

Database Generation for the Development of Village Information System (VIS)

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ABSTRACT

According to Mahatma Gandhiji village is a backbone of our nation. In planning and development process village should be at the centre. Village information system (VIS) is a micro level study which may helpful to planners, policy makers and administrators in planning and decision making process. It is seen that may planning gets fail due to insufficient and non availability of data.

Data is considered as raw material from which meaningful results and analysis can be carried out. Database is a group of organized records and files which are stored systematically and shared by different users. To generate an information system it requires lot of data and database integrated with GIS.

Comprehensive village level information system is a need of hour and in this system database generation is a prime task. Microsoft Access is a low cost, widely available relational database management system (RDBMS) used mainly by home and small business users. Therefore in this paper an attempt is made to highlight the process of database generation for the development of VIS using MS-Access.

General Terms

Data, Database

Keywords

Village Information System (VIS), MS-Access, Village Savali

1. INTRODUCTION

According to Mahatma Gandhiji village is a backbone of our nation hence village should be the centre of planning and development activity. Village information system is a micro level study which may helpful to planners, policy makers and administrators in the planning and decision making process. There are various attempts carried out on private as well as government level for the betterment of villages; in this process modern technologies playing vital role [1]. Geoinformatics is an emerging branch of science and technology has lot of potential to enrich rural lives and bring revolutionary changes by all manners.

In the development of Village Information System data and database plays a central role. Data refer to a collection of facts and figures, usually collected as the result of experience, observation, experiment, processes within a computer system or a set of premises. This may consist of numbers, words, images, etc. Decision makers and planners are handicapped today due to the lack of authentic, complete and up to date information [2].

A database can be explained as a set of logically related files organized to facilitate access by one or more applications programs, systematic storage and minimum data redundancy. A database management system (DBMS) is system software used to manage the organization, storage, access, security and integrity of data in a structured database [3]. In other words DBMS is a structured collection of records or data that is stored in a computer system is known as database. In development of VIS it requires lot of data and organized database (Geodatabase integrated with GIS) [4]. In GIS perspective data is of two types i.e. spatial and non-spatial. Non spatial data (also known as attribute data) which is a description about spatial features whereas; the data which is having its spatial location on earth surface i.e. spatial features or spatial data [5]. In the development of VIS both spatial and non spatial data are equally important. In this paper an attempt is made to highlight the process of database generation for the development of Village Information System using MS-Access.

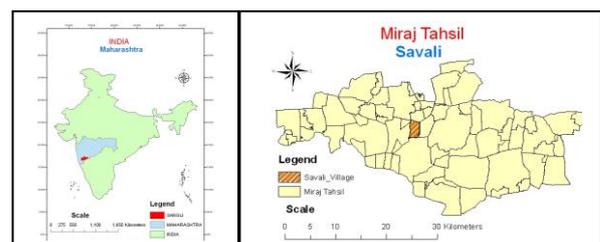
2. AIM & OBJECTIVES

The aim of this research is to generate a database for developing a Village Information System. Following are the related objectives:

1. To understand the database design required for Village Information System.
2. To generate the VIS database structure using MS-Access.
3. To check the compatibility and suitability of MS-Access for village level application.

3. STUDY AREA

The study region selected for the development of VIS is a village "Savali". This is a small village located in Miraj tahsil of Sangli district within coordinates of 16° 46' 28" to 16° 53' 45" North Latitude and 74° 31' 08" to 74° 40' 51" East Longitudes and covers 536 hectares area. This village is 7 km's from Sangli and 6 km's from Miraj at triangular location near Maharashtra Industrial Development Corporation.



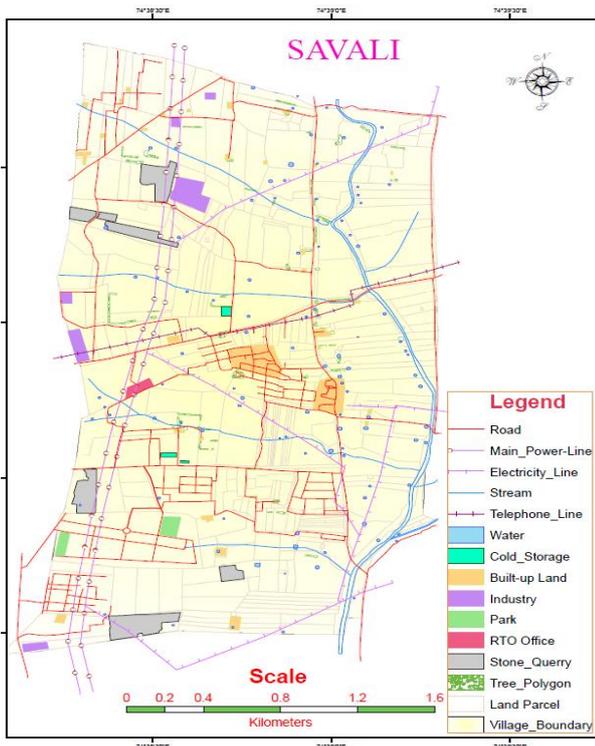


Fig 1: Location Map of Study Area

DATABASE AND METHODOLOGY

In this study both primary as well as secondary data is utilized but more focus was paid on primary data.

3.1 Primary Data

The primary data is collected through intensive field survey. The agricultural landuse survey is conducted to collect crop data. Along with agriculture landuse survey the soil and water survey is also conducted for mapping soil types in the village. The household survey is carried out and data is collected through questionnaire. The information about individual family, demographic structure, educational background, available facilities in village, the problems facing to the society, etc. are collected. GPS is used to collect the coordinates for cadastral map georeferencing and ground truth verifications. The informal interviews are conducted to get information about the impact of M.I.D.C. on the village and other eco-geographical factors.

3.2 Secondary Data

In this study various sources of secondary data are also used. The demographic data of the village is taken from the District Census Handbook. The data related to socio-economic is taken from the Statistical Abstracts. The study reports carried out by for B.A.-III students of Willingdon College, Sangli are also referred. The base mapping of survey land parcel is conducted by Cadastral map. The Survey of India Toposheet is used as a base map for creation of various data layers and information. Google earth high resolution satellite data is also used for individual household mapping. Other than that some other sources like telephone directory, updated election voters list, house ownership record, etc are used, these all are valid sources of information. The website <http://164.100.111.5:8080/mahabhulekh/> is used to collect land records.

The methodology adopted for this study is quite simple and systematic. Initially the scope of work is decided then detail flow chart is prepared to classify data into proper categories. Once the volume of data is realized then database software is selected (MS-Access). As per the flow chart collected data is entered through forms. Then needed manipulation is carried out on added data. The Unicode option is applied for Marathi language. Some query analyses are performed to get desired results and at last derived results are represented through reports.

3.3 DATABASE GENERATION

In order to have a database to be truly functional, it must not only store large amounts of records, but be accessed easily. In addition, new information and changes should also be fairly easy to input. In order to have a highly efficient database system, it needs to incorporate a program that manages the queries and information stored on the system [6]. The advantages of database is having access to user, data security on the contrary it is having complex structure, time consuming to design, cost require for hardware and software are the major disadvantages. There are various types of database viz. Flat Model, Hierarchical, Network, Relational, etc. There are various types of databases are available like SQL, ORACLE, PostGrass, MS-Access, etc. The selection of database has to be done as per the need of project.

In this study MS-Access is used considering all aspects. Microsoft Access is a low cost relational database used mainly by home and small business users. It can run on a personal computer or server and provides an easy-to-use interface for designing simple databases, reports and data entry forms. It has good capabilities for connecting to other data sources and grab data from external databases.

Table 1. Database details of VIS

Database	Data Set	Data Tables	Records Set	English Records	Marathi Records
1	2	18	5718	4728	990

4. RESULT AND DISCUSSION

In this study all main components (tables, forms, reports, queries, etc.) of a MS Access database are used for VIS data.

4.1 Tables

The VIS contains different types of data which is collected from various sources. The agriculture information data set contains four main tables i.e. General Information, Ownership details, Other Rights and Crop details. The Household information contains three tables i.e. General Information, Family Particulars and Other Information. Other than these soil and water pH, commercial places, industrial places, etc. tables are also created. These tables are functioning as attribute information which is further joined to shape files.

4.2 Forms

The data entries in the tables are made by two ways i.e. through Datasheet View or using Form. After data entry all records are checked properly and required manipulation is carried out to produce error free data.

Fig 2: General Information Data Entry Form

Fig 3: Marriage Information Data Entry Form

4.3 Query

Queries are great for getting information from a database. With a query, one can filter the data that stored in a table. The results appear in a tabular format in Datasheet view [8]. The query is most powerful tool of analysis but query has to be generated properly so that it will show the calculative as well as logical analysis (Fig.4).

4.3.1 Query Output – (Irrigated Land Parcels)

Fig. 5 is an output of a simple query, which is generated on General_Info table of Land-Record database. This query

shows the information of irrigated land parcels in village, along with owner's name, record number, total as well as waste land, landuse, etc. Out of total 309 land parcels 25 parcels are having irrigation facility. It shows the percentage of irrigated land is quite low which affect the employment, economy as a result conversion into Non-Agriculture land is increased. The major stream 'Miraj Odha' is passing from Eastern side of village which is non-perennial and contains water only in rainy season. Entire agricultural land of this village is depends on well and tube wells. The proportion of irrigated land is very less hence, some measures like water shade management and water conservation needs to be implemented [7].

4.3.2 Query Output – (Soyabean Crop in Year 2003-04)

Fig.6 is output of multiple query i.e. two record sets of a table, first is year and second is crop statistics. This query defines land parcel, year, season, crop, irrigated and un-irrigated land area, etc. Out of 884 records, 111 records are under Soyabean and rest records are under other various crops. The below given snap shows Soyabean is a non-irrigated crop but some places where irrigation facility is available there it is under irrigation. The database shows that Soyabean is a major crop of Kharif season. Since Soyabean is a cash crop and need not require much irrigation facility farmer prefers to cultivate this crop.

4.3.3 Query Output – (Non-Agricultural Land Parcels in Village)

Fig.7 is an output of a simple query which gives information about the Non-agriculture parcels in village. This village is adjacent to M.I.D.C. and on the edge of Municipal Corporation hence, some people invested money and purchased land parcels in this village for business purpose. New RTO office is situated in this village, considering this aspect many people are attracting towards village Savali. Shaha-Lulla estate developers have developed big portion of land in southern part of village this leads the growth of village wards Miraj. Due to various reasons several farmers sold their land and those patches are converted into Non-Agriculture plots. Fig. 7 shows the information about Non-Agricultural land parcels in the village, their survey numbers, Name of owner, plot area, etc.

4.3.4 Query Output – (Ownership Rights of Land Parcel)

Another important aspect of land parcel is ownership (Fig.8). There are three types of ownership of a land i.e. Main Owner, Common Owner and Other Owner. Snap shot Fig. 8 shows the ownership rights. Out of 1383 owners 377 are common owners and 86 are other owners. Most of the other owners are females because as per rule daughter is equally owner of the land in the family.

The screenshot displays the Microsoft Access interface with several query views:

- Crop_Detail Query:** `SELECT * FROM crop_detail WHERE (((crop_detail.[year])="2003-04") AND ((crop_detail.[crop])="Soyabeen"`
- Bank Loan:** `SELECT * FROM Other_Rights WHERE Finance_Type="Bank";`
- Income Query:** `SELECT * FROM Family WHERE Income >= 2500 AND Sex="स्त्री";`
- Vehicle-Phone Query:** `SELECT * FROM Other WHERE Vehicle="दुचाकी";`

The central part of the image shows a database schema with tables: General_1, Family, and Other. Relationships are indicated by lines connecting fields between tables. A field list at the bottom shows criteria for various fields like Income, Sex, Vehicle, etc.

Fig 4: Query Formation and SQL Statement View

ID	LINK_ID	Survey_ID	Owner_Name	Common_Own	Other_Own	Record_No	Land_Type	Waste_Lan	Total_Land	Landuse
251	244	227/A	Chaya Hanumant Nai	Yes	Yes	439,440,441,442,443	Irrigated	0.06	2.03	Agriculture
252	245	227/b	Ravindra Kalappa Khot	No	No	706,736	Irrigated	0.05	2.03	Agriculture
254	247	229	Aappaso Aanappa khot	Yes	No	16,107,539,634,635	Irrigated	0	1.98	Agriculture
255	248	230	Baban Bandu Mule	No	No	597	Irrigated	0	1.87	Agriculture
256	249	231	Chairman Kanadwadi Vikas Co. Op Society	No	No	766	Irrigated	0	0.27	Agriculture
257	250	232	Ibrahim Miraso Solapure	No	No	628	Irrigated	0	0.29	Agriculture
258	251	233	Balaso Dhanpal Khot	Yes	No	126,576,577,595,705	Irrigated	0.02	0.25	Agriculture
259	252	234	Balaso Dhanpal Khot	Yes	Yes	126,595,705	Irrigated	0	0.6	Agriculture
260	253	235	Shrikant dada Khot	Yes	Yes	4,126,595,596,770	Irrigated	0	5.1	Agriculture
261	254	236	Chairman Kanadwadi Vikas Co. Op Society	No	No	766	Irrigated	0	0.25	Agriculture
262	255	237	Mahavir Aanappa Khot	No	No	576	Irrigated	0	0.33	Agriculture
263	256	238	Balaso Dhanpal Khot	Yes	Yes	126,595,705	Irrigated	0	0.61	Agriculture
264	257	239	Bhupal Kalappa Khot	No	No	1028	Irrigated	0.13	2.6	Agriculture
265	258	240	Sangali Zilla Bhu Vikas Bank	No	No	761	Irrigated	0	1.67	Agriculture
266	259	241	Champabai Aanu Khot	Yes	Yes	29,585,586,587,588	Irrigated	0.65	2.27	Agriculture
267	260	242	Shripal Nemu Khot	No	No	2,708,709	Irrigated	0.18	4.63	Agriculture
268	261	243	Ramesh Guraling Walvekar	Yes	No	73,231,240,259	Irrigated	0.01	0.03	Agriculture
269	262	244	Shobha Pandurang Kore	Yes	Yes	154,165	Irrigated	0	0.86	Agriculture
270	263	245	Ramesh Guraling Walvekar	Yes	Yes	73,231,240,259	Irrigated	0	1.42	Agriculture
271	264	246	Dondiram Aananna Salikhe	No	No	132	Irrigated	0	0.88	Agriculture

Fig 5: Irrigated Land Parcels in Village View

ID	LINK_LD	Survey_No	Year	Season	Landuse	Crop	Irrigated_Land	Un-Irrigated_Land
2	2	1	2003-04	Kharif	Three_Crop	Soyabeen	0	1.15
15	15	2	2003-04	Kharif	Four_Crop	Soyabeen	0.9	0
21	21	3	2003-04	Kharif	Single_Crop	Soyabeen	1.66	0
25	25	4	2003-04	Kharif	Single_Crop	Soyabeen	1.56	0
30	30	5	2003-04	Kharif	Three_Crop	Soyabeen	0	1.11
34	34	5	2003-04	Kharif	Three_Crop	Soyabeen	0	1.11
37	37	6	2003-04	Kharif	Double_Crop	Soyabeen	0.6	0
42	42	8	2003-04	Kharif	Single_Crop	Soyabeen	0	1.09
45	45	9	2003-04	Kharif	Four_Crop	Soyabeen	1.74	0
56	56	11	2003-04	Kharif	Single_Crop	Soyabeen	1.8	0
62	62	12	2003-04	Kharif	Single_Crop	Soyabeen	0	1.26
66	66	13	2003-04	Kharif	Single_Crop	Soyabeen	1.6	0
71	71	14	2003-04	Kharif	Single_Crop	Soyabeen	3.04	0
83	83	16	2003-04	Kharif	Single_Crop	Soyabeen	3.84	0
90	90	17	2003-04	Kharif	Double_Crop	Soyabeen	0.79	0
93	93	19	2003-04	Kharif	Double_Crop	Soyabeen	0.13	0
97	97	20	2003-04	Kharif	Single_Crop	Soyabeen	0.44	0
100	100	21	2003-04	Kharif	Single_Crop	Soyabeen	0.47	0
103	103	23	2003-04	Kharif	Single_Crop	Soyabeen	0.27	0

Fig 6: Soyabeen Crop in Year 2003 - 04

ID	Survey_No	Sub/Survey/No	Owner_Name	Landuse	Ferfar	Record_No	Area
28	36	36/1/A/32	Rupali Prakash Raut	Non Agriculture	3928	1946	232.0
29	36	36/1/A/33	Rachana Hement Raut	Non Agriculture	3929	1947	297.0
30	36	36/1/A/34	Nitin Shantinath Anwade	Non Agriculture	3051	1948	27.0
31	36	36/1/A/35	Ravindra Surchandra Shaha	Non Agriculture	3051	1949	280.0
32	36	36/1/A/36	Sukumar Bapu Patil	Non Agriculture	3051	1950	368.0
33	36	36/1/A/38	Narayan Natha Jadhav	Non Agriculture	3051	1952	296.0
34	36	36/1/A/41	Bapu Prabhu Shinde	Non Agriculture	3051	1955	295.0
35	36	36/1/A/42	Shivputra Annappa Arbole	Non Agriculture	3051	1954	310.0
36	39	39/1	Kishor Ramvilas Kabra	Non Agriculture	3971	1198	29.0
37	39	39/2	Amit Kishor Lulla	Non Agriculture	3920	1199	308.0
38	39	39/3	Mahendra Ashok Tele	Non Agriculture	3921	1200	308.0
39	39	39/4	Kishor Krushnadas Thakkar	Non Agriculture	3466	1201	308.0
40	39	39/5	Sadashiv Mahadev Mali	Non Agriculture	2762	1202	292.0
41	39	39/6	Mangla Kamlakar Patil	Non Agriculture	2549	1203	31.0
42	39	39/8	Kamlakar Ramoonda Patil	Non Agriculture	2547	1204	295.0

Fig 7: Non-Agricultural Land Parcels in Village

ID	LINK_ID	Survey_No	Farmer_Name	Sex	Ownership_Type	Akar_Anne	Waste	Fer_Far
5	5	1	Putalabai Appaso Vatkar	Female	Other_Owner	0	0	1181
6	6	1	Ratnabai Bhimrao Maske	Female	Other_Owner	0	0	1181
7	7	1	Chandrabai Baburao Pandhre	Female	Other_Owner	0	0	1181
8	8	1	Sunanda Balaso Tambe	Female	Other_Owner	0	0	1181
9	9	1	Bayabai Dhondiram Shingade	Female	Other_Owner	0	0	1181
10	10	1	Sushila Ramchandra Hazare	Female	Other_Owner	0	0	1181
13	13	3	Shirama Balgonda Patil	Female	Main_Owner	5	4	3084
14	14	3	Shakuntala Appaso Patil	Female	Main_Owner	0	0	3084
17	17	3	Balabai Dada Patil	Female	Main_Owner	0	0	3084
18	18	3	Shalan Malgonda Patil	Female	Main_Owner	0	0	3084
39	39	7	Kalawanti Bhagwan Mali	Female	Other_Owner	0	0	3454
41	41	8	Malubai Appa Mali	Female	Other_Owner	0	0	1034
42	42	8	Kalawanti Bhagwan Mali	Female	Other_Owner	0	0	2442
47	47	10	Chabutai Atmaram Nalavade	Female	Main_Owner	0	0	3042
48	48	10	Vimal Maruti Nalavade	Female	Main_Owner	0	0	3042
49	49	10	Indubai Appaso Nalavade	Female	Main_Owner	0	0	3042
54	54	10	Maya Ramchandra Salunkhe	Female	Common_Owner	8	0	901
55	55	10	Shanabai Ramchandra Salunkhe	Female	Common_Owner	8	0	3737

Fig 8: Other Ownership Rights of the Land Parcels in Village

Other												
Respondent_Name	Age	Sex	Education_of_F	Occupation	Mobile_Pho	Solid_Wast	Saving_Acc	Taken_any_	Vehicle	Entertainme	Food_Supp	Name_ir
सुजाता सदाशिव कृपवाडे	30	स्त्री	माध्यमिक	घरकाम	आहे_1 फोन	अ-समाधानी	वँक	वैद्यकीय-करीता	दुचाकी	टि.ट्ही.	आहे	आहे
दिलीप महादेव तांबडे	34	पुरुष	माध्यमिक	शेती	आहे_1 फोन	समाधानी	वँक	शेती-साठी	इतर	टि.ट्ही.	आहे	आहे
शकुंतला चंद्रकांत पोतदार	31	स्त्री	उच्च_माध्यमिक	घरकाम	आहे_1 फोन	समाधानी	इतर	वाहना-करीता	इतर	रेडीओ	नाही	नाही
महेश जानदेव कोडकर	16	पुरुष	प्राथमिक	शेती	आहे_1 फोन	समाधानी	वँक	घरवांधणी-करीत	नाही	टि.ट्ही.	आहे	आहे
विमल किसन कांबळे	50	स्त्री	अशिक्षित	घरकाम	आहे_1 फोन	अ-समाधानी	वँक	शेती-साठी	दुचाकी	टि.ट्ही.	आहे	आहे
वेवी शिवाजी शिंदे	50	स्त्री	माध्यमिक	घरकाम	आहे_1 फोन	अ-समाधानी	वँक	शेती-साठी	नाही	टि.ट्ही.	आहे	आहे
मलव्या बसाप्पा कांबळे	22	स्त्री	पदवीधर	घरकाम	2 फोनs	समाधानी	वँक	वैद्यकीय-करीता	चार-चाकी-ट्रक	सेट-अप-वॉक्स	आहे	आहे
सुवर्णा दिलीप लठठे	35	स्त्री	माध्यमिक	घरकाम	नाही	समाधानी	इतर	घरवांधणी-करीत	नाही	टि.ट्ही.	आहे	आहे
दिपाली शरद माळी	22	स्त्री	उच्च_माध्यमिक	घरकाम	नाही	अ-समाधानी	इतर	घरवांधणी-करीत	दुचाकी	टि.ट्ही.	आहे	आहे
शंकर दत्त गरव	55	पुरुष	प्राथमिक	शेती	नाही	समाधानी	वँक	शेती-साठी	नाही	टि.ट्ही.	आहे	आहे

General_1										
ID	House_ID	House_Number	Family_Head	Religion	Cast	House_Ownership	House_Loc	House_Type	Food_Supp	
11	B_11	उपलब्ध-नाही	चंद्रकांत राजाराम पोतदार	हिंदू	जनरल-खुला	भाडेकरू	गावठाण	कौलारू	आहे	
14	B_14	उपलब्ध-नाही	बजरंग महादेव राजमाने	हिंदू	जनरल-खुला	भाडेकरू	नयिन-वसहत	कौलारू	नाही	
15	B_15	उपलब्ध-नाही	शिवाजी शंकर केंगार	हिंदू	S.C.-मागास	भाडेकरू	नयिन-वसहत	कौलारू	आहे	
16	B_16	उपलब्ध-नाही	सुशिला मनगोंडा पाटील	हिंदू	जनरल-खुला	भाडेकरू	गावठाण	कौलारू	नाही	
17	B_17	उपलब्ध-नाही	नेताजी महादेव श्रीखोंडे	हिंदू	S.T.-भटके	भाडेकरू	नयिन-वसहत	कौलारू	नाही	
18	B_18	उपलब्ध-नाही	दिपक महादेव शिरकंड	हिंदू	S.T.-भटके	भाडेकरू	नयिन-वसहत	कौलारू	आहे	
19	B_19	उपलब्ध-नाही	रमेश जगन्नाथ माने	हिंदू	S.T.-भटके	भाडेकरू	नयिन-वसहत	कौलारू	नाही	
24	R_4	उपलब्ध-नाही	अरुण दत्तात्रय कदम	हिंदू	S.C.-मागास	भाडेकरू	गावठाण	कौलारू	आहे	
38	S_34	उपलब्ध-नाही	सदाशिव शंकर कांबळे	हिंदू	S.C.-मागास	भाडेकरू	नयिन-वसहत	कौलारू	नाही	

Income										
ID	Link_ID	House_ID	Name	Sex	Age	Education	Occupation	Work_Place	Marriage	Income
1	उपलब्ध-नाही	B_1	मारुती सदाशिव गिरमल	पुरुष	35	पदवीधर	खाजगी-नोकरी	एम आय डी सी	होय	3000
5	उपलब्ध-नाही	B_2	गुंडाप्पा अणू कृपवाडे	पुरुष	57	प्राथमिक	-	सावळी	होय	5000
9	उपलब्ध-नाही	B_3	अणू पंभू कृपवाडे	पुरुष	80	प्राथमिक	-	-	होय	3000
20	उपलब्ध-नाही	B_5	दिलीप महादेव तांबडे	पुरुष	40	माध्यमिक	शेती	सावळी	होय	3000
34	उपलब्ध-नाही	B_7	रामगोंडा बापू कृपवाडे	पुरुष	60	अशिक्षित	शेती	सावळी	होय	3000
37	उपलब्ध-नाही	B_8	रविंद्र चंद्रगोंडा कृपवाडे	पुरुष	34	माध्यमिक	शेती	सावळी	होय	3600
43	उपलब्ध-नाही	B_9	श्रिकांत मल्लाप्पा कुळळी	पुरुष	50	माध्यमिक	खाजगी-नोकरी	सावळी	होय	2500
45	उपलब्ध-नाही	B_10	वत्सला माहिन मोरे	स्त्री	65	अशिक्षित	-	सावळी	होय	2500
46	उपलब्ध-नाही	B_11	चंद्रकांत राजाराम पोतदार	पुरुष	36	पदवीधर	खाजगी-नोकरी	एम आय डी सी	होय	2500
447	उपलब्ध-नाही	S_30	मारुती धोडीवा माळी	पुरुष	60	अशिक्षित	शेती	सावळी	होय	5000
577	उपलब्ध-नाही	Y_1	दिगंबर शंकर गरव	पुरुष	24	पदवीधर	खाजगी-नोकरी	मिरज	नाही	3000
605	उपलब्ध-नाही	Y_7	संतोष मारुती माळी	पुरुष	40	उच्च_माध्यमिक	खाजगी-नोकरी	एम आय डी सी	होय	3000
609	उपलब्ध-नाही	Y_8	निघंती गंगाराम शिंदे	पुरुष	45	उच्च_माध्यमिक	खाजगी-नोकरी	सांगली	होय	15000
618	उपलब्ध-नाही	Y_10	आण्णासो आप्पा चौगले	पुरुष	55	उच्च_माध्यमिक	खाजगी-नोकरी	सांगली	होय	10000

Fig 9: Query Output in Marathi

Genral						
Family_Head	Religion	Cast	House_Owners	House_Location	House_Type	Food_Sup_Card
Chandarkant Rajaram Potdar	Hindu	General	Rented	Gauthan	Bangalow	Yes
Mahadev Shivappa Todakar	Hindu	General	Own	Gauthan	Bangalow	Yes
Yalappa Channapa Bhosale	Hindu	SC	Own	New-Settlement	Bangalow	No
Bajarang Mahadev Rajamane	Hindu	General	Rented	New-Settlement	Bangalow	No
Shivaji Shankar Kagar	Hindu	SC	Rented	New-Settlement	Bangalow	Yes
Sushila Mangonda Patil	Hindu	General	Rented	New-Settlement	Bangalow	No
Netaji Mahadev Shrikhande	Hindu	ST	Rented	New-Settlement	Bangalow	No
Dipak Mahadev Shirkhande	Hindu	ST	Rented	New-Settlement	Bangalow	Yes
Ramesh Jagannath Mane	Hindu	ST	Rented	New-Settlement	Bangalow	No
Dnyanadev Mahadev Kandakar	Hindu	General	Own	Gauthan	Bangalow	Yes

Fig 10: General View of Report

Agriculture-Irrigated									
Agriculture-Irrigated									
Friday, May 01, 2009 11:56:25 PM									
Survey_No	Owner_Name	Common_Owner	Other_Owner	Record_No	Land_Type	Waste_Land	Total_Land	Landuse	Loan
227/A	Chaya Hanumant Nai	Yes	Yes	439,440,441,442,443,444,445,446	Irrigated	0.06	2.03	Agriculture	
227/b	Ravindra Kalappa Khot	No	No	706,736	Irrigated	0.05	2.03	Agriculture	No
229	Aappaso Aanappa khot	Yes	No	16,107,539,634,635,636,637,638,	Irrigated	0	1.98	Agriculture	No
230	Baban Bandu Mule	No	No	597	Irrigated	0	1.87	Agriculture	Yes
231	Chairman Kanadwadi Vikas Co. Op Society	No	No	766	Irrigated	0	0.27	Agriculture	No
232	Ibrahim Miraso Solapure	No	No	628	Irrigated	0	0.29	Agriculture	No
233	Balaso Dhanpal Khot	Yes	No	126,576,577,595,705,766,	Irrigated	0.02	0.25	Agriculture	Yes
234	Balaso Dhanpal Khot	Yes	Yes	126,595,705	Irrigated	0	0.6	Agriculture	No
235	Shrikant dada Khot	Yes	Yes	4,126,595,596,770	Irrigated	0	5.1	Agriculture	Yes
236	Chairman Kanadwadi Vikas Co. Op Society	No	No	766	Irrigated	0	0.25	Agriculture	Yes
237	Mahavir Aanappa Khot	No	No	576	Irrigated	0	0.33	Agriculture	Yes
238	Balaso Dhanpal Khot	Yes	Yes	126,595,705	Irrigated	0	0.61	Agriculture	No
239	Bhupal Kalappa Khot	No	No	1028	Irrigated	0.13	2.6	Agriculture	No
240	Sangali Zilla Bhu Vikas Bank	No	No	761	Irrigated	0	1.67	Agriculture	Yes
241	Champabai Aanu Khot	Yes	Yes	29,585,586,587,588	Irrigated	0.65	2.27	Agriculture	No
242	Shripal Nemu Khot	No	No	2,708,709	Irrigated	0.18	4.63	Agriculture	No

Fig 11: Agriculture Irrigated Land Parcels Report

Non-Agriculture Land Parcels						
Non-Agriculture Land Parcels						
Thursday, May 14, 2009 11:00:14 PM						
ID	LINK_ID	Survey_No	Owner_Name	Common_Owner	Other_Owner	Landuse
37	37	36	Laximibai Pirgonda Patil & Others	-	-	Non-Agriculture
38	38	37	Survey Number is Not Existed	-	-	Non-Agriculture
39	39	38	Survey Number is Not Existed	-	-	Non-Agriculture
40	40	39	Kishor Ramvias Kabara & Others	-	-	Non-Agriculture
51	51	50	Parshuram Bhaskar Chitale & Others	-	-	Non-Agriculture
56	56	55	Sahadev Dattu Isapure & Others	-	-	Non-Agriculture
87	86	86	No Name	-	-	Non-Agriculture
113	111		Marathe Research Fedration Miraj - Arvind Govind Marathe & Others	-	-	Non-Agriculture
119	117		Dilip Subarao Patil & Others	-	-	Non-Agriculture
123	121		Rajaram Shankar Basvar & Others	-	-	Non-Agriculture
126	124		Bhimashankar Krishnat Karle & Others	-	-	Non-Agriculture
131	124	127	Sukumar Gundappa Gane & Others	-	-	Non-Agriculture
136	129	132	Govt. of Maharashtra & Others	-	-	Non-Agriculture
137	130	133	Subhash Dattairao Pawar & Others	-	-	Non-Agriculture
146	139	138	Kumar Gunda More & Others	-	-	Non-Agriculture
152	145	143	Balaso Annaso Kabade & Others	-	-	Non-Agriculture
153	146	144	Survey Number is Not Existed	-	-	Non-Agriculture
156	149	147	Anna Shankar Kolekar & Others	-	-	Non-Agriculture

Fig 12: Non-Agriculture Land Parcels Report

4.3.5 Query Output – (in Marathi Language)

Few queries are formed on Marathi database like how many two wheelers are available in village, income, tiles house, etc. (Fig.9) Each query shows the desired output in particular format like house number, name of head, their sex, age, education, etc. These queries are working as a means of filtering the needed information to the user. The snaps represented are some example of queries which generated for display purpose. The user can develop his own queries probably he must know how to generate a query using various parameters.

4.4 Report

A report is an effective way to present the data in a printed format. The user has control over the size and appearance of everything on a report. The reports can be generated for various aspects. The report is a fine medium of showing the information in organized format. It is having privilege to delete the unnecessary information and present required information in precise format. Few reports generated from the available data. Some generated reports are given below section Fig 10 is general information of household, Fig 11 is Agricultural-Irrigated land report and Fig 12 is about non-agricultural land parcels. The reports are very much useful for printing as well as soft copy view.

5. CONCLUSION

The generated database is multipurpose like it is centralized at one server, digital storage, helpful for government officials, further analysis by GIS users and many more. The spatial information about various features from village viz. land parcel, household, roads, water body, electricity line, telephone line, etc is made available with digital maps. The attribute information of these features i.e. Name of owner, land particulars, demographic details, crop information and many more is systematically stored in database.

The database created for VIS application is huge which contains 2 main datasets, 18 data-tables and 5718 record-sets out of this 4728 are in English and 990 in Marathi. The general table of Land Records contains 309 records of 11 informative columns. The Ownership table contains 1383 records of 7 data columns and the Crop detail table having 884 record sets in 8 columns. The database is also prepared for Non-Agriculture land parcels in the village which contains 506 record sets of 7 columns. Same way the database is developed for the Household information of village which contains 3 main tables. The general information table of Household having 176 record sets of 10 columns. The family information for same household is collected which is having 803 record sets along with this general satisfactory survey is conducted on same houses for 50 columns. The information given by these families are become very much useful during the analysis task. Same way the database is created in Marathi language which contains 990 record sets.

Various types of queries are generated on prepared database. These queries filter particular information and represent the desired output in systematic order for user. The details of Agriculture Land Parcels is processed and stored in a system. The system contains most useful information about land parcels like ownership, crop details, other rights on land, etc. Out of total 309 parcels, 63 parcels are having loan form

Bank, 110 from Co-operative society, 26 from Credit society. This statistics shows the use of land as a garniture in economic transactions.

The figures are well explanatory and represent the volume of database. The creation of structured database was a challenging work and selection of data type, data entry, data organization, data manipulation, etc. was time consuming as well as difficult task. To conclude it; the database generation for VIS is complicated and challenging task which can be handled efficiently by MS-Access. This task is accomplished systematically and properly so that it will be further helpful for VB application as well as for attribute data of shape files for spatial analysis.

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