation and monitoring of NREGA in order to ensure proper utilization of funds and its delivery to the beneficiaries. Details of an E-Muster System conceptualized and developed for the abovementioned objective is provided along with a case study of its implementation in the Shujalpur Block of Madhya Pradesh, a large and important State in the central part of India. The case study clearly brings out the key learning and challenges while undertaking such implementations and thereby provides useful and practical insight to policy makers and ICT providers in this domain. The key learning is identified in the area of job cards, muster rolls, NREGA guidelines, infrastructure and connectivity, and payment related matters. The major conclusion and recommendation is the need for adoption of an E-Muster System that is fully integrated from the level of “work” and “workers” right up to validated electronic payments towards employment guarantee. The said enterprise system also needs to scale up to provide a mechanism to monitor and evaluate the scheme at the Block, District and State level in order to provide complete accountability to the Centre.

Index Terms – E-Muster, NREGA, E-Governance

I. INTRODUCTION

The National Rural Employment Guarantee Act (NREGA), 2005 [1] guarantees 100 days of employment in a financial year to any rural household whose adult members are willing for unskilled manual work. This Act is an important step towards the realization of right to work. It is also expected to enhance people’s livelihood on a sustained basis by developing the economic and social infrastructure in rural areas through asset creating public

works programmes [2]. The choice of works seeks to address the causes of chronic poverty such as drought, deforestation and soil erosion. Effectively implemented, the employment generated under the Act has the potential of transforming the geography of poverty.

While analyzing the implementation of the scheme, the social audit study of the scheme done in Orissa from 3rd to 12th October, 2007 by the students of G. B. Pant Social Science Institute (Allahabad University) [3] stated that although the scheme had been implemented, it was found to be vulnerable to corruption and benefits were not reaching the beneficiaries. The root cause of the problem was the muster, only 60% being genuine, and inconsistently maintained Job Cards. Since the muster was paper based it was open to manipulation. Also the work evaluation, based on which the final wages to the workers were calculated, was on paper, and it was virtually impossible to ascertain how the calculations had been done without reference to the engineer’s workbook which was not easily available. Although an IT based system had been implemented in the State but adjustments were found to be made in the data to meet the requirements of the system.

This prompted the authors to conceptualize and develop a seamlessly integrated E-Muster System using a wireless biometric device integrated with an E-Muster Portal based on SAP Technologies and developed by Consultants from Lateral Praxis. The Paper begins by providing a brief summary on employment guarantee and then moves on to highlight the components of the E-Muster System along with its process flows. The subsequent section is a Case Study of the “proof of concept” and the “implementation” of this System at Shujalpur Block in Madhya Pradesh. The Paper finally concludes with the identification of key learning from the implementation and the potential expansion of the ICT for NREGA.

II. SUMMARY OF EMPLOYMENT GUARANTEE

Employment Guarantee in various countries, both developed as well as developing, is aimed at providing social security to each individual of the country and to help them in maintaining basic living standards. Overall this effort has a positive impact in the prevention of poverty in the nation.

The schemes are called by different names in different nations. While it is called *social assistance* in countries like Austria, Czech etc, *integration or insertion income* in Belgium, Portugal, *public assistance* in Cyprus, *income support* in UK, *supplementary welfare allowance* in Ireland, the aim of the schemes remains same. They help in developing the skills of the person by providing basic assistance.

In the UK, this is achieved through job centers where a personal advisor helps the individual in looking for appropriate work. A job seeker allowance is paid to the individuals registered in the job center and these individuals are bound to take part in the schemes aimed at providing employment. In fact, maintaining and creating jobs is the paramount aim of European Union (EU) employment policies and structural assistance [4].

In countries like South Africa, most employment subsidies are aimed at specific target groups, such as low-wage, less skilled workers, the long-term unemployed, youth, older persons and persons with disabilities. By targeting the more vulnerable groups, they counteract social exclusion [5].

The Singapore Government with the help of an organization like Community Development council (CDS) runs several training programs for the unemployed youth and assists them to be placed in an organization / Industry.

In China the *Minimum Living Standard Scheme (MLSGS)* has become an integral part of the social security system [6]. This scheme is funded by the government and provides cash assistance to the households whose per capita income falls below local poverty lines.

Some of the schemes as mentioned above aim at developing individual skills by providing skill enhancement assistance and financial support. This enables the individual to become independent in due course. Others just aim at providing financial assistance and hence in the alleviation of poverty. NREGA, however, does not focus on skills' enhancement, it just aims at providing a minimum number of days employment to the unskilled, similar to the schemes that run in China and Africa.

India has several Employment schemes started by various governments. These include *Employment Guarantee Scheme (EGS)* in Maharashtra which is widely regarded as the most successful anti-poverty intervention [7], *Employment Assurance Scheme (EAS)*, *Jawahar Rozgar Yojana (JRY)*, *National Rural Employment Guarantee Act (NREGA)*, *Prime Minister's Rozgar Yojana (PMRY)*, *Rural Employment Generation Programme (REGP)*, *Sampoorna Grameen Rozgar Yojana (SGRY)* etc. Amongst these the National Rural Employment Guarantee

Act of 2005 has been a landmark development in the history of poverty reduction strategies and rural development policies in India. It is also important that the scheme is looked at as not merely providing 100 days of work to the individuals but as an opportunity to eradicate the poverty that exists in our country and also to empower the poor and promote growth of the Indian economy.

There are, however, several challenges with employment guarantee. In some regions the resource base and potential are so meagre that even with the best of planning intentions and skills it may not be possible to provide gainful employment to the swelling labour force within the mainstream of development [8]. Implementation of NREGA has challenges due to other factors as well. It is ailed by various reports of manipulation, diversion, misdirecting and misuse of funds. Improper job cards, incomplete muster rolls, missing names or signatures and many more are the major issues with the scheme.

In order to bring in transparency to the implementation process of any scheme, it is important that an IT-enabled system is developed whereby human intervention is minimized. In this regard a step has already been taken, whereby, under NREGA guidelines every state is required to have an on-line management information system at block levels [1].

IT can help to maintain the records with greater accuracy and it will help the governments in preventing the various implementation problems. The direct transfer of money into the beneficiary's account, based on the attendance marked automatically, at the site shall ensure that the benefits under the scheme are delivered accurately. In addition, all the critical data can be made available for comprehensive monitoring and accountability.

III. E-MUSTER SYSTEM FOR NREGA

After several discussions with government officials and agencies it was concluded that e-enablement of the enrolment of beneficiaries and collection of attendance (this being the base data for the entire scheme) would allow for the auto-generation of the muster. Manipulations could be considerably minimized and the entire system could be made more transparent and accountable.

Considering that the only means of communication which worked with certainty in rural areas was a mobile, it was decided that a SIM card enabled biometric device would be used for the purpose of enrolment and marking attendance. The device could transmit any data using the mobile network and hence could integrate with a web-based central server. The device was envisaged to be used in the offline mode as well.

A. Features of the Solution

The key features of the solution that was conceptualized are:

- An offline system designed to work at the Panchayat level in order to capture all transactions related to the scheme viz. data for enrolled persons, job cards, all proposed works, demand for work, allocation of work, attendance, evaluation, generation of muster, recording of other expenses and generation of the payslip. This software would interface with the attendance device. The system would be installed at the block as well and the Sachiv/ MET (NREGA official) would be responsible for carrying all data from the Panchayat level to be updated in the block software.
- Alternatively, usage of the same software at the block level by capturing transactions for all panchayats within the block with only the attendance device remaining in the Panchayat for the purpose of collection of attendance
- The Gram Sachiv/ MET trained at the Panchayat to get the attendance marked.
- The device, which can work both in online and offline modes, would store 16,000 attendance records and the thumb prints of 500 persons. This meant that in the case of failure of the mobile network the attendance data for a week could easily be stored in the device. At any point of time there are about 3-4 works at a Panchayat employing not more than 300 to 400 workers. Hence there would be approximately 2,800 attendance records per week.
- In case the system was installed at the block level, the Sachiv, when visiting the block for the upload of attendance of the previous week from the device, would also carry data for the demand and allocation of work for the following weeks which would be required for the purpose of generation of the muster. If installed at the Panchayat level the system could be updated whenever the Sachiv visited the Panchayat office.
- The Central Server would always be up to date in terms of attendance but since internet connections were available only at the block level, the other data would be updated by providing relevant uploads from the system at the block. Finally, all this helps in generating the E-Muster and all the other relevant feeds required for MIS at the District and State level including the NIC system.
- The central server provides log-ins for officials at District and State levels to view the extent and details of implementation of the scheme.
- Finally, the solution would enable the generation of electronic clearing statement bank-wise, for each beneficiary of the scheme

B. Components of the Solution

Following are the basic components of the solution:

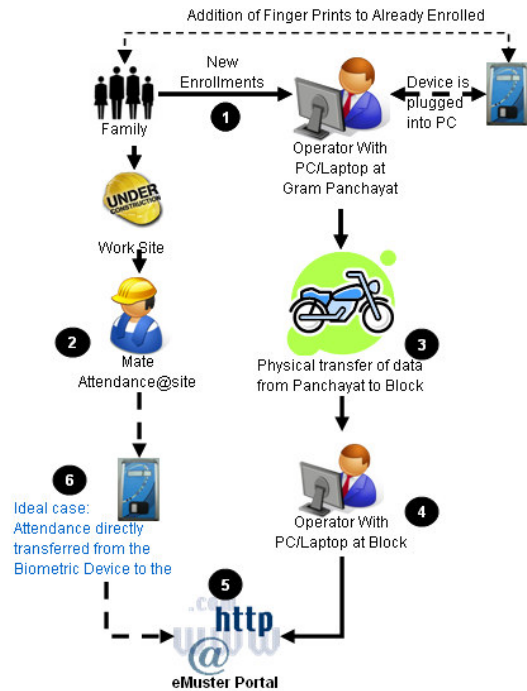
- Biometric enrolment/attendance device (battery operated, wireless) used to record the finger prints for the purpose of enrollment of the applicant and attendance of the laborers. At periodic intervals it transfers the attendance data to the central server.
- Each Applicant/ Laborer is enrolled by taking his/ her finger print. He will mark his attendance on the biometric terminal when the device is brought to the work location by the Gram Sachiv/ MET.
- The Gram Sachiv/ MET or an equivalent trained person is responsible for taking the device to the work location for getting the attendance marked. The device transfers the attendance to the central server using the mobile network. In the offline mode the device transfers the attendance to the offline application on the Panchayat/ Block PC.
- PCs at the block office_ are used to update the transactions' data on the Central Server and to keep a record of all such transactions for all Panchayats within its purview.
- Modes of Data Transfer are multiple. Muster data is transferred using any mobile Network. The Central Server is accessible from anywhere using an Internet connection which could be a Leased Line, Broadband, dial-up as the case may be.
- The Central server is located in a data centre; it is a data repository. Users are able to generate MIS, pay sheets and monitor the implementation and management of NREGA scheme in the state.

C. Process/Information Flows

The following process diagrams depict the flow of information between the various entities and that of data synchronization. It is also envisaged that the payments to the beneficiaries would be transferred directly into their post office/ bank accounts.

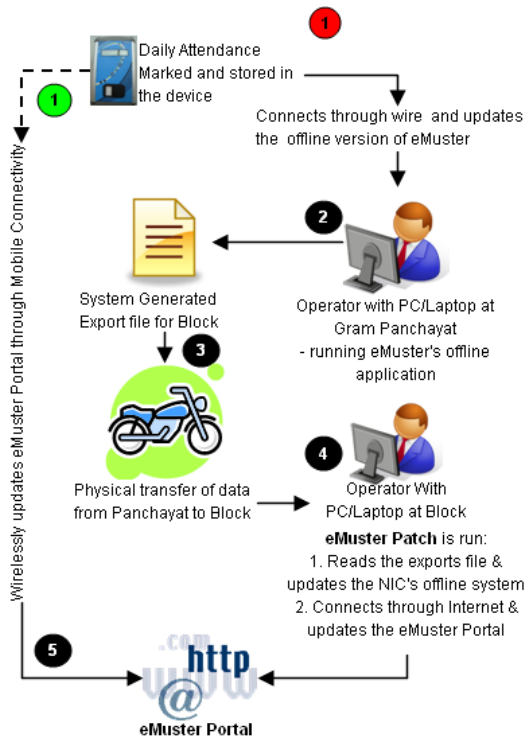
1. Information Flow

This diagram shows the basic flow of information on the system. The collection of data begins with the enrolments and marking of attendance at the site where the work is being carried out. In case of a Panchayat level system, information on all transactions is exported from the Panchayat system and uploaded into the block system. The Block system is used to update the Central Server. The attendance data is pushed at regular intervals to the Central Server using the mobile network.



2. Data Synchronization

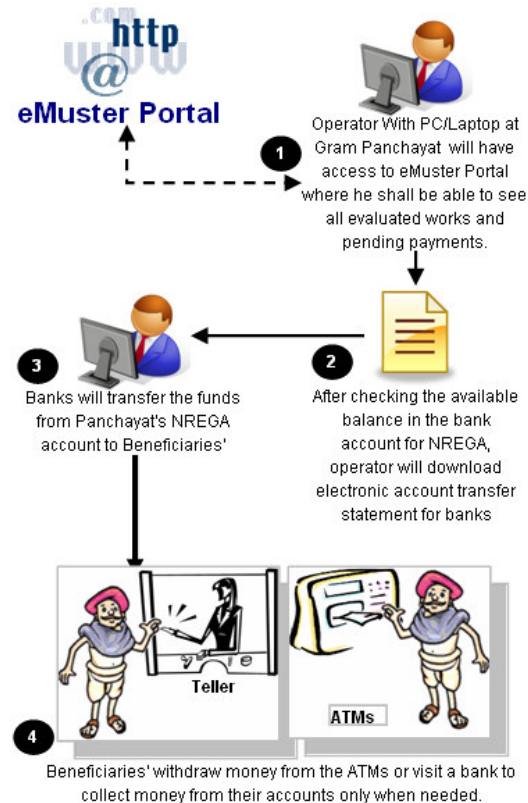
The diagram below shows in detail how data is synchronized between various entities which the system intends to integrate:



3. Electronic transfer of payment to beneficiaries

The current process of payment is manual based on the evaluation of the Muster. The responsibility of distribution and withdrawal of money depends on the persons in the Block and Panchayat offices.

The proposed system envisages integrated automation using the electronic Muster sheet and an auto-generated bank reconciliation statement. The Beneficiary would be able to withdraw money from his/ her account in Post Office/ Bank.



IV. IMPLEMENTATION OF E-MUSTER SYSTEM AT SHUJALPUR, MADHYA PRADESH

A. Proof of Concept (POC)

The objective of the POC was an extensive field study of the implementation and ground realities both from the point of view of the NREGA and government officials as well as the Beneficiaries. It was also necessary to assess the acceptability of the solution by the various stakeholders as well as to check the workability of the biometric enrolments and electronic marking of attendance as an alternative to the manual process. 7 to 8 panchayats were chosen in the Block Shujalpur which were to be studied in terms of the variation of processes, terrain, work culture, attitudes of the senior Panchayat/NREGA officials, infrastructure, connectivity (road and mobile),

internet connectivity of block and availability of money disbursement agencies viz. Banks, post offices, ATMs.

A simplified offline version of the software based on NREGA guidelines was designed which was integrated with the attendance device.

The team travelled to Shujalpur and was stationed in the block for about 10 days. They travelled to the villages everyday for the purpose of enrolment/attendance. Not everyone in the village was enrolled but across the Panchayats of Bhilkheda, Bhilkhedi, Chitoda, Dehandi, Gerkhedi, Jamner, Jethra, Kishoni, Mihirkhedi, Tapka Basantpur approximately 2000 enrolments were done and attendance was marked for the various works in progress.

B. Complete Panchayat Implementation

After a successful completion of the POC and receipt of instruction for complete implementation from the CEO of Shujalpur Block, the complete version of the software was designed. The team travelled to Dehandi for the full implementation of the e-Muster system. After having completed the POC the team was well aware of the challenges involved.

About 20 days were budgeted for a complete implementation including the training of a work supervisor in the Panchayat. Implementation period was estimated keeping in mind the fact that Dehandi Panchayat was comparatively smaller, consisting of 2 villages with around 1000 people of workable age.

Following tasks had to be completed in order to consider the implementation as complete:

- Enrolling of all the beneficiaries with the help of a Mobile Enabled Biometric Device
- Allocation of work to the beneficiaries through the e-Muster offline application installed at the Panchayat
- Marking of attendance on site of work through the Mobile Enabled Biometric Device
- Generation of e-Muster which matched manual entries in handwritten Muster Sheets maintained & prepared by the Panchayat
- Generation of sample Pay-slip for each beneficiary through e-Muster offline application
- Ensuring that all the past data of the works currently under execution was on the system

During this implementation the team was stationed at Shujalpur Block, 9 Km from Dehandi village. Various entities, CEO of Shujalpur Block, Sarpanch of Dehandi, Panchayat Sachiv, Beneficiaries, and Upanyantri (Evaluation Engineer) were involved in the implementation.

There were two works under progress under the category Drought Proofing:

- Kapil Dhara Koop Nirman (Suraj Singh Bhabhoot Singh)

- Kapil Dhara Koop Nirman (Hemraj Singh Devi Singh)

The team performed the various activities over a period of 20 days and left Shujalpur after a successful completion and on receipt of completion certificate from the CEO of Shujalpur Block.

Some suggestions were made as regards changes in the solution, which were subsequently incorporated.

V. LEARNING, CONCLUSION AND RECOMMENDATIONS

Following were the key learning:

A. Job Cards

1. *Updated and current information may not be available in the NREGA database*

The initial data for Job Cards was picked up from software designed by NIC which is available at the block office. This data is based on the BPL Survey 2002-2003. In the current scenario, whenever a new person is added or an existing one removed or some details edited, the MET of the corresponding village does the same on the job cards only. This information is not updated in the database resulting in inconsistencies.

2. *Job cards may not be issued to the beneficiaries*

Currently, the applications for job cards are given in the Panchayat and a job card number is assigned. These are then taken to the block office for entry into the NIC system. The printed job card is brought back to the Panchayat for submission to the applicant. Many times applications for issuing of job cards are not acted upon and remain in the Panchayat or the issued job cards are not handed over to the applicants. Such job cards remain open to manipulation when filling up the work details, since currently these details are hand written on the job card. In the new system since preparation of job cards requires the physical presence of the person for taking finger prints, these practices will be highly minimized.

3. *Job cards details may be incomplete*

Job cards are generally not filled up properly and the following discrepancies are found:

- a. Attendance of the work is not entered hence reliable and authentic proof of the completed work is not available with the person in order to enable him to claim the payment at a later date.
- b. Photographs of the job card applicants are generally unavailable
- c. Persons below the age of 18 are found to be part of job cards.
- d. Same person was part of more than one job card

B. Muster Rolls

1. *Delayed Updation of Muster Rolls*

The muster rolls are kept in the Panchayat office and not updated on a daily basis. In the new system the updation of the muster roll is from the attendance device.

2. *Adjustments & Lack of Transparency in Muster Rolls*

Workers without Job Cards are often accommodated by clubbing his/her wages with someone who has a Job Card, under the latter's name. Attendance is generally first taken on rough notebooks and then put into formal records which are often manipulated.

C. *NREGA Guidelines* [1]

1. *Unemployment Allowance*

If the person who demands work is not allocated something within 15 days then he/she becomes eligible for an unemployment allowance. Due to lack of proper data, this number is always open to manipulation. In the case of a new system this will be easily calculated.

2. *It may not always be possible to maintain the ratio of 60:40 (wages:material)*

As per NREGA guidelines the wage and material ratio should be maintained as 60:40. In the scheme "Kapil Dhara" related to "Drought Proofing", which was under execution in Shujalpur block, the expense ratio for wages and material is 52:48. Also evaluation engineers are unaware of such guidelines.

D. *General*

1. *Accounts of job card holders may not have been opened*

According to NREGA, every job card holder should have an account in local bank/post office. The Dehandi post office was initially not ready to open the accounts of workers.

2. *Potential resistance to computerization even at the level of the highest officials in a Panchayat*

Initially the Sarpanch and Secretary of Dehandi Panchayat were hesitant towards the implementation despite the directive from the CEO of the Shujalpur block. The team had to brief them extensively about the benefits of the system in order to complete the implementation.

E. *Infrastructure and Connectivity*

1. *Roads*

Some of the Gram Panchayats are connected with the main road by a "pucca" road constructed as part of the *Pradhan Mantri Gram Sadak Yojana*. Most of them, however, are connected to the main road via a "Kachchi Sadak".

2. *Mobile*

Mobile connectivity is good in most villages. A number of service providers (i.e. Airtel, Idea, BSNL, Reliance, Tata & Smart) have network coverage in every village.

3. *Internet*

Internet facility is not available in Panchayats. The block has broadband facility from BSNL.

F. *Money Disbursement Agencies*

Banks and their ATMs are available only in the Block. However post offices were available in every panchayat where accounts of job card holders can be opened.

The case study clearly highlights the various shortcomings and desired changes with respect to different dimensions of NREGA execution. It is evident that an integrated E-Muster system (Biometric Device, Portal, MIS and Feeds to NIC monitoring system) has the potential of resolving several problems at the grass roots level and at the same time providing a fail-safe mechanism for the downstream activities of NREGA to fully integrate with the IT systems being used upward at District and State. It is useful to note at this stage that the level of integration achieved with the downstream activity of E-Muster and E-Payments can be easily extended further to provide a seamless and comprehensive flow of information for the NREGA program across the State in its entirety so as to provide complete transparency to the State as well as the Centre. Of course, the key success factor for this would be the scalability of the systems, which in this solution has been ensured from the inception stage by using a comprehensive enterprise system whose other components like financial management, works management and personnel management, to name a few, can be fully leveraged on the same platform to provide comprehensive E-Governance towards better, transparent, efficient and effective implementation of NREGA program. In this context, a recommendation towards phased usage and deployment of enterprise systems for NREGA is relevant and worthy of consideration by the policy makers and ICT agencies.

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