# Challenges of Identity Management – A Context in Rural India

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**Abstract.** An efficient identity management has been an aspiring and dream for many nations and organizations. The objectives for uniquely identifying individuals have been different for different entities. For some, the need for better security had been the driving factor, while for others identity management would mean better transparency and improved efficiency. The challenges in implementing an efficient identity management mechanism in a country like India are immense. In this paper we have tried to identify the challenges and factors effecting identity management in rural India at a micro level by studying the membership management of Self Employed Women's Association (SEWA) an organization working in rural districts of India.

**Keywords:** Identity management, Rural Organization, Factors affecting identity managemen, NGO.

## 1 Introduction

Managing the identity of individuals has been a challenge for different nations and organizations since years. There have been different reasons for identifying people uniquely. Enhancement of security through detection of fraud, guard against terrorism and illegal immigration are some of the prime objectives for providing unique identification to the citizens [1]. Another important use of national ID cards is to authenticate a person's entitlement to government services [2]. Even though in real life there are enough dimensions for unique identification of different entities, but when it comes to managing identity of individuals within an organization or a nation, the decision need to be made solely based on the captured dimensions. In many cases the dimensions captured may not be enough to provide unique identification to individuals. There are two different problems related to identity of an individual, absence of identity of an individual and existence of multiple identity of the single individual.

Around one hundred nations including Argentina, Belgium, Brazil, Bulgaria, France and Spain have implemented national ID cards for their citizens, while some countries like Indian, Bangladesh and China are taking initiatives for providing their citizens with ID cards. Considering the Indian context, a nation with 1.1 Billion population and huge amount of diversity in terms of terrain, culture and religion is expected to face huge challenges in achieving this mammoth task. Considering the fact that more than seventy percent of Indian population residing in the rural parts, it won't be unfair to say that actual India can be seen in the rural areas.

In order to understand the complexities involved in managing identity in rural parts of India, we decided to investigate about the challenges and their probable solution at a micro level. We conducted this study in order to understand and address the challenges of identity management faced by Self Employed Women's Organization (SEWA) which is a Non-Government Organization (NGO) working since 1972 towards the empowerment of poor self employed women. SEWA is registered as a trade union and has more than five hundred and sixty thousand members in Gujarat out of which more than fifty four percent members reside in the rural areas.

We have conducted an exploratory study to identify the factors effecting the efficient management of unique identification of members at SEWA. Through this study we were able to determine various factors affecting the identification management exercise both in positive as well as in negative terms. Certain factors were found to be under the control of the organization, while some factors the organization had absolutely no control. Through this study we were able to suggest a decentralized process of data digitization and verification for resolving the issues of identity management at SEWA. Further we proposed to enhance the service delivery structure by implementing identity verification of members during service delivery in order to convert the process of enrollment from a push based system to a pull based system.

## 2  The Problem

SEWA being a trade union, as per the norms of the Labour Ministry of India, mandates its members to renew their registration every year. Hence, the organization needs to maintain accurate records of its members and get them audited by the Ministry. Moreover, the organization provides various types of products and services, conducts various activities and extends facilities to its active members. This mode of working also requires proper identification of active members in order to ensure that the facilities and services reach the right individuals.

In order to serve the members, various branches of SEWA have evolved during the years. Each branch provides different types of services to the members of SEWA. The existence of unique identification of the members would also help these branches to consolidate information related to each member and provide better services through proper coordination. Despite of taking various Information and Communication Technology (ICT) initiatives, the organization has failed to provide unique identity to its members.

This study was conducted to evaluate the challenges of the organization in the identity management of its members and propose a suitable solution. The study was conducted with the following objectives:

- Identify the challenges of identity management within an organization working in rural parts of India
- Determine the drivers at various levels of the organization for generating and maintaining unique identification.

## 3   Related Research

Identity management is a much larger issue than purely personal identity management. Identity management involves systems for the identification of a variety of objects supporting societal behavior: people, goods, places, etc. [3]. In information society an individual may take on a number of different identities. As a consequence an individual may accumulate a vast array of personal identifiers for different services. Hence, multiple identity management is a significant issue for individuals and organizations, both in public and private sectors [4]. Beynon-Davies [3] has used a semiotic framework [5] for building an holistic account of the issue of personal identity management in the sense that it is seen as consisting of three inter-related processes – authentication, identification and enrolment – that bridges between the realm of ICT systems and that of human activity systems [6].

An identifier is a symbol or a set of symbol that can be used to identify something. Authentication involves validating the association between the identifier and the person [7]. The term identification is defined by Concise Oxford Dictionary as "the act or process of establishing the identity of or recognizing something. Personal identification concerns the practical way in which individuals are identified in various contexts [8]. The process of enrolment (a term adopted from actor-network theory [9]) performed by a validated identity serves to enroll the individual in some defined human activity system [6] that comprises a logical collection of activities performed by some group of people in pursuit of some goal [3]. The sequence of processes followed during first interaction is: enrolment, identification and authentication [10].

## 4   Methodology

In this type of study, understanding the context of the organization becomes very critical. Hence, we adopted various methods for understanding the context and analyzing the data obtained to determine the dimensions of the problem. The methods adopted in this study are as follows:

*Review of existing data and documents*
Data for the year 2006 and 2007 were extracted from the existing membership management system in order to get a better insight of the existing processes and its drawbacks. Various documents like annual reports and organization website was referred to understand the organization and the context of the existing problems related to identity management.

*Interviewing the decision makers of SEWA*
One-to-one interviews as well as group interviews were conducted with the decision makers of SEWA in order to understand the views and challenges of the top level management. During these interviews we also focused on the critical success factors of the top level management and their dependability on efficient identity management of the members. In such an exercise, the support of the top level management towards the implementation of strong system for identity management becomes very critical.

These interviews also enabled us in determining the degree of interest among various layers of top management in supporting the introduction of such a system.

*Focused group discussions*

Around five focused group discussions were conducted among the district coordinators (who are responsible for coordinating various activities in their respective districts) and aagewans (leaders who are responsible for collecting membership details fees from the members every year). These focused group discussions gave us complete insight about the challenges and bottlenecks at various levels of the organization. These discussions provided a complete picture through the perspectives of the various stakeholders of the organization and helped us in identifying the grass root issues related to identity management of the members.

*Analysis of the identified dimensions*

After collecting the relevant data, we analyzed it to determine the factors effecting the efficient identity management of SEWA. We further went ahead to analyze the identified dimensions and tried to determine the relationship of each dimension with the exercise of identity management.

## 5   The Study

Through detailed discussion with various stakeholders of SEWA and review of the existing documents, we were able to determine the processes that were followed in the existing membership management system at the organization.

### 5.1   Existing Processes for Membership Management at SEWA

The membership receipt books are generally printed once in a year with each book containing forty membership receipts. As the books need to be distributed district-wise, they carry a serial number on them for each district along with a unique district code. While, serial numbers from one to forty are printed on each individual receipt of each book. In case of shortage of receipts books, reprinting is done based on the demand for the same.

   The receipt books are issued centrally for all districts from the SEWA reception centre (SRC) situated in Ahmedabad. The district coordinators, local district coordinators or karyakartas collect the books from SRC. At the SRC a manual register is maintained to keep track of the issued books. The receiver of books is supposed to sign across each record on the register which records the book number, name of the receiver and issue date. The books normally exchange few hands before reaching the aagewans. During each such exchange, manual records are maintained about the receiver of the books along with the date and signature of the receiver.

   After receiving the membership receipt books, the aagewans collect the membership details along with annual membership fee from new as well as existing members of SEWA. After filling all the relevant details, the receipts are given to the members as a proof of membership while, the counterfoil is safely retained by the aagewan.

The total number of members registered by an aagewan normally demonstrates her capability and strength within the organization. Each aagewan is normally responsible for registering members only from a single village/area, but may vary depending upon the local scenario.

After registering the members, the membership receipt books along with the collected fees need to be returned back to SRC. The aagewans normally sends the filled receipt books back to SRC through the same channel by which they had received the books. Still in many cases the books reach the SRC through a different channel. The decision about who would deposit the books and the fees to the SRC is based on convenience rather than any rule. During this process, the details of pending books (i.e. the books that are issued but not been received) at the SRC is also fetched and conveyed to the receiver.

After accepting the membership fees at the SRC, the collected fees are deposited in the bank on daily basis. The deposit receipts are maintained and are later audited at the end of the year against the acknowledgement receipts that were issued to the depositors of membership receipt books. In order to facilitate the audit process, list of received book numbers are maintained on the hind side of the bank deposit receipt counterpart.

At the SEWA reception centre, a three member back-office team is responsible for digitizing the membership management data using FoxPro based software. The digitization of manually maintained data of issued and received membership receipt books is done on daily basis. This data is used to generate various types of information. Firstly, this data is used to calculate the current status of total membership at any point of during the year. Secondly, this data is used to keep track of the membership receipt books that have been issued and not yet been received.

## 5.2   Analyzing the Existing Membership Data

In order to gain a better insight about the existing membership management at SEWA, we analyzed the membership data of the year 2006 and 2007. The dimensions stored in the database included name of the member, age, gender, residential address (including area/village, taluka and district), member's primary trade, member's secondary trade, primary trade address, secondary trade address and the name of the leader who collected the membership details. In addition to these dimensions, provision for capturing activity related details were also provided which were never filled.

Along with the digitized data, we also had copies of their annual report mentioning the total number of members across various trades.  We first compared the aggregate values of the digitized data with the values of the annual report and found the result to match with each other. On further analysis we found high frequency of duplicate values across various dimensions. First we tried to determine the number of records have same value for member's name (including first name, middle name and last name) and reside in the same location (i.e. same district, taluka and village). The summery of the findings is given in Table–1.

**Table 1.** Frequency of Membership Records with Same Name and Location

| No. of Records with Same Value | Total Instances Found |
|:---:|:---:|
| 2 | 14,419 |
| 3 | 1,878 |
| 4 | 409 |
| 5 | 143 |
| 6 | 58 |
| 7 | 21 |
| 8 | 12 |
| 9 | 2 |
| 10 | 2 |
| 14 | 1 |

As shown in the table, fourteen thousand four hundred and nineteen instances were found where the same values were repeated twice and one thousand eight hundred seventy eight instances were found where the values were repeated thrice. Most amazing was the fact that one instance was found where the same values for name and location was found to be repeated fourteen times. On further investigation, we included member's trade as a dimension along with the name and location to see the effect on the duplicate records. This reduced the frequency of duplication by some amount, but the resultant values were still significant. The result is presented in Table – 2.

**Table 2.** Frequency of Membership Records with Same Name, Location and Trade

| No. of Records with Same Value | Total Instances Found |
|:---:|:---:|
| 2 | 11,760 |
| 3 | 1,320 |
| 4 | 263 |
| 5 | 85 |
| 6 | 31 |
| 7 | 12 |
| 8 | 4 |
| 9 | 1 |
| 10 | 2 |
| 14 | 1 |

We further went on to check the uniqueness of book numbers and slip numbers that were used for membership collection. As each printed books contained a district code and a serial number unique for that particular district, we tried to find out whether there exists any record with similar values for district code, book number and slip number. The output of the query is given in Table – 3.

**Table 3.** Frequency of Records with Same Book Number, Slip Number and District

| District | No. of Records with Same Value | Total Instances Found |
|---|---|---|
| Ahmedabad City | 2 | 285 |
| | 3 | 5 |
| Ahmedabad Dist. | 2 | 170 |
| | 3 | 9 |
| Anand | 2 | 15 |
| Gandhinagar | 2 | 36 |
| Kheda | 2 | 15 |
| Kutch | 2 | 1 |
| Mehsana | 2 | 16 |
| Panchmahal | 2 | 3 |
| Patan | 2 | 19 |
| Sabarkantha | 2 | 14 |
| Surendranagar | 2 | 28 |
| Vadodara | 2 | 8 |
| | 3 | 2 |

The above table shows that in Ahmedabad City, there were two hundred and eighty five instances where the combination of book number and slip number were repeated twice, where as in five instances, the values of the fields were found to be repeated thrice. In almost all districts, duplicate values were found for book number and slip number.

### 5.3   Facts Revealed from the Interviews and Group Discussions

The interviews and focused group discussions with various stakeholders of SEWA revealed that there were members residing in the same location who were having completely same name and even involved in the same trade. But still there were chances for some amount of data being incorrect considering the fact that most of the aagewans responsible for collection of membership details were uneducated and had to take help from for filling the membership receipts. Hence, in order to save effort, certain data might be unduly duplicated. Moreover, discussion with the district coordinators revealed that the aagewans were given targets for membership generation every year and during the year end, they would create duplicate records in order to meet these targets. For example, the case where there were fourteen records with the same name, location and trade can be an instance of such case. Further discussion revealed that this case can also be a result of a membership book

being lost by an individual and in order to compensate the same, duplicate entries were being made.

Discussing about the fact of duplicate membership book and slip numbers within the existing data, it was found that there were instances where the records of membership receipt books that were either not received or digitized in the current year, were enter in the subsequent year. As the receipt books did not have any mention of the year of membership, records were generated with the same values for book number and slip number.

## 5.4    Challenges Encountered during De-duplication of Data

We tried to perform a de-duplication exercise on the data for the year 2006 and 2007 in order to distinguish between the member who reregistered themselves in 2007 and the ones who joined as new members. Given the fact that duplication existed in almost all dimensions of the existing data, there were hardly any combination of dimensions that could be used for uniquely identifying the members even within a single year. Moreover, the interviews and discussions with various stakeholders of SEWA revealed many interesting facts about the characteristics of members as well as the leaders responsible for collecting data which made the de-duplication task much more difficult.

The discussions surprisingly revealed that even the basic data regarding the members like name, age, location does not remain consistent for a member across years. As all the members of SEWA are women, their middle name, last name and residential address are subject to change after marriage. Moreover, in certain casts in India, there is a tradition of changing even the first name of a woman after marriage. As the members are self employed and related to unrecognized sector of trade, they also change their location as well as trade in search of better livelihood. It was also found that the values recorded for age of the members were not consistent as the majority of the members were uneducated and could not correctly reveal their date of birth. Even the age mentioned by them across years were found to be inconsistent.

In addition, there were traces of typographical errors within the existing data. As the data entry operators used to manually enter all the details of membership during the process of digitization every year, it was found that they used different spellings for the name of the same members in subsequent years. For example, a member whose name was registered as "Menaben" in one year might be registered as "Meenaben" in the subsequent year. This also happened due to the fact that the data originally recorded on the registration slips were in the local language (Gujarati) while the digitization process happened in English. Using techniques to identify the similar sounding words, we were able to resolve the issue of inconsistency in the spelling of members' name up to certain extent. But the fact that almost all the captured dimensions in membership details showed different degrees of volatility, made the task of de-duplication very difficult. In the absence of any supporting data (like voter identity list, list of ration card holders, etc.) from some authentic source the task of de-duplication seemed impossible. However, when an extracted list of

duplicate data were sent to the district offices for verification, it was found that the district coordinators and the aagewans were able to identify the discrepancies and authenticate the data quite easily.

## 6 Findings of the Study

Through this study, we were able to identify various factors affecting the process of identity management at SEWA. These factors could be classified based on two dimensions: its effect on identity management and whether the dimension is under control of the organization. The identified factors and their role towards efficient identity management are as follows:

**Table 4.** Factors Affecting Identity Management at SEWA

| Factor | Description | Effect on Identity Management | Under organization's control (Yes / No) |
|---|---|---|---|
| Business Needs | This is a factor that can determine the support of the top level management in the identity management exercise. The degree of business needs in maintaining unique identity for the members is also expected to determine the level of effort the organization would put in the whole exercise. | Positive | Yes |
| Cost of Operations | Cost is found to be one of the major constraints towards efficient identity management. High cost of operations of such system could act as a deterring factor in the path of identity management exercise. | Negative | No |
| Reachability and connectivity | Reachability and connectivity to the members both in terms of geographical terrain as well as technology has been found to be a factor in determining efficiency of identity management exercise. | Positive | No |
| Skill of Personnel | Capability of the people involved in implementation of the identity management exercise was one of the major factors in its successful implementation. In this case the lack of capability of the aagewans in reading and writing the membership details had proved to be a hurdle for identity management. | Positive | Partially Yes |
| Motivation of Personnel | Motivation of the people involved in implementation of the process also plays a major role in successfully implementing an identity management system. In this case, the electoral structure of the organization provided a positive motivation to the aagewans towards identity management, while meeting the intended target of membership proved to be a negative motivation towards the exercise. | Positive | Yes |

**Table 4.** (*continued*)

| Factor | Description | Effect on Identity Management | Under organization's control (Yes / No) |
|---|---|---|---|
| Benefits for the members in retaining identity | Determining the relationship between the benefits for the members in retaining identity with the organization and an efficient identity management is a tricky issue. On one hand, if the benefits received is very low the members may not show enough interest in retaining identity with the organization. While on the other hand, in the presence of very high benefits for the members, there may be inclinations for maintaining multiple identities with the organization. In case of SEWA, there was a lack of motivation for the members in retaining their identity as there was no authentication of membership conducted while extending various services to the members. This was also a reason for the process of identity management of SEWA being push based rather than a pull base approach. | Both Positive and Negative | Yes |
| Availability of resources for checking validity of identity | Once the member is enrolled, availability of proper resources for authenticating the identity at the time of service delivery would act as an important factor in the implementation of identity management for the organization. This factor would also provide sufficient control over the entire process. | Positive | Yes |
| Volatility of captured dimensions | In our study we found high degree of volatility even for the very basic dimensions (like name, address, age) that were captured. This provided a huge challenge in efficient identity management for the organization. | Negative | No |
| Availability of supporting data from other authentic sources | This factor can act as a source for cross checking the validity of data captured about the members. | Positive | No |
| Distance between source of data and place of validation | The study revealed that the data that was hard to validate from the central location could be very easily validated at the districts where they had originated. This shows a very important fact that complexity of data validation actually increased due to centralization of data. Hence, reducing the distance between the source of data and location of validity could play a significant role in identity management. | Negative | Yes |

**Table 5.** Relationship of Identified with Identification Management Exercise

|  | Positive | Negative |
|---|---|---|
| **Controlled** | • Business Needs<br>• Skill of Personnel (partially controlled)<br>• Motivation of Personnel<br>• Benefits for the members in retaining identity<br>• Availability of resources for checking validity of identity | • Benefits for the members in retaining identity<br>• Distance between source of data and place of validation |
| **Uncontrolled** | • Reachability and connectivity<br>• Availability of supporting data from other authentic sources | • Cost of Operations<br>• Volatility of captured dimensions |

## 7  Conclusion and Further Research

The study revealed various factors effecting identity management at SEWA, an organization working for the rural population of India. Out of the determined factors some were found to be in control of the organization, while others were to be out of control of the organizational boundaries. Some of the dimensions were found to be related to the identity management exercise while others were found to have negative effect on its efficiency.

Through the study we found that due to close social contacts between the members and leaders at the local, the validation of data worked much more efficiently when the task of verification is decentralized and brought near the source of data. This fact led us to suggest a decentralized process for digitization of membership data within the organization. After the data gets digitized at the local level, it can be transferred to a central server. Once the data is collated at the central server, a second level of verification at the central level can be performed and can be referred back to the local agents in case of any discrepancy. This would provide two levels of check on the data being used for unique identification of members.

It was also found during the study there were absence proper motivation for the members in retaining the proof of membership as there were no existing procedure to check the validity of member's identity during service delivery. Further, there was no existing process in place that could track the participation of the members in various activities or services received or rendered by the member. Hence, there were urgent need to implement a mechanism for consolidating the data generated due to the participation (or non-participation) of the members in various activities of SEWA and provide them with enhanced facilities with the help the knowledge that would be generated from the consolidated data. Initiatives towards this direction would enable the organization from shifting the identification management from a push based system to a pull based system where the members themselves would approach the organization with valid data for registration.

This study was conducted for resolving the issues of identity management of a single organization working for the rural population in Gujarat, India. As the study had a fixed scope, the determined factors would be limited. Further research can be conducted in order to understand the factors that would effect the identity management when looked from the perspective of the nation as a whole. Moreover, research can be conducted to determine the degree and nature of relationship among various factors and their overall contribution towards the efficiency of identity management.

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