



2011 National Census of Population and Housing The Technical Report

2013

1390 National Census of Population and Housing

The Technical Report

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STATISTICAL
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**Technical Design and Statistical
Methods Research Group**

2013

Users Guide

Iranian calendar vs Gregorian calendar

Iranian year	1370	1375	1380	1381	1382	1383	1384	1385	1386	1387	1388	1389	1390
Christian year	1991-1992	1996-1997	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	200-2009	2009-2010	2010-2011	2011-2012

Iranian months

Farvardin
Ordibehesht
Khordad
Tir
Mordad
Shahrivar
Mehr
Aban
Azar
Dey
Bahman
Esfand

Christian months

21 March- 20 April
21 April- 21 May
22 May- 21 June
22 June- 22 July
23 July- 22 August
23 August- 22 September
23 September- 22 October
23 October- 21 November
22 November- 20 December
22 December- 20 January
21 January- 19 February
20 February- 20 March

Iranian year begins on March 21st of the Christian year and ends on March 20st of the next year. To convert the Iranian year into Christian year, add 621 to the former.

Preface

The technical report on the 1390 National Census of Population and Housing contains a coherent collection of the technical methods employed in all the census's stages ranging from planning to the publication of the results in order to satisfy the needs of such users as planners, policy makers, researchers, students, and the interested individuals as well as those who will be involved in designing and conducting the future censuses.

The present collection introduces the technics used in the 1390 Census including those applied in the Pilot Censuses together with the concepts and procedures tested in these experiments.

Today, in many countries throughout the world the census technical report designing committees in cooperation with the other working groups are actively engaged in gathering and introducing the technical methods used in the censuses, the results of which can be accessible through electronic publications (ebooks) and the printed publications. In 1385, in Islamic Republic of Iran compilation of such a collection was included on the agenda and it was provided, at a very limited extent, to the users in the Statistical Centre of the Iran. In addition, after the 1390 Pilot Census in 1388 some actions were taken to identify the technical methods. The present collection has been prepared reviewing the previous reports, taking into account their weak and strong points, and carrying out a comparative study on the other country's performance, in an effort to make it a very comprehensive for the users.

This research project has come to maturity by sincere collaboration of our colleagues, gentlemen Zabyolah Ghaemi, Mohammad Reza Rayhani, Daryosh Mohammadi, Arash Fazeli, Nourmohammad Javeed, Mehdi Vahdati, Reza Salehian, and Ladies Ozra Naeneeni, Shirin Jafari, Samaneh Ghaderi, Khadijeh Karimi, Akram Rasoli, Sadigheh Mirzaee, Neda Mostafavi, Sodabeh Zerbarjad, Marjan Mirzakhilili, to all of whom we are grateful. We really appreciate Mrs. Javadi from the Statistical Research and Training Center for refereeing this project and giving valuable comments and Miss. Mehrnoosh Mirmohammad and Mrs. Najmeh Nazerian for taking the responsibility of typing this report. Our special thanks must go to Mr. Hamid Moazzami Goodarzi for translating the text into English.

We welcome any comments and recommendations the readers of this report would like to make on its contents.

Technical Design and Statistical Methods Research Group

Table of Contents

Title	Page
Introduction	1
Chapter 1. Generalities	
1. Generalities	3
1.1. The background on preparing the Census's technical report in Iran	3
1.2. Comparative Study	4
1.3. History of Census of Population in Iran	4
1.4. The Census's goals and objectives	11
1.5. Why to reduce the span between the censuses (from 10 to 5 years)?.....	11
1.6. The Pilot Census	12
1.6.1. The 1390 Pilot Censuses in 1388 and 1389	12
1.6.1.1. The Pilot Census in1388	13
1.6.1.1.1. Major activities tested by the Census Groups	13
1.6.1.1.2. Implementation Time	15
1.6.1.1.3. Geographical Area	16
1.6.1.2. The Pilot Census in 1389	16
1.6.1.2.1. Major activities tested by the Census Groups	17
1.6.1.2.2. Implementation Time	19
1.6.1.2.3. Geographical Area	19
1.7. Managerial Organization	19
1.8. Chat Room in the Census	21
1.9. Time table	21
Chapter 2- The Census Technical Design	
2. The Census Technical Design	25
2.1. Methodology	25
2.1.1. Implementation Methodology	25
2-1-2- Data Collection Method	26

2.1.3. Implementation procedures (Individual and collective)	27
2.1.4. Data collection from the absent households	27
2.2. Needs analysis on the Census's items	28
2.2.1. Criteria and the recommendations of United Nations Statistics Division (UNSD) for the selection of items in the censuses	28
2.2.2. Listing and arrangement of the Census's Items in the Recommendations of United Nations Statistics Division (UNSD)	30
2.2.3. The items demanded and the organizations demanding them	31
2.3. Concepts and Definitions used in the Census	31
2.4. Census items	42
2.4.1. The Census Forms	43
2.4.1.1. Listing Form	43
2.4.1.2. Form 2 (the Household Questionnaire and Form 3 (The Institutional Household Questionnaire)	43
2.4.1.2.1. Items included in Form 2. Household Questionnaire	43
2.4.1.2.2. The Institutional Household Questionnaire Items. (Form 3)	50
2.4.1.3. Form 4 (Village Profile)	51
2.5. Training	55
2.5.1. Training stages in implementation of the censuses in Iran	55
2.5.1.1. Training method in the 1390 Census (E. learning)	57
2.5.1.2. The Software design	57
2.5.1.3. Online question- answering system	57
2.5.2. Coding training in the 1390 Census	58
2.6. Edit and imputation	59
2.6.1. The 1390 Pilot Census in 1388	59
2.6.2. The 1390 Pilot Census in 1389	59
2.6.3. The 1390 National Census of Population and Housing	60
2.7. Coding classification	61
2.7.1. Use of the statistical classifications in the 1390 National Census of Population and Housing	61
2.7.2. Types of the standard classifications used in the 1390 Census	62

2.7.3. Coding operations	64
2.7.3.1. The classifications used in coding the 1390 Census	64
2.7.3.2. Coding stages	64
2.7.3.3. Code verification	65
2.7.3.4. Quality control of coding operations	65
2.7.3.4.1. Urgency	65
2.8. Tables	66
2.8.1. The 1390 Pilot Censuses in 1388 and 1389	66
2.8.2. The 1390 Census Implementation	66
2.8.2.1. The 1390 Census Publications	67
2.8.2.1.1. The Detail Results Issue	67
2.8.2.1.2. Total Results	68
2.8.2.1.3. The Population of the country's cities by age and sex	68
2.8.2.1.4. Tehran's 22 Districts	68
2.8.2.1.5. Bakhshs' (Counties) Profile, and Village Gazzetteer	68
2.8.2.1.6. The Census Selected Findings	68
2.8.2.2. The 1390 Census Results Review	69
2.9. Post enumeration	69

Chapter 3. Map and Spatial Data

3. Map and Spatial Data	71
3.1. Updating the Statistical Maps from 1386 to the 1390 Census Implementation	71
3.2. Geographical File	71
3.2.1. Preparing the Geographical File and matching it with the maps	71
3.2.2. Preparing Geographical File Software	72
3.2.3. Preparing Geographical File containing data on the Enumeration Areas	72
3.2.4. Implementation of the First Phase of Updating Map Folder and Geographical File prior to the 1390 Census	72
3.2.5. Implementation of the Second Phase of Updating Map Folder and Geographical File prior to the 1390 Census	73

3.2.5.1. Updating the E.As Map Folder during the Census Implementation	73
3.2.5.2. Elimination of Discrepancies from the 501 Forms and Map Folder of Enumeration Areas	73
3.3. Updating Geographical File	74
3.3.1. Preparing Final Geographical File for the Census data extraction	74
3.4. Demarcation of Enumeration Areas	74
3.4.1. The household Enumeration	74
3.4.2. Design of Enumeration Areas Software	75
3.4.3. Basic Data required for E.As demarcation	75
3.4.4. Preparing Manual for E.As demarcation	75
3.4.5. Preparing Final Report on E.As demarcation operations	76
3.4.6. Preparing the Maps Folder in Ostans	76
3.4.7. Geometric surveying of changes incorporated into the Folder of maps and preparing File of maps after the Census implementation	76

Chapter 4: Publicity

4. Publicity	79
4.1. Publicity and Data Dissemination in the 1390 National Census of Population and Housing	79
4.2. Experiences of the other countries in publicity for censuses	79
4.3. Implementation of the Research on Social, Psychological, and Communicative Factors Affecting People's Attitude towards the National Census of Population and Housing in 1384	80
4.4. Publicity tools and facilities in the 1390 Census	80
4.4.1. The 1390 Pilot Census in 1388	80
4.4.2. The 1390 Pilot Census in 1389	80
4.4.3. The 1390 National Census of Population and Housing	81
4.5. Design of Opinion Poll: Measuring efficacy of the Census data dissemination and indexes for the statistical awareness promotion in the households responding to the 1390 Census items	83

Chapter 5: Field Operations

5. Field Operations	85
5.1. Field Operations Methodology	85
5.1.1. 1390 Pilot Census in 1388	85
5.1.2. The 1390 Pilot Census in 1389	86
5.1.3. The 1390 National Census of Population and Housing	86
5.2. The Census Executive Organization	86
5.2.1. The 1388 Pilot Census	86
5.2.2. The 1389 Pilot Census	86
5.2.3. The 1390 National Census of Population and Housing	87
5.3. Manpower	91
5.3.1. The 1388 and 1389 Pilot Censuses	91
5.3.2. The 1390 National Census of Population Housing	91
5.3.2.1. The enumerator's work load	91
5.3.2.2. Manpower Estimation	91
5.3.2.3. Grouping and Assigning number of Executive Ranks	92
5.3.2.4. Number of Executive Organization Ranks at the Provincial Level	92
5.3.2.5. Number of Executive Organization Ranks at Sub-provincial Level	93
5.4. General and Private Qualifications of the Census Executive Ranks	94
5.5. Sources for hiring manpower	94
5.5.1. Internet System for the Executive Groups' enrollment	95
5.5.2. The 1390 Census Identification Card	95
5.6. Insurance of the executive ranks	96
5.7. Census' Credits and Expenditures	96
5.8. Providing and distributing the Census's supplies	97

Chapter 6. Data Processing, Extraction and Dissemination

6. Data processing, extraction and dissemination	99
6.1. Technical Support	99
6.2. Data Processing	101
6.2.1. Data Processing Methodology	101

6.2.2. Data Processing Implementation Architecture	102
6.2.3. Preparation of software	104
6.2.4. Data Processing Implementation	108
6.3. Data Extraction and dissemination	109
6.3.1. Data Extraction Architecture (imputation and tabulation)	109
6.3.2. Preparation of Imputation Operations Software	109
6.3.3. Preparation of Tabulation Operations Software	112
6.3.4. Extraction Stages implementation (Imputation and Tabulation)	113
6.3.5. Information Dissemination	117
6.4. Conclusion	117

Chapter 7. Monitoring

7. Monitoring	119
7.1. The Monitoring Executive Organization	119
7.2. The 1388 Pilot Census	120
7.2.1. Phases to be tested	120
7.2.1.1. Manpower hiring	121
7.2.1.2. Training	121
7.2.1.3. Field Operations	121
7.2.1.4. Data input and verification	121
7.2.1.5. Evaluation of Provinces and executive ranks	121
7.2.2. Methods for completing the monitoring forms and reporting	121
7.3. The 1389 Pilot Census	121
7.3.1. Phases to be tested	121
7.3.1.1. Training methodology (classroom training and E-learning)	121
7.3.1.2. Teaching methodology (using slides and text reading)	121
7.3.1.3. Design of the test items	121
7.3.1.4. Implementation methodology (individually and collectively)	122
7.3.1.5. Work load estimation	122
7.3.1.6. Executive organization	122
7.3.1.7. Notice card for the absent household	122

7.3.1.8. Certificate for the Census termination	122
7.3.1.9. The questionnaire items (in terms of household and enumerator)	122
7.3.1.10. Publicity and data dissemination methodology	122
7.3.1.11. Map	122
7.3.2. Methods for completing the monitoring forms and reporting	122
7.4. Monitoring phases of the 1390 Census	122
7.4.1. Manpower hiring	122
7.4.2. Training	123
7.4.3. Publicity	123
7.4.4. Logistics	123
7.4.5. Field Operations	123
7.4.6. Verification	123
7.4.7. Postenumeration	123
7.4.8. Evaluation of Provinces	124
7.5. Monitoring and Reporting Methods	124
7.6. The Monitoring Results of the 1390 Census	124
References	125

Introduction

Information is believed to be the most fundamental implement for development since it is the building block for accurate planning in all fields. Meanwhile, the methods for production of efficient information are a topic which in itself calls for a unique and comprehensive scrutiny. National Census of Population and Housing has been one of the methods for producing information in the last centuries and countries have endeavored to make the necessary arrangements for successful conduct of censuses participating in the related conferences and benefiting from the UN recommendations. For instance, they have followed the 10-year span between the censuses and selected their census years to coincide possibly with the other countries' censuses.

Also, many countries determine the census items with regard to the latest UN recommendations. However, the point that has slipped from the attention of most countries is compilation of the census techniques that would be highly appropriate and applicable to them if accordingly informed. It is noticeable that not all countries enjoy equal development level. There may be cases where a country, that had taken the way in conducting a census, has been imitated by another country in the subsequent years or decades. This proves the fact that the countries are unaware of the techniques and procedures either of them use due to the lack of timely information and interaction. In the recent years, some effective strides have been taken in this respect.

Countries have begun to introduce the techniques used in their censuses. Although there are a new variety of the topics and contents in the technical reports of the census of population and housing, the preparation of the reports of this sort could be an efficient step to prevent waste of human, operational, and technical resources in census taking process.

Chapter 1. Generalities

1. Generalities

1.1. The background on preparing the Census's technical report in Iran

Since 1335, the Statistical Centre of Iran has conducted seven National Censuses of Population and Housing in modern methods using the most recent technology of the world proportionate to the special circumstances in each time and existing facilities. Although making an integrated report on all activities performed in the censuses has not always been possible, the trend of entering such concepts as household, place, etc. into the either of the Census's Enumeration Areas can be drawn up partially based on what has been obtained from the censuses' scattered documents. Also, the techniques used for taking the censuses and the data processing methodologies can be found in these documents. Since 1385, the idea of designing the "Census Technical Report" had begun to emerge among the experts in the Census Organization particularly in the country's Census Headquarters and one year later than the census implementation year a collection called the Census Technical Report on the 1385 National Census of Population and Housing was prepared. The report began to be prepared exactly one year after the census implementation and for this reason there was no immediate and extensive access to the census' executive and technical cadre.

The initial part of this report is devoted to the history of the National Census of Population and Housing from the old times till the introduction of modern methods in taking the censuses in Iran including the details about the last census. Other parts of the report deal with such stages as planning, designing, organizing, publicizing, training for, and implementing the census as well as, finally its data processing and disseminating phases. The subsequent experiences occurred in 1389 and 1390.

The general details have also been presented regarding the 1390 National Census of Population and Housing Pilot Censuses carried out in 1388 and 1389.

1.2. Comparative Study

To do the present research, a broad investigation on the topic, preparation of the technical report for the censuses, particularly (census of population and housing) was made by visiting the statistical bureaus or the Census site of the other countries to obtain the documents bearing the above title or concerned with it. Such documents were deeply studied.

1.3. History of Census of Population in Iran

In the country's historical documents, more signs regarding the "population count" can be found, meeting the designers' objectives in specific time periods. However, such documents cannot be introduced as dependable or reliable demographic sources since in those periods there were no specific definition of population and its structure to identify the number, distribution and components of the population. The same is true of the other countries. It has taken centuries till the attempts result in establishing the scientific and technical frames for the modern censuses with following characteristics:

- Being both inclusive and exclusive
- Possibility of collecting data within specific time intervals
- Comparability of data or ensuring their comparability.

The first population data with the above-mentioned characteristics or facilitating the trend reaching them are derived from the censuses conducted during the 17th century A.D. However, a certain activities in the 15th and 16th centuries A.D. can be regarded as the beginning of this era. In Iran this case started with a relatively long delay. The Censuses taken in Naserid period, particularly the 1262 and 1270 Censuses in Tehran were first instances. The subsequent Censuses conducted in 1301 and 1311 in Tehran resulted in some specific definitions and scientific frames. Till that time no organization tasked formally with collecting and concentrating on population data was available and all efforts made in this respect were of ad hoc nature. In 1297, the country's Civil Registration Department was established to register four vital events. Registration of data

related to births, deaths, marriage and divorces revealed a need for information on the country's population and assigning an organization to collect the related data. By the approval of the regulation in 1303, the responsibility of the centralization and collection of the required information was entrusted to the Ministry of the Interior. Undergoing several changes, the decree was legally approved by the former National Consultative Assembly. Based on the decree, the centralization of information was assigned to the Ministry of the Interior and all Ministries were duty bound to regularly send their related information to the said Ministry based on its instructions. In 1314 the High Council of Statistics was established to render coordination between all Ministries and approval of the first Census Act by the former National Consultative Assembly in 1318 led to the implementation of the first Population Census in Tehran on Esfanad of the same year and in 32 cities during the years 1319 and 1320. Kashan and GonbandeKavos were respectively first and the last cities that were enumerated. But the project was delayed due to the 1320 event (military occupation of Iran). In Esfand 1331 the General Statistics Cooperation Organization was established and accordingly for the first time an organization tasked particularly with the collection of statistics emerged. This organization, in implementation of the Census and Statistics Act approved in 1334, was affiliated to the Ministry of the Interior and renamed the General Department of Public Statistics. By the virtue of the Census and Statistics Act approved by the former National Consultative Assembly in Esfand 15th 1334 it was stipulated that the General Department of Public Statistics be established in 1335 and tasked with the implementation of the National Population Census in the same year. Therefore, the census whose preliminary arrangements had been made in advance and tested in a certain areas of the country was conducted from 10th to 25th of Aban 1335.

In 1344, the Statistical Centre of Iran was established. In addition to the centralization of the statistical activities, such cases as the Centre's monitoring over data processing and producing by the other government agencies conducting statistical surveys as well as development of the national data base were referred to in Act establishing the SCI. The

second National Census of Population and Housing was taken in 1345 by the SCI. The characteristics of this Census are briefly mentioned below:

- The first statistical activity at national level
- Broader use of the international classifications, concepts and definitions and comparability of the results with those of the countries' censuses
- Prevailing method for census implementation: De jure
- Enumeration of nomadic and tribal households visited by enumerators in their moving route and publication of the related results apart from the census results.
- Participation of 11885 enumerators and their supervisors in the census units
- The Census implementation 8th to 27th Aban,1345
- Division of the population by the two urban and rural sub-populations
- No definition for the unsettled household
- No collection of data on economic activities relating to “location” and no potentiality for frame building for economic activities or establishments pertaining to that location.
- Wide collection of data on “housing” and possibility of calculating the related indices

After amendment and approval of the SCI's Act Establishment in 1353, planning and preparations for the census including the experiences gained in former censuses and determination of the country's responsible organizations' fundamental needs and then preliminary design of the 1355 National Census of Population and Housing were begun from early 1354 in the SCI. The preliminary design was put to the test in Aban of 1354 in urban and rural areas of four sample Shahrestans (Langerood, Minab, Izeh and Semnan) and some parts of two large cities (Tehran and Esfahan). The census characteristics are mentioned in brief below:

- The census implementation: 8 to 28 Aban 1355
- Participation of 3000 supervisors and enumerators
- Census methodology: De jure

The first set of the Census results entitled "Preliminary Results" being processed with application of 5 percent sampling method was published in 25 volumes, 23 for Ostans (Provinces) and two for Tehran during the ending months of 1356 and early 1357. However, the final census results processing was extraordinarily delayed due to its coincidence with the throughout national strikes for Islamic Revolution. The results of the 1355 National Census of Population and Housing were published in 162 issues for Shahrestans, 23 issues for Ostans, and one issue for Total Country based on the administrative divisions of the time, as well as the issues covering characteristics of the country's rural areas.

In 1365, the fourth National Census of Population and Housing and the first one after the victory of Islamic Revolution of Iran was conducted under the Imposed War, Economic Sanctions, and the resulting constraints.

The Statistical Centre of Iran began to make preliminary preparations for the 1365 National Census of Population and Housing from the second half of the year 1361. The first step in this respect was to recognize the fundamental needs of the country's responsible government agencies that were achieved based on the census preliminary design and put to the test in the urban and rural areas of 3 Shahrestans, Astaneh Ashrafieh in Gilan Ostan, Saravan in Sistan and Baluchestan Ostan and Shadegan in Khuzestan Ostan and as well as in a certain number of sample districts in each of the other Ostans. The results were used to revise questionnaires, forms and technical and operational manuals and accordingly the final design of the census was prepared for implementation. The census operations began simultaneously throughout the country from 16 to 30 Mehr 1365. In this stage, the then Plan and Budget Organization Offices in Ostans, Teachers' Training Centers and other government organizations and the Islamic Revolution institutions cooperated with the SCI in taking the Census.

The fifth National Census of Population and Housing, the second one in the Islamic Republic of Iran was conducted in Aban 1375. This Census, though very similar to the 1365 Census in types of questions, following international concepts and definitions, included the differences some of which are described below:

- Use of the Islamic Republic of Iran Post Company's Listing Forms formerly completed for preliminary allocation of Postal Code and National Code
- In this Census, instead of listing the places and households, the enumerators were required to revise and update the afore-mentioned forms in urban areas and list only the blocks which were not listed for any reason by the said Company.
- The households questionnaire data processing by Optical Mark Reader Unit. This innovation facilitated combination of coding and editing stages and rapid data entry and processing ones.
- Showing training films on the enumerators' manual in training classrooms
- Showing T.V serials entitled Khane-be-khane (House to house) to raise the households' awareness on the Census.

The sixth National Census of Population and Housing in the Islamic Republic of Iran was taken in Aban 1385 after being tested on 27th Aban 1384. This Census bore much resemblance to the former censuses in observing the international concepts and definitions, particularly to the 1375 Census, however, due to the time interval between the two Censuses, it was found necessary to take some measures different from those taken in the past to identify the weak and strong points of the previous censuses and analyze the appropriate methodologies proportionate to the technology of the time. In certain cases, the 1385 Census appears to be an exception to the former censuses. The Census' major characteristics and innovations are described below:

- Determining the Census study prerequisites and carrying out the study projects and using their results in the Census.
- Implementing the Census with sampling
- Calculating net underenumeration based on results of post enumeration (only underenumeration was calculated in the past)
- Designing the 1385 Census's Web Site for the first time in the country
- Adding the household's postal address to the Form 2

- Matching items relating to activity status in the Census with the new international definitions
- Using a mechanized documentation system
- Rendering correspondence and communication between the Census Central Headquarters in the Center and the Census Officials in Ostans (Provinces) in Paper Less, through the mechanized Secretariat, Chat Room, On line, and E-mail.
- Using ICR technology for entering the household's questionnaire data into the computer
- Updating the geographical files of the villages on line in the network environment and using SQL server facilities
- Using a mechanized system of E.As demarcation
- Using digital maps instead of paper ones
- Using Satellite and GPS images in updating statistical maps
- Monitoring the Census process using M.S Project
- Preparing a brochure for the Census information dissemination and publicity through teachers and school masters
- Assigning three target groups for the Census publicity and information dissemination
 - Users and decision makers
 - The Census executive individuals
 - Respondents
- Publicity and information dissemination through SMS
- Preparing a uniform for all census staff for the first time in the country' Census history (waistcoat)
- Holding opening and closing ceremonies for the Census.

The results of the 1385 National Census of Population and Housing indicate that in the recent years the country's population has gone through changes more quickly than before together with changes in housing construction pattern in the large cities as well. In the

same years, the definition of "city" has been modified due to attaching lesser importance to its relation to the population. Accordingly substantial changes have occurred in the country's geographical division. These changes have been so broad that the Statistical Centre of Iran found it necessary to reduce the time span between the subsequent censuses from 10 to 5 years referring the case to the government for approval.

The Cabinet approved the SCI's request under decree issued on Ordibehesht 24th 1386 permitting the SCI to conduct the first Census of Population and Housing based on the new approach in 1390.

Consequently, making arrangements for the 7th Census was included on the SCI's agenda from 1387. The Census Headquarters was formally established from Farvardin of 1388 and the studies required for the census were planned to be carried out in the same year. In addition, the Security and Protection Committee, the Coordination and Combination Group and the Secretariat of the country's Census stood at a level higher than the other specialized groups and committees taking the responsibility of harmonizing the Census technical and operational activities and decision-making at the macro level. These specialized groups and committees benefiting from the great steps taken in the 1385 Census and avoiding repeating of the probable errors occurred in it, made a firm decision to carry out the following Census with a higher quality and more reliable results. They, in connection with the country' fresh needs and in harmony with the experiences gained by the other countries of the world, as well as following the latest international recommendations, began to be carefully involved in this enterprise. The census planning, designing, organizing, training and publicizing, etc. processes were performed in parallel with the necessary studies. Meanwhile, for the first time in this Census, two Pilot Censuses were planned with different objectives, the first being conducted in 1388 and the second in 1389.

1.4. The Census's goals and objectives

A. Goals

To collect data and statistics on the country's total population in order to identify the population and housing characteristics and to prepare data required to plan for socio-economic and cultural developments and to design appropriate frames for carrying out various related surveys.

B. Detailed objectives

To meet the statistical requirements of the population through completing the National Census of Population and Housing questionnaires fully elaborated on later in this report.

1.5. Why to reduce the span between the censuses (from 10 to 5 years)?

To analyze the status quo and to plan for the future in various socio-economic fields, the accurate, comprehensive, and timely statistical data are needed. For this reason, the statistical data prove to be one of the essential and effective instruments for planning activities, assessment of performances and decision-makings at various managerial levels. It is obvious that policy makers, planners, experts as well as the individuals active in economy and business need to use the reliable data to design their strategies, to make decisions and policies, to plan, monitor, coordinate and direct their programs towards the objectives and accordingly to raise the country's standing in the world's market.

Number of population and dwelling units in the country and their related characteristics are basic data that are required in planning for the households' socio-economic development at various geographical levels. Such data are mostly collected through census of population and housing.

The National Census of Population and Housing used to be conducted decennially till 1385. However, for a variety of reasons such as the population changes, accuracy of estimates, population distribution by the new administrative divisions, need for housing units and the assessment of the country's five-year Socio-economic Development Plan necessitated the Census to be implemented in five-year intervals.

1.6. The Pilot Census

The National Census of Population and Housing is a set of interconnected activities in a vast geographical area within a relatively short period of time and one of the most costly and the greatest statistical project in the country. Since the census activities should be performed within a short period of time, in case any errors occur there might be no chance to overcome them or to fill the probable gaps resulting in waste of expenditures and manpower employed. In order to identify the probable issues and prevent waste of expenditures, it is essential to accurately analyze all activities to be sure about their integration prior to the census implementation.

Therefore it is necessary the whole census' processes from the initial to the final ones to be tested once till all issues or shortages not predicted in advance to be recognized process by process so as to take the necessary steps to improve and overcome them. The Pilot Census can be used to examine the accuracy and clarity of the maps and their being commensurate with the nature; concepts and definitions, wording and the logic of questionnaire items, the questionnaire's form and design, directions and manuals, adequacy of the number of training sessions and materials, to set the time to be taken for completing the questionnaire, to identify issues in field operations, adequacy of manpower, and to appoint the executive ranks required, to examine coding, processing and publishing stages. On the whole, the contents, major points and the area to be tested, the time of the tests, number of the census tests, the implementation duration with regard to the census's objectives should be taken into consideration in the Pilot Census.

1.6.1. The 1390 Pilot Censuses in 1388 and 1389

The Census was designed to be carried out within a five-year interval as compared with the former Census period. Although the span between the two Censuses appears to be relatively short, each Census enjoys its own characteristics that cannot be regarded exactly the same as its preceding one.

In view of the fact that there are various procedures for completing the questionnaire, such as self-enumeration, Internet, and mail devices in addition to the enumerator's

performing the task, the Pilot Census was anticipated to be conducted in two stages. In the first stage, the procedures for completing the questionnaire and the data entry were studied and in the second stage, the trends for the Census implementation very similar to its real implementation were tested after selecting the Census implementation and data processing methodologies (based on the first stage results). For his purpose, the First Pilot Census was performed in 1388 and the second one in 1389.

1.6.1.1. The Pilot Census in 1388

The 1388 Pilot Census was done to see the possibility of applying various procedures to fill out the Census's questionnaires. The two-year interval till the real Census implementation was considered to give enough time to decide on how to collect and process the data.

1.6.1.1.1. Major activities tested by the Census Groups.

A. Design Group

- To study the new questionnaire items and their wording.
- To test the forms and questionnaires considering how to fill out them
- To study directions, points and examples to be inserted into the questionnaires considering the procedures for completing them (self-enumeration, Internet, face-to-face interview)
- To study automatic editing procedure
- To study Neighborhood Imputation Method (NIM)
- To design a lesson plan for each training session
- To design training program based on the classic and scientific education principles
- To train the census instructors apart from the other executive ranks (improving the instructors' training pamphlets)
- To benefit from the new training procedures for compiling the manuals.

- How to record data pertaining to the classifications in the self-enumeration procedure
- To study the coverage of the classifications used in the Census
- To study the potentialities of the coding software

B. Information Technology

- To test the general design of data processing system.
- To test the results obtained from the studies carried out (The data processing methodology)
- To test the data processing software
- To test the census data processing and post enumeration
- To assess the manuals for the enumerator, checker and for data processing
- To evaluate forms and labels
- Electronic Form
- Data entry in a selected procedure
- Data processing and extraction software
- To study Business Intelligence technology and analytical reporting based On Line Analytical Processing (OLAP)
- To use Extraction, Transformation and Loading (ETL) instrument for data cleaning
- To apply Postgre SQL data base
- To use ETL instrument and SMS method in receiving monitoring data
- To study ad hoc reports system
- To update geographical file
- To assess the statistical maps' match with the real situation during the census enumeration
- To assess the real work load in the Census E.As if in match with the work load estimated

- To assess the methodology for the simultaneous updating of geographical file based on the map changes during the census implementation
- To use maps with parcels in the census and demarcation of the EAs

C. Organizing and Logistic Group

- Implementation
 - To test how to collect data and to attract the respondent's cooperation
 - To study the results of the implementation procedures.
- Finance

D. Public Relations and Publicity Group

- To dispatch brochure for the urban households by mail in 4 selected Ostans (Provinces)
- To Study the impact of information dissemination by the health workers, agriculture promoters and local reliable persons on the rural households in 4 selected Ostans (Provinces)

E. Monitoring and Evaluation Group

- To assess the monitoring methodology and the government agencies' efficiency
- To assess the forms and the time to take to complete them
- To assess monitoring training manual
- To assess the report taking and giving procedure
- To assess time table of the activities dealing with the Pilot Census
- To assess monitoring methodology with a mobile and pocket Unit (PDA)

1.6.1.1.2. Implementation Time

8-27 Aban 1388

1.6.1.1.3. Geographical Area

Considering the different procedures for completing the questionnaire, facilities required for each procedure, and the diversity of cultural and socio-economic characteristics in various areas of the country, the Pilot Census was conducted throughout the country by selecting a limited number of the urban and rural areas in 31 Ostars (Provinces) in order to carry out an accurate study on the feasibility of applying the procedures in various areas.

The Centers of 10 Ostars, Tehran, Khorasanerazavi, Kerman, Esfahan, Khozestan, Hamadan, Gilan, Golestan, Bushehr and Kordestan as well as the second largest Shahrestans in population in 20 Ostars were selected according to the following table:

Ostar	The Ostar's second largest Shahrestan	Ostar	The Ostar's second largest Shahrestan
East Azarbayejan	Maragheh	Qazvin	Alborz
West Azarbayejan	Khoy	Qom	Qom
Ardebil	Parsabad	Kermanshah	Eslamabadegharb
Ilam	Shirvan and Chardavel	Kohgiloyeh and Boyerahmad	Buyerahmad
Charharmahal and Bakhtiari	Lordegan	Fars	Marvdasht
South Khorasan	Gaenat	Lorestan	Borojerd
North Khorasan	Shirvan	Mazandaran	Babol
Zanjan	Khodabandeh	Markazi	Saveh
Semnan	Shahrod	Hormozgan	Minab
Sistan and Baluchestan	Zabol	Yazd	Maybod

1.6.1.2. The Pilot Census in 1389

Based on the results of the Pilot Census in 1388 and the experiences obtained from the 1385 Census it was decided that the forms should be completed by the enumerators and designed in ICR. Accordingly, the Pilot Census was carried out in 1389 aiming at complete enumeration in a smaller scale.

1.6.1.2.1. Major activities tested by the Census Groups

A. Design Group

- To test the questionnaire items and their wording.
- To Test forms and questionnaires
- To consider manuals and points and examples inserted into them
- To identify major causes for the absence of the households in urban and rural areas.
- To consider the imputation in NIM
- To consider the feasibility of applying the semi-computerized contrastive method
- To estimate the work load in field operations and contrastive analysis in post enumeration
- To consider more rapid access to the post enumeration file with regard to improvement in data processing methodology (ICR)
- To identify the variables influencing the coverage for changing the estimation level
- Decentralized coding with respect to work load.
- To consider automatic coding quality and procedure

B. Information Technology Group

- Organization of processing stage
- Facilities and equipment
- ICR
- To assess forms and labels
- To assess manuals for the enumerators, checkers and for data processing
- The data processing and extraction softwares
- To update geographical file
- To assess the statistical maps' match with the real situation during the census enumeration

- To assess the real work load in the Census E.As if in match with the work load estimated
- To assess the methodology for the simultaneous updating of geographical file based on the map changes during the census implementation
- To use maps with parcels in the census and demarcation of the E.As
- To use the country's Statistical Data Base in tabulation
- To prepare imputation software based on NET technology
- To prepare post enumeration software based on the NET technology
- To use Crystal report software in preparing the monitoring reports
- To employ services under unified web with a portal infrastructure for setting up the Chat Room.

C. Organizing and Logistic Group

- Implementation
- Finance

D. Public Relations and Publicity Group

- To dispatch information packages for local informed individuals and special households (non-cooperation) in order to consider their effect on informing the respondents and attracting their cooperation
- To hold opinion poll for households to assign the indexes measuring the statistical awareness promotion and to do quantitative and qualitative analyses on the census implementation

E. Monitoring and Evaluation Group

- Monitoring and evaluating the logistic affairs.
- Monitoring and evaluating the publicity
- Monitoring and evaluating hiring and training the manpower

- Monitoring and evaluating census field operations and post enumeration
- Ostan evaluation
- Executive ranks evaluation

1.6.1.2.2. Implementation Time

8-27 Aban 1389

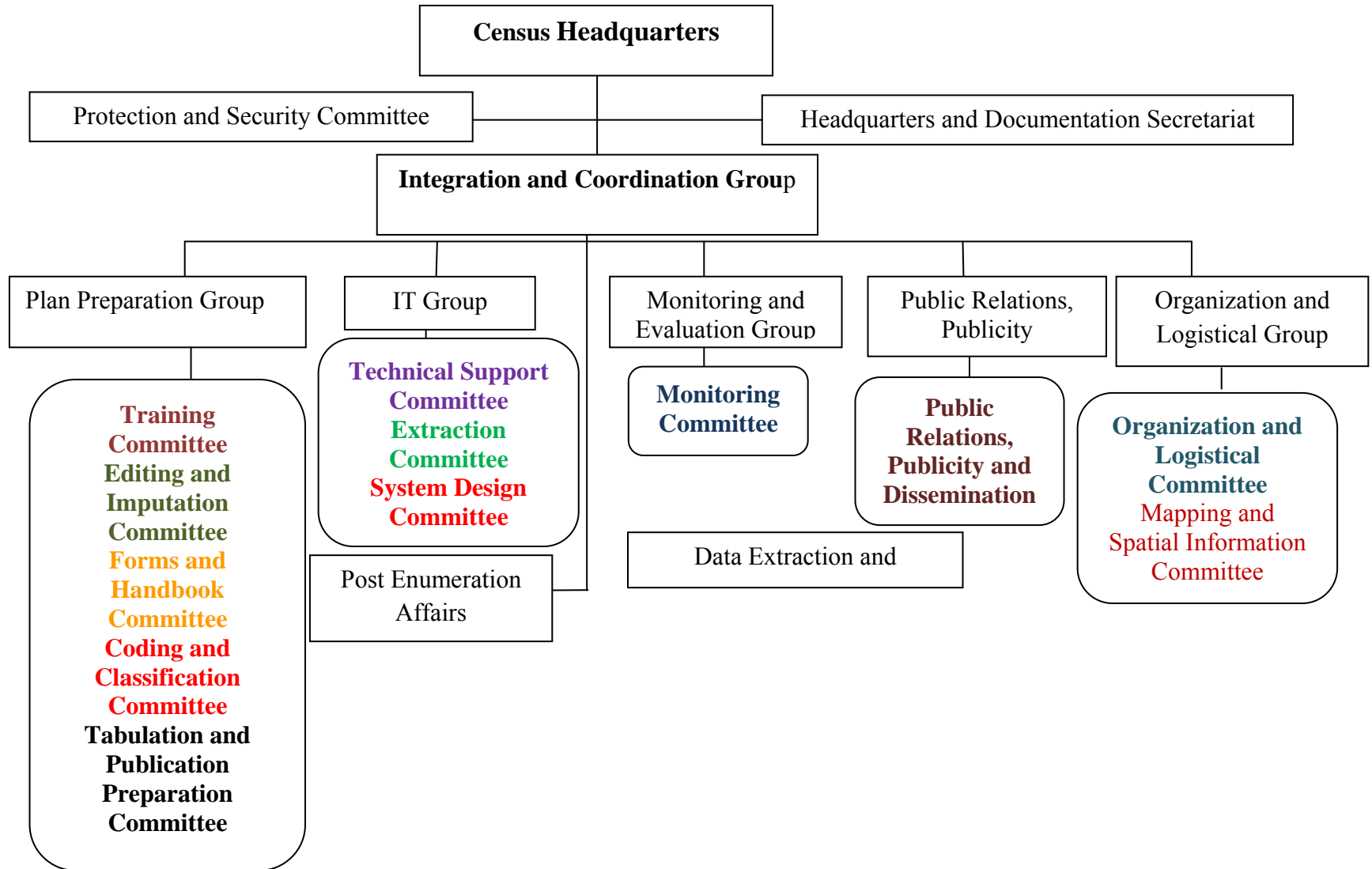
1.6.1.2.3. Geographical Area

With regard to the limited number of the households and considering the various geographical conditions, such Shahrestans as Daylam, Charoymagh, Kohbanan, Ghasreshirin and some limited districts in Tehran constituted the geographical area of the test.

1.7. Managerial Organization

With the volume of operations and the range of activities to be done for the census, a certain number of regular measures should be taken from several years prior to the census implementation to plan for the census operations in advance. For this purpose, the preliminary activities started in the Statistical Centre of Iran from the 1387 year and the 1390 National Census of Population and Housing Executive Organization began to fulfill its operations by establishing the Census's Headquarters and assigning the specialized groups and committees. The aforementioned organization went through changes in the process of the two Pilot Censuses proportionate to volume of operations and limited coverage of either of the tests in order to improve the Census's structure and overcome the eventual issues. The following chart illustrates the 1390 Census's Managerial Organization.

The 1390 National Census of population and Housing Chart



1.8. Chat Room in the Census

In the 1385 and 1390 Censuses, one of the important steps was the possibility of benefiting from the Chat Room. Of course, the problems dealing with Internet in Iran have caused obstacles in using this facility. However, hopefully it could be possible to remove these obstacles to make the best use of this valuable facility in future.

1.9. Time table

Due to the extent of operations, limitations in time, sources and expenditures, the Census of Population and Housing requires designing a regular and efficient time table in such a way that in each stage the critical points could be processed, followed up, and repaired. Therefore, design of a time table has proved to be one of major activities for the census implementation in order to manage the time, sources, and expenditures of the census.

In the time table, beginning and ending dates of all census phases comprising preliminary studies, planning, organizing sources and manpower, designing, publicity, training, implementation, monitoring and extraction have been determined. The operations are divided into three sections, before, after, and during the Census. Upon the establishment of groups and committees, each was tasked with designing the time table for the related activities from the beginning to the end. With passage of time during the Census planning and designing, the Census time table was improved. Finally a selected number of activities considering their order and sequence are introduced below:

The Timetable of the Activities in the 1390 National Census of Population and Housing

NO	Activities	Beginning date	Ending date
1	A comparative study on the selected census items in other countries, international recommendations and the country's former censuses and preparing the related report	1387/10/10	1388/2/30
2	Establishing coordination and integration groups and specialized working groups for the 1390 Census	1388/01/25	1388/01/25
3	A study on the recommended items for the Pilot Census in 1388 with presence of the government agencies' representatives	1388/3/31	1388/4/10
4	To determine the statistical items to be inserted into the forms and questionnaires	1388/4/10	1388/4/20
5	The Pilot Census in 1388	1388/8/17	1388/8/27
6	Processing the results of the Census- Pilot Census in 1388	1388/9/15	1388/10/05
7	To analyze the needs of the government agencies for conduct of the Pilot Census in 1390	1388/11/11	1389/01/25
8	To determine major activities for the Pilot Census in 1389	1388/11/25	1388/12/25
9	To update the urban and rural maps and to design geographical file	1389/01/05	1390/03/31
10	The Pilot Census in 1389 (implementation time)	1389/08/08	1389/08/27
11	To study the opinion poll, publicity, design of the Census's logo and to prepare the extensive plan for publicity	1389/10/20	1390/03/15
12	To analyze the statistical needs of the government agencies and to finalize the 1390 Census items	1389/11/10	1389/11/30
13	To prepare the model and manual, and summary of findings of the tables of Total Census Results Issue	1389/11/10	1389/12/20
14	Extraction of the results of the Pilot Census in 1389 and preparing the report	1389/11/15	1389/12/28
15	To finalize data processing and coding procedures	1389/11/23	1389/12/28
16	To finalize the data processing and extraction and to prepare the manual for producing the data processing and extraction softwares	1389/12/01	1390/01/31
17	To complete the classifications list for coding using the CAC method	1389/12/15	1390/03/31
18	Final design of the Census Executive Organization	1389/12/15	1390/02/15
19	To prepare statistical items and their concepts and definitions	1390/01/06	1390/02/20
20	To prepare technical characteristics of the equipment, to provide and prepare the hardwares, to establish the network and communicative lines	1390/01/06	1390/08/15
21	To design editing and imputation	1390/01/15	1390/02/31
22	To design forms and labels	1390/01/15	1390/01/31

NO	Activities	Beginning date	Ending date
23	To prepare final design of monitoring and to describe the monitors' functions	1390/01/15	1390/03/31
24	To determine the Groups' activities	1390/01/20	1390/02/05
25	To design the Census's forms, and manuals for applying them	1390/01/22	1390/02/15
26	To prepare manuals for executive, financial and logistic affairs and to provide the related manuals and forms	1390/02/01	1390/03/01
27	To prepare, operationalize and support the Census data processing center and the other staffs defined	1390/02/01	1390/11/30
28	To design the model and manual for the Census publications	1390/02/17	1390/03/06
29	To design ICR forms for the Census enumeration and post enumeration	1390/02/20	1390/04/31
30	To draft the set of the Census codes and manuals for coding	1390/03/01	1390/06/31
31	To produce film, picture, poster, teaser, and other documents for the Census's publicity	1390/03/01	1390/08/22
32	To finalize the post enumerator's and editing manuals, to describe the executive ranks' functions and to have the documents printed	1390/03/21	1390/04/29
33	To provide the Census's processing and extraction and post enumeration softwares	1390/04/01	1390/09/14
34	Final print of forms, manuals, directions, and brochures	1390/05/11	1390/06/15
35	To hire the manpower	1390/05/20	1390/09/15
36	To appoint monitors and to monitor all Census's processes	1390/05/20	1390/11/20
37	To establish the News Staff and to publicize the Census nationwide	1390/06/01	1290/08/22
38	To implement the first, second, and third Census training stages and the first stage of post enumeration	1390/06/13	1390/07/28
39	To control and perform the editing, tabulation, and imputation program and to perform the tabulation program	1390/07/01	1390/12/28
40	The 1390 Census field operations	1390/08/02	1390/08/22
41	Managing the Census's processing and extraction operations	1390/08/25	1391/02/31
42	To perform first and second training stages of the post enumeration	1390/08/28	1390/08/29
43	To implement post enumeration	1390/09/01	1390/09/08
44	Post enumeration questionnaires processing, address editing, on line editing and coding	1390/09/15	1390/10/25
45	Coding the Census's questionnaires and verification of their codes	1390/10/01	1390/11/20

NO	Activities	Beginning date	Ending date
46	Post enumeration contrastive training in first stage, by telephone research, action research and contrastive research in post enumeration second stage	1390/10/24	1391/01/31
47	To design post enumeration sampling, to prepare the tables processing program, and to estimate the net under enumeration	1391/02/01	1391/02/31
48	To present the preliminary results in selected findings issue and to analyze and compile the publications in the Word file	1391/06/01	1392/02/30
49	To announce the census's preliminary results based on the operational forms (Periodical report)		1390/09/01
50	To announce the Census's total results		1391/02/01

Chapter 2. The Census Technical Design

2. The Census Technical Design

2.1. Methodology

2.1.1. Implementation Methodology

All Censuses of population and housing have been taken across the world by either of the two methods, De jure or De facto or a combination of the two. Both methods are used with regard to the special circumstances dealing with the population movements and the way the households are settled.

The 1390 Census method was selected considering the following points:

- 1- As said earlier, the previous censuses in Iran were conducted De jure. Thus, to ensure the comparability between the censuses the same method is found suitable to be employed to take the 1390 Census.
- 2- The small percentage of the unsettled population in Iran and the fact that the census implementation in the country takes almost one month are considered to fit De jure nature.
- 3- Uses of the census results in political fields, planning, and constructing frames involve the application of De jure.
- 4- It is recommended that De facto be applied to that part of the population for whom the place of usual residence cannot be defined (e.g. the unsettled population) provided that clear and specific directions for their enumeration be compiled.
- 5- In view of that fact that there still is no efficient administrative records (register-based data) system in the country and considering the significance of the statistics and data resulting from the country's censuses in planning and policy making activities, it is recommend to use De jure method for counting the private settled population and De facto method for counting the private unsettled population.

2.1.2. Data Collection Method

With regard to the related objectives, some questionnaires are designed to collect data from the censuses. The procedures for establishing communications between the statistical units and filing out the questionnaires differ due to the country's demographic, social and cultural characteristics. In this respect, the routine practices are introduced as follows:

- Face- to- face interview
- Computer- assisted interview
- Telephone interview
- Computer-assisted self-enumeration
- Self-enumeration (distribution of forms by the enumerator, or mail and collection by the enumerator or mail,
- E-mail,
- Mail
- Internet

In 1388, simultaneous with the conduct of the first Pilot Census, again the focus was made on possibility of applying such data collection practices as interview, self-enumeration, mail, and Internet analyzing the advantages and disadvantages of either of them after being tested.

No	Questionnaire distributed by:	Questionnaire completed by:	Questionnaire dispatched by:
1	Mail	Household	Mail
2	Mail	Household	Enumerator
3	Enumerator	Household	Mail
4	Enumerator	Household	Enumerator
5	Enumerator	Household	Internet
6	Interview	Household	-
7	Internet	Household	Internet

From the above practices, the two, “mail, household, enumerator” and “enumerator, household, mail” were excluded from the list prior to the Pilot Census.

Also, the other practices were omitted after the 1388 Pilot Census based on the assessments made by the supervisors and through the opinion poll attended by the other Pilot Census executive ranks. Then, it was recommended that in the Pilot Census in 1389 and in the 1390 Census “the interview” be still employed. Of course, in order to consider the possibility of using PDA in the subsequent censuses, the enumeration was done in a certain number of E.As using it.

It is necessary to mention that in the 1388 Pilot Census, in “mail” procedure, the household acted to fill out the Census forms in a self-enumeration manner. In fact, the self-enumeration procedure was tested in one way in the Pilot Census.

2.1.3. Implementation procedures (Individual and collective)

In 1388 in addition to procedures for filling out the questionnaires, the implementation procedures individually or collectively were tested to consider the advantages and disadvantages of each and finally the individual procedure was found to be more efficient than collective procedure. Therefore, in the next Pilot Census and finally in the main census the individual procedure was employed excluding very limited cases.

2.1.4. Data collection from the absent households

Usually in general censuses of population and housing, despite advance planning for gathering information from all households within the E.As, there might be a certain number of households who are absent for various reasons during the whole period of the census implementation (usually 20 days). For this reason, the Census Organization should design a specific program in this respect in advance so as not to miss the general data on these households and their members trying to add them to the country’s total

population. To achieve this purpose, the procedures so far employed in the country's censuses including in the 1390 Census are described as follows:

- Using Notice Card for the absent households
- Taking two days after the end of the census implementation for collecting information from the absent households by the enumerators.
- Hiring manpower and the equipment required such as transportation vehicles for a two-day period
- Establishing telephone interview for the absent households. For instance, the telephone numbers through which they would be able to announce their member's characteristics.
- Asking about some items regarding the number of the absent households and their basic data of their neighbors.

2.2. Needs analysis on the Census's items

Various methods such as censuses and sample surveys and the administrative records can be employed to produce information. It is apparent that in designing the census's technical report its related items be discussed and since in the preceding part the implementation and data collection methods have been described, this part is devoted to the analysis of the opinion poll attended by the users of the census results as one of procedures for the selection of the items to be asked.

2.2.1. Criteria and the recommendations of United Nations Statistics Division (UNSD) for the selection of items in the censuses

For the censuses' contents the following points should be taken into consideration

- To satisfy the nationwide needs based on priorities
- To provide facilities to ensure comparability with the former censuses
- To be sure about the rationality of the operations' expenditures

- To provide facilities to ensure comparability at regional and international levels

Generally, each census covers a variety of items most of which enjoy high significance. If it is expected to take a cost-effective census, the following points should be focused on when selecting the related items:

- To meet government's special needs: The government's information, political, and administrative needs should be determined with the related items to be included in the census.
- To fill the information gap: It is possible that for some available items more information might be essential to fill the exciting gap.
- To determine the most important items: Many items are very important but should be compared to determine the most important of them
- To determine what items are appropriate to be collected: The census should not be used as an instrument to collect very susceptible data, since they may cause damage to quality of the other census's items.
- To determine whether or not the census is a suitable method to collect any type of information items: the census may not appear to be an appropriate method for items requiring in-depth and follow-up studies and hiring highly-experienced enumerators.

An accurate decision should be made in selection of items with due regard to organization limitations and the enumeration issues. The census is usually taken by part-time enumerators within a short period of time. Therefore, the items requiring many questions and follow-ups are not appropriate for the census. The enumerators' capacity in understanding and grasping the concepts and directions and their application in the census implementation, may not be so well as they were trained to do. So the work load should be set to extent that an average enumerator can cope with it.

2.2.2. Listing and arrangement of the Census's Items in the Recommendations of United Nations Statistics Division (UNSD)

In the censuses of the countries of the world there are items of national, regional, and international significance. These items usually deal with the basic demographic characteristics, socio-economic aspects, literacy and education, migration and in most cases fertility. The items pertaining to the housing mostly comprises the building's characteristics such as age of and facilities within the housing unit. The statistical items are divided into two groups, first group is composed of the basic items and the second group covers the appropriate items whose inclusion in the census depends on their requirement, proportion, and value and the organizational factors.

Seven censuses have been taken in the country till 1390. In all of these censuses the UN Recommendations have been studied with some items inserted into the census questionnaire considering the users' present needs. These items have been introduced in the related part. Prior to the implementation of the 1385 and 1390 Censuses, seminars were held with the users of the statistics in the country. In these sessions in addition to interpretation of the UN Recommendations for items that could be asked in the census and presentation of the list of the preceding census as basis and background for the required items, the participants were requested to inform the SCI of the items of their interest, within a specified period of time, to be added to the census questionnaire.

In subsequent regular expert sessions with presence of the demanding organizations' representatives, the documents received were examined and considering the census limitations and justifying these limitations the final items to be asked in the census were determined. The insertion of the other items into the Census questionnaire was due to the preservation of the time series of the former censuses' items that were still significant and applicable to the country's statistical system and the UN-recommended basic items.

2.2.3. The items demanded and the organizations demanding them

After holding Seminar on the 1390 Census, through a circular letter 38 organizations were requested to send the required 1390 Census's items to the Census's Secretariat. Till the first Pilot Census in 1388, totally 282 items were received from 20 organizations and since then up to the second Pilot Census in 1389, 59 items were received from 11 other organizations. After the conduct of the second Pilot Census, totally 405 items from 37 organizations were examined.

2.3. Concepts and Definitions used in the Census

The data required in this census are collected through the related forms. The forms are completed by enumerators asking the households the questions. In order to collect the same data, some standard definitions should be given for the terms used in the forms so that all will be able to collect data by following such definitions. Giving standard definitions make it possible for all users to have the same impression on the terms used and help them make a better use of the census findings. In this part, the key definitions used in the census's forms have been presented:

Population under Enumeration

The members of all private settled, institutional, and collective households whose place of usual residence is located in Iran at the time of the enumeration and also the members of all private unsettled households of the country comprise the population under enumeration.

The members of all diplomatic missions and foreign embassies in Iran and their household members are not included in the Census. The Iranian citizens who are members of the diplomatic missions and Iran's embassies abroad together with their households are, however included in the population under enumeration.

Private Household

A private household consists of several individuals who live together in one place of residence, share their living expenses and usually eat together. There may be cases where a private household constitutes only one individual.

Private Settled Household

A household residing in a permanent place of residence (Places constructed from hard materials, fixed tents, hut, straw hut, etc.) is called private settled household

Private Unsettled Household

A household not residing in a permanent place of residence at the time of the census is a private unsettled household. This group of households comprises the following three categories:

- 1- Households who are migrating (nomadic population) at the time of the census or live outside cities and villages in mobile shelters;
- 2- Households who do not live in a permanent address and are changing their place of residence constantly such as gypsies;
- 3- Households who do not have a specific place of residence and usually spend the night in parks, ruins, under the bridges, etc.

Collective Household

A group of individuals, all or most of whom have selected a common place of residence for themselves because of specific circumstances (mainly common characteristics) and settle their daily affairs jointly in that place of residence form a collective household.

Institutional Household

All the individuals, who live together in an institution due to a common objective or characteristics and that institution has assumed the responsibility of their accommodation (providing them with a place of residence, services, and facilities) based on a license or in accordance with specific rules and regulations, form an institutional household. Some common examples of institutional households include: military barracks, police stations,

and student dorms under the administration of a university excluding hostels for married people, asylums, etc.

Place of Usual Residence

The place of usual residence for a household is a place where the household is residing at the time of the census provided that the household does not have another place of residence. The place of usual residence of the private settled households with more than one place of residence at the time of the census is the place where they spend most of the year.

City or Urban Area

A city / Urban is a geographic locality having a municipality

Village or Rural Area

A village is an area located in a rural agglomeration (agricultural or nonagricultural) with independent registered or conventional boundary outside a city boundary or outside another village with a specific name.

In case the village is the place of residence of a household or households it is regarded “inhabited” otherwise, “uninhabited”.

Population Settled in Urban Areas

The population settled in various urban areas of counties, sub-provinces, provinces, or the whole country, is the total population in all cities located in those areas, and the population of each city is the total number of all members of private settled, institutional, and collective households, whose place of usual residence at the time of the enumeration was located in that city.

Population Settled in Rural Areas

The population settled in various rural areas of counties, sub-provinces, provinces, or the whole country, and population of each village is the total number of all members of private settled, institutional, and collective households, whose place of usual residence at the time of the enumeration was located in that village.

Unsettled Population

Unsettled populations in a sub-province, province, or the total country are all those private unsettled households who have been enumerated within that census area.

Head of the Household

A member of the household who is acknowledged the head by other household members. It is noteworthy that the head is responsible for bearing all or major part of the household's expenditures or making decision on how to spend the household's income. It is obvious that in one-person households, the only member of the household is considered the household head.

Place of Birth

The village or city where the mother has given birth to her child is regarded the child's place of birth. In other words, the individual's time of birth determines the city or village as the place of birth.

Migrants

Members of private settled, collective, and institutional households who have changed their place of residence during the years 1385 to 1390 are considered migrants.

Under Education

All individuals who are being trained under the Islamic Republic of Iran's formal curriculums including religious schools' students, Literacy Movement trainees and the individuals studying abroad are regarded those "under education".

Literate

All individuals who can read write a simple text in Farsi or any other languages are considered literate whether they have a formal certificate or not. All students including all the first year primary school beginners and learners of the Adults Literacy Movement are considered literate.

Work

Any economic activity (mental or physical) which is carried out for earning an income (in cash or in kind) aiming at producing goods or rendering services. The individuals who work are mainly divided into “self-employed” (those working for themselves) and wage and salary earners (the individuals who receive compensation against their work). The activities of the following individuals are regarded as instances of “work”.

- The individuals engaged in military service.
- The individuals whose service at Baseej is regarded as their job and on account of which they receive wage and salary
- The individuals who, for the purpose of earning income or profit, perform service or manufacturing activities such as carpet weaving, sewing, hair-dressing, typing, private tutoring, repairing electric devices, nursing children or the aged etc. at their place of residence.
- The individuals who for producing durable goods are engaged in such activities as carpet weaving, rug weaving, straw-plaiting, sewing etc. for their own or households’ consumption.
- The individuals who are engaged in constructing, reconstructing or fundamental repairing their own houses.
- The individuals who as “apprentices” do activities relating to the place of apprenticeship, that is to say they are directly participating in producing goods or services whether they receive any compensation or not.
- Men or women who are engaged in such agricultural activities as farming, horticulture, livestock breeding and fishing, etc.

Activity Status

This Census deals with the activity status of the individuals during the last seven days preceding the enumeration. Every one of the individuals may, accordingly, fall into following categories:

Employed

The individuals who, under the definition of the work, worked at least one hour during the last seven days preceding the enumeration, though not in his routine Job is considered as employed. In addition, the individuals with following qualifications are treated as employed:

- The individuals who have a job but have not worked at least one hour during the last seven days preceding the enumeration.
- The individuals who are engaged in agricultural activities for themselves but have not worked due to the seasonal conditions during the last seven days preceding the enumeration.
- The individuals who (due to their shifting job) have not worked during the last seven days preceding the enumeration.
- The individuals who, on fellowship from their place of work, are studying and for this reason have not worked during the last seven days preceding the enumeration.
- The individuals who, due to vacation, holiday, illness, travel, etc. have not been at work during the last seven days preceding the enumeration.
- The individuals who, due to temporary organizational changes, or the malfunction of the equipment and machineries, having no customer or order for work, have not been at work.
- The individuals who are suspended from work but enjoy a formal attachment to their job.

Unemployed

The individuals, who have not worked at least one hour during the last seven days preceding the enumeration and did not have any job, are considered as “unemployed” in case the two following conditions hold:

- 1- They are actively seeking work during the last 30 days before the enumeration day and have taken specific steps including registration at an employment agency,

placing or answering the newspaper advertisements, seeking assistance of friends or relatives, etc.

2- They are currently available for work, that is during a 15-day period, the past 7 days and the next 7 days are ready to begin work.

Also, the following individuals are regarded “unemployed”:

- Individuals waiting to begin work, that is to say they are available for work and are supposed to work in future and are ready for work (according to work definition)
- Individuals who are waiting to return to their former job and are ready for work (according to work definition). By waiting to return to the former job is meant that the individual had formerly a job but has missed it for some reasons and has not formal attachment to it but is waiting to return to it.

Student: the individuals who are neither employed nor unemployed and are studying under country’s formal curriculums or abroad.

Income recipient: the individuals who are not considered employed, unemployed (seeking work), student and have regular incomes such as retirement salary and pension, or income from land and property, real estates, dividends, etc.

Homemaker: the individuals who are not considered as employed, unemployed (seeking work), or income recipient and are engaged in homemaking activities in their own home.

Others: the individuals who may not fall into none of the above-mentioned categories.

Occupation: the type of work (according to the work definition) the individual has done during the last seven days preceding enumeration. In case of those who were employed but not worked during the last seven days before enumeration for various reasons the occupation is the type of work in which the individual was engaged when employed.

Marital Status

Married: men or women who have got married (permanently, temporarily) even if they have not begun their married life. Excluded are those engaged but not yet married.

Widowed: men or women whose spouse is dead and who have not got married again till the time of enumeration.

Divorced: men or women who have separated from their spouse due to divorce and have not got married again till the time of enumeration

Never married: men or women who have not got married till the time of enumeration. Included are those engaged but not yet married.

Live births (Live-born children)

Infants born alive showing at least one of vital signs (crying, breathing and moving arms and legs etc.) even if they die immediately after birth

Children presently alive

Children, born by women who have married at least once, who are alive at the time of enumeration even if they are living with another household or are born from numerous marriages.

Disability

In this census, only some types of particular disabilities with following definitions have been considered.

Blind: the individual who has completely lost the sight of both eyes and is even unable to see with auxiliary facilities such as glasses or his power of sight is to the extent that can only sense the existence of light in the environment and is unable to feel the movements of the objects in a distance over one meter from himself.

Voice and Speech Disorder: any inability in speaking or in making natural or normal sounds through larynx

Instances are described as follows:

- The individual who is unable to speak (mute)
- The individual whose speech is irregular and interrupted (the individual who stutters or stammers)

- The individual who is unable to make normal sounds through larynx due to larynx handicap, illness or other reasons or speaks with abnormal pauses or whose voice is completely different from a normal voice like men whose voice is thin as a result of larynx surgery
- The individual who cannot speak with fluency due to mental disorder

Hand amputation: amputation of the thumb or of other four fingers together or hand amputation at any points of the shoulder or lower in either of both hands.

Hand impairment: deficiency or deformity of hand, arm, elbow or shoulder in either of both hands. Hand impairment and index finger amputation or any other deformity of hand (e.g. thinness or shortness of the hand to its natural situation).

Leg amputation: amputation of the toe, shank, thigh and knee in either of the two legs or any amputation at the pelvis and lower at any point and in either of the two legs.

Leg impairment: deficiency or deformity of the toe, shank, thigh, knee in either of the two legs or any impairment or deformity of the leg such as thinness and shortness of the leg or imbalance in walking (hobbling).

Torso impairment: torso is part of the body composed of neck, waist, back and torso impairment is any deficiency or deformity in the skeleton or muscular structure of the body, or any deficiency or deformity of the spine like bending of the spine to the sides or forward (hump) and fallen body (inability to keep it upright).

Mental disorder: the case deals with the individual having an I.Q. lower than normal and who is mentally retarded.

The household engaged in agriculture activity: the household one of whose members alone or together with the others manages at least one of the following agricultural activities in any area of the country.

Farming: (cultivation of herbaceous plants in arable land or under cover usually plastic) for a gainful activity such as cultivation of wheat, sugar beet, cotton, onions, alfalfa,

saffron, vegetables, pulses, and gladioli. The household managing at least a 400-sqm arable land is considered as one engaged in agricultural activity.

Horticulture: holdings with fruit and non-fruit orchards including nurseries and generally growing permanent crops outdoors or under temporary cover (usually plastic). All fruit trees or saplings such as orange, peach, grape, Persian rose, tea plants and all non-fruit trees such as poplars are considered perennial crops. The household managing at least 200 square meters of orchards and nurseries is considered as one engaged in agricultural activity.

Livestock and poultry: activities such as raising livestock, poultry as well as sericulture and apiculture.

Households engaged in livestock and poultry raising are those raising:

- At least 2 heads of small livestock (sheep and goats)
- At least one head of large livestock (cows, buffaloes, camels)
- At least 10 hens, roosters, chickens, ducks, turkeys or geese

Also those engaged in apiculture and sericulture at any size.

Greenhouse production: cultivation of a variety of annual or perennial crops in greenhouse (in any size) as a profitable activity. The greenhouse is a place, with a building having fixed columns and glass roof or plastic cover in an environment under control in heat, humidity, light, ventilation, etc., and in which there is enough space for the workers' coming and going.

Light motor vehicles: passenger cars, vans, etc. excluding buses and minibuses.

Housing unit: a place in which one or more households are residing at the time enumeration. A place is an enclosed space or area having one independent entrance or more leading to a public thoroughfare (alley, street, market, square etc.) or to a common corridor or staircase.

Type of the household's place of residence

Apartment residential unit: an independent unit with one or more rooms, kitchen, bathroom with its entrance leading to a common corridor or staircase.

Non-apartment residential unit (conventional housing unit): a one- or two-storied building constructed for the household's residence with an entrance usually leading to a public thoroughfare and most cases may have a yard.

Tent: a housing unit made of woolen, cotton, hair, nylon, tarpaulin, etc. fabrics erected with wooden or metal bars and ropes.

Hut: a housing unit made of straw and sometimes with mud and sun-dried brick.

Slum, hovel and the like: housing unit located in cities or around the cities, made of combination of materials such as tin plate, nylon, tarpaulin, etc. including places dug in the walls of holes or valleys or hills usually without using considerable quantity of materials. Also included are places such as cave, tree trunk etc. in case they are used by the household for residence.

Floor area of a residential unit: the total area of the levels built under a roof in the residential unit including room(s), kitchen(s), and bathroom(s) WC(s), laundry room(s), attic, etc.

Room: hall, living room, kitchen, etc. or roofed and enclosed space with a minimum floor area of 4 sq. m. and a minimum height of 2 m.

Hall: a space used usually for household's common activities, rest, and watching T.V programs.

Dining room: a space used usually to serve guests, rest, and sleep.

Kitchen room: a separate space used for cooking and baking usually with a sink for washing the dishes.

Skeleton of residential unit: the set of supporting parts (pillars, columns, beams etc.) of the building.

2.4. Census items

In the census of population and housing that is usually taken decennially in many countries of world, the information dealing with population and all housing units is collected. For this reason, the census is expected to satisfy the information needs of a large number of users generally composed of planners, politicians, economists, researchers of social and population sciences and others. Such a wide range of users denote a variety of wants and expectations some of which may not be met through the census findings. Definitely, due to executive limitations and heavy expenditures it seems to be impossible to meet all requirements. Therefore, the census planners are compelled to prioritize the information needs as a critical challenge. Consequently, to meet the users' needs requires designing and selecting a combination of the census items taking into consideration the following points:

- To satisfy the needs at the national level based on priorities,
- To ensure comparability with the preceding censuses,
- To ensure comparability at regional and international levels,
- To focus on the UN Recommendations,
- To focus on expenditures

Considering the above-mentioned points the 1390 Census items were determined with regard to the following factors:

- The UN Recommendations
- The preceding censuses
- Needs announced by the government organizations and institutions
- Findings of the Pilot Censuses in 1388 and 1389

In this part, the 1390 Census items are studied and compared with the 1385 Census items.

2.4.1. The Census Forms

The census forms are designed to collect items for different purposes. Four forms have been used in the 1390 Census:

- Form 1. Listing
- Form 2. The household Questionnaire
- Form 3. The institutional Household Questionnaire
- Form 4. Village Profile

2.4.1.1. Listing Form

This form has been designed to cover all households and housing units. It contains items helping the enumerator list completely all places and households and also provides a frame for the country's households to be used for subsequent household samplings.

2.4.1.2. Form 2 (the Household Questionnaire and Form 3 (The Institutional Household Questionnaire)

Information on the private settled, private unsettled and collective households is collected through Form 2. Household Questionnaire and information on the institutional households through Form 3. Institutional Household Questionnaire. Due to the similarity between the two forms and their significance in the Census process their contents are reviewed and described in this part.

2.4.1.2.1. Items included in Form 2. Household Questionnaire

A. Items on population:

- Type of Household (private settled, private unsettled, collective, institutional)
- Name, Surname and National Card Number
- Relationship to the Head of the Household (head of household, spouse, son/ daughter, son/ daughter in law, grandchild or great grandchild, father or mother,

brother or sister, spouse's parents, spouse's brother or sister, other relative, non-relatives.

- Sex (male or female)
- Age at last birthday (full years)
- Residence status (present, temporary absent, abroad for work or education, other)
- Does he/she reside in another place?
- Yes in the same city or village, in the other city (name) or the other village
- No
- How long has the person lived in the second residence? (less than 3 months, 3 to 6 months)
- Has he/she changed his/her residences since 1385? (yes, no)
- Length of residence in the same city or village (full year)
- Reasons for change of previous residence (seeking job, looking for a better job, job transfer, education, being graduate, military service, end of military service, following the household, other
- Previous residence (elsewhere in the same Shahrestan (sub-province) (city, village)
- Another Shahrestan (city, village)
- Abroad
- Name of Shahrestan of the previous residence (for abroad, name of the country)
- Has he/she changed his/her residence from abroad to inside the country since Nov. 1385? (name)
- Has he/she used the Internet at least once during the last 12 months
 - Yes, at home, work, educational institutes, coffee net, other
 - No
- Is he/she attending school/university?

Yes, in Iran, abroad, no

- Literacy status (literate, illiterate)
- Grade and educational attainment (grade for school students, educational course for university students, the highest grade or educational attainment for other people)
- Field of study (for grade, course or educational attainment)
- Place of education (in the same city or village, in other city (the name), in other village)
- Activity status during the last 7 days (worked during the last 7 days, unpaid workers in household business, temporarily absent from work, did not work during the last 7 days)
 - Seeking work
 - Not seeking work due to starting work in future, waiting to return to the previous work, education, homemaker, income recipient, other
- Status of availability to work
 - Available to work
 - Not available to work due to education, homemaker, income recipient, other
- Main activity of the work place (avoid writing such general titles as office, company, factory, supermarket, shop, etc.)
- Job: avoid writing general titles as clerk, farmer, self-employed, etc.)
- Job status: employer, own-account worker, wage and salary earner: public sector, private sector, cooperative sector, unpaid family worker
- Place of work: in the same city or village, in the other city (name), in the other village
- Marital status: married, widowed, divorced, never married
- Fertility status: Has she ever given a live birth (yes, no)

- Total number of ever born children (boy, girl)
 - Number of living children (boy, girl)
- Has she given a live birth during the last 365 days? (yes, no)
 - Total number of children born alive (boy, girl)
 - Number of living children (boy, girl)
- Is the mother a member of the very household?
 - (Yes, no)
 - Line number of the mother in column 1
- Place of birth (residence place of mother at the time of delivery), the same city/ village, another city, another village, abroad
- Disability status: Is there anybody in the household with at least one of the following disabilities?
 - Yes (blind, deaf, voice and speech disorder, hand amputation, hand impairment, leg amputation, leg impairment, torso impairment, mental disorder)
 - Not having the above disabilities
 - No
- Religion: (Moslem, Christian, Assyrian and Chaldean, Armenian, other Christians, Jewish, Zoroastrian, other)
- Citizenship: (Iran, Afghanistan, Iraq, Pakistan, other countries)
- Death event in the household: Has any person died in the household? (yes, no)
 - Is the dead person a female?
 - Has the person been aged between 10 to 60?
- In what agricultural activities is the household engaged?
 - Farming (at least 400 sq. m.)
 - Horticulture (at least 200 sq. m.)

- Livestock and poultry (at least 2 small livestock, at least one large livestock, at least 10 poultries, apiculture and sericulture on any scale)
- Greenhouse production
- None

B. Items on population and housing

- Are the following facilities available to the household?
 - Motorcycle (with gearbox and moped)
 - Light automobile (car, pick-up, van. etc.)
 - Personal computer
- The major fuel used by the household for cooking, heating, providing warm water
 - Natural gas (public network)
 - Liquid gas
 - Burning oil
 - Gas oil
 - Electricity
 - Solid fuel (firewood, charcoal, animal waste, etc.)
 - Other fuels
 - None
- Main source of water supply used by the household for drinking, cooking and other uses
 - Public reservoir of city or village
 - Well, spring, aqueduct and water reservoir unimproved
 - Well, spring, aqueduct and water reservoir improved
 - Water tank (fixed, mobile)
 - Bottled water
 - River, pool, brooks and rain water

- Others
- None
- Type of the household residence
 - Apartment housing unit
 - Non-apartment housing unit (conventional)
 - Tent
 - Straw hut (Kapar)
 - Hut and the like
 - Other
- Type of tenure of housing unit
 - Owned land and building
 - Owned building
 - Rented
 - Against service
 - Rent free
 - Other
- Number of rooms, hall, dining room, closed kitchen available to the household
- How many households live in this housing unit? (one household, more than one household)
- Facilities in housing unit (available/ not available)
 - Electricity
 - Fixed telephone
 - Piped water
 - Piped gas
 - Central heating system (Package, shofezh)
 - Central heating and cooling system (fancoil, panel etc.)
 - Kitchen

- Bathroom
- Toilet
- Number of rooms, hall, dining room, open kitchen, closed kitchen and other in this housing unit
 - Room
 - Hall and dining room
 - Open kitchen
 - Closed kitchen
 - Other
- Floor area of the housing unit (sq. m)
 - 50 m² or less
 - 51-75 m²
 - 76-80 m²
 - 81-100 m²
 - 101-150 m²
 - 151-200 m²
 - 201-300 m²
 - 301-500 m²
 - 501 m² and more
- Type of housing unit skeleton (metal, reinforced, concrete, other)
- Main construction materials of the housing unit:
 - Brick and steel or stone and steel
 - Brick and wood or stone and wood
 - Cement blocks (roof of any kind)
 - All brick or stone and brick
 - All wood
 - Sun-dried brick and wood

- Sun-dried brick and mud
- Other (mention the type)
- Year of construction completion of the housing unit:
 - 1390
 - 1389
 - 1388
 - 1387
 - 1386
 - 1385
 - 1375- 1384
 - 1365- 1374
 - 1355- 1364
 - 1345- 1354
 - Before 1345
- Type of sewage disposal in the housing unit (toilet, kitchen, other)
 - Public sewerage
 - Private sewerage
 - Absorbing well
 - Septic tank
 - Area around the unit
 - Other (mention the type)
 - None

2.4.1.2.2. The Institutional Household Questionnaire Items. (Form 3)

In comparison with the household questionnaire (Form 2), the institutional household questionnaire (Form 3) containing characteristics unique to this household exclude such items as “relation to the head of the household”. Is the individual’s mother the

household's member?, "the line number of mother", the death event in the household, "agricultural holding", and "facilities and housing unit of the household".

The Census findings can give a relatively complete list of institutional households. A set of information regarding the name and place of the institutions as well as their activities may provide an appropriate frame for the institutional households in the country. This frame could facilitate the conduct of the related samplings. To meet this purpose, an item regarding the institutional household's activity was added to the Census.

- Type of institutional household activity
 - Dormitory and pension house
 - Defense, disciplinary and public security
 - Hospital and social worker
 - Other

2.4.1.3. Form 4 (Village Profile)

The 1390 Census Village Profile has gone through considerable changes compared with the preceding censuses in order to cover some additional items in a variety of fields. The Village Profile comprises 77 main items in various areas as follows:

Items of Village Profile (Form 3)

- Natural condition of the village
 - Plain
 - Woody located in plain
 - Woody located in mountain or hill
 - Mountainous, hill or valley
- Type of village roads
 - Land road (asphalted road, graveled road, dirt road, dirt track)
 - Railroad
 - Water way

- Village status by habitation:
 - Inhabited (permanent/ seasonal)
 - Uninhabited (permanent/ seasonal)
- Hadi rural planning (implemented, under implementation, not necessary)
- The place for purchasing necessities of the village inhabitants
- Village facilities
 - Educational
 1. Rural nursery
 2. Primary school
 3. Boy's lower secondary boarding school
 4. Girl's lower secondary boarding school
 5. Boy's lower secondary school
 6. Girl's lower secondary school
 7. Mixed lower secondary school
 8. Boy's upper secondary boarding school
 9. Girl's upper secondary boarding school
 10. Boy's upper secondary school
 11. Girl's upper secondary school
 12. Boy's work and knowledge school
 13. Girl's work and knowledge school
 14. Boy's technical and vocational school
 15. Girl's technical and vocational school
- Sports and cultural
 - Rural park
 - Public library
 - Sports place (sports field, sport hall)
- Religious

- Mosque
- Imamzadeh (Holy religious person shrine)
- Other Muslims' religious places
- Religious places of the other religions
- Religious (Elmiyeh) school
- Permanent prayer leader (Ratib)
- Religious scholar house
- Political and administrative
 - Village Islamic Council
 - Dehyar (village manager)
 - Police station
 - The Center for Agricultural-e-Jihad services
 - Agricultural promoter
 - Dispute Settlement Council
 - Rural Cooperatives
- Electricity, gas and water
 - Electricity (national electrical grid, diesel, electrical engine, new energy (solar, wind))
 - Piped gas
 - Piped water (water treatment system)
- Health and treatment
 - Public bathroom
 - Health and treatment center
 - Pharmacy
 - Health home
 - Rural health station
 - Maternity health care center

- Family physician
- Physician
- Dentist/ dental and oral hygienist
- Experimental dentist/ prosthodontist
- Health worker and village midwife
- Health attendant
- Veterinarian
- Veterinary technician
- Laboratory and radiology
- Mortuary room (Ghasalkhaneh)
- Garbage collection station
- Trade and services
 - Fire fighting
 - Kerosene distribution agent
 - Gas cylinder distribution agent
 - Cooperative shop
 - Grocery
 - Bakery
 - Butchery
 - Tea house
 - Bank
 - Agricultural machinery repair shop
 - Non-agricultural machinery repair shop
 - Filling station
- Telecommunications and communications
 - Post box
 - Post office

- Telecommunications office
- Rural ICT
- Public access to Internet in the village
- Access to newspapers and magazines
- Access to public transportation in the village
- Access to the railway

2.5. Training

2.5.1. Training stages in implementation of the censuses in Iran

The history of the censuses implantation in the country indicates that the Statistical Centre of Iran has always benefited from the international recommendations, as a priority, in taking censuses. Tables 2.5 and 2.6 illustrate the training stages and the time frame set for each stage. In order to improve the census implementation quality in the country, a committee for identification of the census vulnerabilities was established in 1386. The committee managed to call for reports dealing with the census issues. The committee's efforts resulted in compiling a valuable set of the 1385 Census's strong and weak points. The main issues in the census training stages were reported to be as follows:

1. Inadequate time for training checkers.
2. Selection of the instructors in a limited time.
3. Short time intervals between the census training stages.

Therefore, the training committee, in the 1390 Pilot Census in 1388, employed the classroom training method together with the E-learning. 15 out of 30 provinces were recommended to use the classroom training method and the other 15 provinces to benefit from the classroom training method together with the E-learning.

Table 2.8. Characteristics of training procedures employed in the 1390 Pilot Census in 1388 and 1389 and in the 1390 Census implementation

Year	Training stage	Type of training	Training materials	Facilities	E- learning (beginning)	Classroom training	
						Beginning	Duration (day)
1388	First stage	E-learning	Manuals for the enumerator, checker (physical and electronic and training CD)(exercises)	Chat room	27 th Mehr 1388	-	-
		Classroom training	Manuals for the enumerator, checker (physical and electronic and training CD)(physical)	classroom	-	3 rd Aban 1388	4
	Second stage	E-learning	Manuals for the enumerator, checker (physical and electronic and training CD)(exercises)	Chat room	6 th Aban 1388	11 th Aban 1388	4
		Classroom training	Manuals for the enumerator, checker (physical and electronic and training CD)(exercises)	classroom	-	9 th Aban 1388	6
1389	First stage	E- learning	Manuals for enumerator, checker, monitoring and post enumeration	Chat room	10 th Mehr 1389	-	-
		Classroom training	Manuals for enumerator, checker, monitoring and post enumeration	classroom	-	18 th Mehr 1389	4
	Second stage	Classroom training	Manuals for enumerator and checker	classroom	-	24 th Mehr 1389	7
1390	First stage	E- learning	Manuals for enumerator, checker, monitoring and post enumeration	Web-based system	3 th Shahrivar 1390	-	-
	Second stage	Classroom training	Manuals for the enumerator checker, executive expert, publicity, interorganizational monitoring with training DVD	classroom	-	13 Shahrivar 1390	8
	Third stage	Classroom training	Manuals for the enumerator, checker, executive expert, publicity, interorganizational monitoring with training DVD	classroom	-	26 th Shahrivar 1390	12
		Classroom training	Manuals for enumerator, checker, executive expert with training DVD	classroom	-	16 th Mehr 1390	12

2.5.1.1. Training method in the 1390 Census (E. learning)

The E-learning-based training of the census was designed in two divisions:

- 1- The software design and backup
- 2- Online question-answering system

2.5.1.2. The Software design

With regard to the findings of the First and Second Pilot Censuses in 1388 and 1389, a software was designed with the following potentialities.

- 1- Interacting with each trainee in all areas of the country having access to the Internet to do exercises for the daily test per individual.
- 2- Having access to the various questions and exercises (at random) any time the trainee visits the web-based system.
- 3- Observing the trainee's ranked scores after recording the data of each chapter.
- 4- Holding final test after studying all chapters
- 5- Online delivery of data from all over the country to the central sever or to the instructors for the assessment of the trainees' learning and scores levels.
- 6- Voice answer-back through web after recording the trainees' wrong answers.

2.5.1.3. Online question- answering system

In this part, a private Chat Room has been designed for the trainees, each with a specific user's name, so that they can use the question-answering Chat Room by entering the system.

The trainees, by entering the Chat Room system, will be able to raise their questions and vague points regarding the manuals for the enumerator or the questions of the test and receive the answers through the instructors and executive experts. Also, another division peculiar to the notices has been designed. Only the training committee can have access to this division for loading and the trainees can be aware of the latest improvements in data and manuals by visiting this division.

In addition to designing the notices hall, another division entitled forms and manuals' has been designed to give the trainees a chance to raise in this hall the ambiguities on the wording or technical points of the forms and manuals and to receive in this way the solutions to overcome the ambiguities. During the training course, the complete backup has been made of the software and Chat Room with loading on the site to overcome the related issues. It is also noteworthy that during E-learning, 850 messages sent by the trainees have been answered.

2.5.2. Coding training in the 1390 Census

The coding of the household questionnaire of the 1390 Census have been performed in decentralized procedure and the training courses have been designed for the various coding individuals composed of coding operators, coding experts and coding senior experts and coding supervisors aiming at forwarding the necessary information for proper coding and introducing coding procedures and the related technical issues to the coding ranks.

The first training stage for coding was held within two days (20 and 21 Azar) in which the provinces' senior coding experts (54 persons) participated as trainees. The committee for coding and classification and extraction group have been responsible for organizing the course. The subsequent training course has been held in provinces for such ranks as coding experts and coding operators.

Data related to educational certificate and field, occupation, activity, Shahr (city), Shahrestan (sub-province) and total country have been coded in two stages. First, machine-based coding procedure is used and second, in case of the figures which the machine is unable to code the computer-assisted coding is employed by the operator. For this purpose, the web-based systems have been designed through which the coding operators can act to code the related items.

2.6. Edit and imputation

The data collected through each census or survey may be accompanied by some missing or inconsistent data. Such errors might be caused by the respondent's wrong or inadequate response or during the data processing. Thus, to be certain about the consistency of the data produced, the Edit and Imputation Committee is established. This Committee, in addition to cleaning the data, is required to identify errors and to reduce them in the first stages of enumeration and to introduce instruments to achieve this purpose. Some of these instruments can be manpowers such as editing clerks in provinces and other instruments like machine-based editing.

The Committee should also apply some methods to identify quality data at the earliest time possible. The Committee's objectives on the whole are:

- a. To analyse the topics and types of errors in previous censuses technically.
- b. To study the methods used in previous censuses, and the methods used in other countries in the past with a look at future.
- c. To determine the range of edit and imputation and to select the best and the most efficient methodology for the 1390 Census Edit and Imputation¹

2.6.1. The 1390 Pilot Census in 1388

In the 1390 Pilot Census in 1388, according to the Data Extraction Committee's decision on preparing the machine-based editing software, the Edit and Imputation Committee was tasked with designing the editing relations. After preparation of the machine-based editing software, the committee was also assigned to test the software and to review the existing issues.

2.6.2. The 1390 Pilot Census in 1389

Since the establishment of the Statistical Centre of Iran the If-Then-Else rules have been used to edit data resulted from surveys and censuses which takes a lot of time and manpower in each survey or census. This has proved to be one of the challenges in

¹ A study on use of modern editing methods in surveys, SRTC and UNFPA

carrying out statistical projects since any little change in the questionnaire or in information items would necessitate improving and checking a number of decision-making flow charts.

As said earlier, one of the objectives of the Edit and Imputation Committee is to study and select the best and the most efficient methods for edit and imputation. In order to achieve this objective, the committee acted to use Fellgi-Holt method in editing the data and NIM for four variables of “relationship to the head of the household”, “age”, “sex” and marital status’ in the 1390 Pilot Census in 1389 after studying the edit and imputation methods used in the other countries. The reason for selection of these four variables is that the information on the household members in these four variables enjoys a specific structure which can be found in the other households and as such the same information can be applied to the other households.

Considering the fact that it is very expensive to purchase the software from the other countries (like the CANCIES software used in Canada). The members of the Edit and Imputation Committee acted to design a similar software.

2.6.3. The 1390 National Census of Population and Housing

Based on the findings of the Pilot Census in 1389, the automatic editing method has been employed for the variables, relationship to the head of the household, age, sex and marital status in the 1390 Census enumeration and edit and implementation of the other variables will be implemented using If-Then-Else method. Accordingly, the flow charts used in If-Then-Else method after being studied and matched with the latest changes in questionnaire as compared with the 1389, accompanied by the automatic edit and imputation manuals for the aforementioned four variables have been forwarded to the related employees of the SCI IT’s Centre. It is apparent that the technical report on the findings of the 1390 Census after being finalized will be submitted to the 1390 Census Technical Committee.

2.7. Coding classification

2.7.1. Use of the statistical classifications in the 1390 National Census of Population and Housing

Since its establishment, the Statistical Centre of Iran has, by law, been involved in preparing and utilizing the statistical classifications in surveys, censuses and routine statistical activities.

Needless to say the accurate, reliable and comprehensive information and statistics are basic to the drawing up socio-economic policies and to planning at national and regional levels for the country as well as to the precise and scientific assessment of the plans carried out according to the predesigned objectives. In addition, proper use can be made of the data obtained from the censuses when they have been classified based on a regular and logical system. Furthermore, the statistical classifications are used as a standard and comparable frame for a regular introduction of economic flows and developments and have been of interest to international societies and organizations from long ago. Thus, there are standard classifications on social, economic and cultural activities, recommended for the member countries of these international organizations and societies. However, since the cultural and socio-economic conditions of the countries are not the same, the countries are allowed to make the necessary adjustments in their classifications to use a national standard one preserving the original frame. Use of statistical classifications and international standards is one of the stages in the technical design of the census. The highest volume of the statistical data are produced in the general censuses and accordingly the various statistical classifications are of prime importance.

Coding the 1390 Census questionnaires is one of the critical stages in the process of the census activities in which some of key data of the census questionnaires are converted into codes using a set of the classified codes to facilitate the data entry and the extraction of the census results. The classifications required for the census and the other statistical projects are usually subject to revisions with the technical developments and socio-economic changes.

The classifications used in coding the 1390 Census, which have also been revised where necessary and prepared to be applied in the census are introduced as follows:

- **Economic activities classification**
- **Grade, course and educational attainment classification**
- **Educational fields classification**
- **Occupations classification**
- **The total country classification**
- **City classification**

Shahrestan (sub-province) classification

The background and application of either of the classifications in the Pilot Censuses and the main census have been described in detail in the next section.

2.7.2. Types of the standard classifications used in the 1390 Census

- **Iran's economic activities classification**

In the 1390 Pilot Censuses in 1388 and 1389, the classification of the country's economic activities has been made on the ISIC, Rev. 3.1 whereas in the 1390 Census, the data collected on the same activities have been coded and extracted based on ISIC, Rev. 4.

- **Grade, course, educational attainment classification**

The last revision of this classification has been made based on ISCED 97 and used in the first and second Pilot Censuses of the 1390 Census.

Due to multiplicity of educational systems in the country and as such complexity in this respect, the educational systems have been omitted in the related committee and the section of grade, course and educational attainment has been drawn up again based on ISCED 97 and used in the 1390 Census.

- **Educational fields classification**

This classification has also been drawn up based on ISCED 97 and used in the 1390 Census first and second Pilot Censuses. In order to revise this classification all

educational fields were received from the Ministry of Science Research and Technology and Ministry of Education.

They have been drawn up again based on ISCED 97 and the revised file of the educational fields used in the 1390 Pilot Census.

- **Occupations classification**

The country's occupations classification has been based on ISCO 88 in the first and second 1390 Pilot Censuses.

Considering the fact that the new version of the occupations classification have not yet been compiled and the former version is old, the revised lists of the occupations have been used in the 1390 Census after the necessary revisions made by the Coding and Classification Committee with regard to the enumeration of new occupations in the first and second 1390 Pilot Censuses.

- **Occupational status**

This classification has been used in the 1390 Census based on ISCED and all of its six classes.

- **The country classification**

In this classification, the list of the countries has been arranged in alphabetical order and according to the international standard classification of M 49, Standard Country or Area Codes for Statistical Use and 3-digit codes have been assigned to the countries and areas. This classification has been used in the first and second 1390 Pilot Censuses.

- **City classification**

This classification has been compiled based on the country's administrative divisions and geographical conditions and is composed of a 10-digit level in which the first six digits on the left side indicate respectively Ostan (province) Shahrestan (Sub-province) and Bakhsh (Agglomeration) relating to the city and the last four digits show the city code. This classification has been used in the first and second 1390 Pilot Censuses.

Shahrestan (sub-province) classification

This classification has been compiled based on the country's administrative divisions and graphical conditions and is made up of a 4-digit level. The use has been made of this classification in the 1390 Pilot Censuses.

2.7.3. Coding operations

The coding operations in the 1390 Census have been done automatically or by the coding operators. In cases, where the machine is unable to do the coding, it is done manually. Manual coding is performed with the coding software in the three methods, alphabetical list of the codes, searching for words, and arrangement of the concepts.

Coding of the household questionnaires in the 1390 Census has been done in decentralized procedure with holding training courses for various ranks, coding operators, coding experts, coding senior experts and coding supervisors aiming at transferring the data required for proper coding and introducing the coding procedures and the related technical issues to the coding ranks.

2.7.3.1. The classifications used in coding the 1390 Census

Coding of seven information items is carried out using the following classifications:

1. Grade, course, and educational attainment based on ISCED 97
2. Educational fields classification based on ISCED 97
3. Iran's economic activities classification based on ISIC 4.
4. Iran's occupations classification based on ISCO-88
5. Shahrestan (sub-province) classification
6. City classification
7. Standard Country or Area Codes for Statistical Use based on M 49

2.7.3.2. Coding stages

After completion of field operations, in order to extract data resulting from the census the coding stage as one of processing stages is carried out.

In the 1390 Census, the data relating to certificate, field of study, job, activity, city, Shahrestan, and country have been coded in two stages.

First automatic coding is used and then for the items the machine is unable to code the computer-assisted coding procedure is applied by the operator. To achieve this purpose, the web-based systems have been designed for the coding operator to do coding operations.

2.7.3.3. Code verification

In order to control coding quality, a percent of the codes selected in each package are provided to the coding operators for verification. In case the errors and discrepancies in codes between the first and second coding operators exceed the percent determined in the system, the whole package will be returned to the first coding operator for recoding. This trend will be continued for certainty of the coding quality and errors control.

2.7.3.4. Quality control of coding operations

2.7.3.4.1. Urgency

To construct a sampling frame for the future surveys is usually regarded as one of the census objectives. Coding is considered as one of the potential sources of the frame coverage and contents error. Meanwhile, the accuracy of the figures in multi way tables of the census is dependent upon proper coding. Also, such factors as the quality of the classifications used, the way the enumerator registers the responses, and the quality of coding operators' training could affect coding quality. It is obvious it is very costly to improve errors caused by coding after the census.

The coding operations like the other census activities may not be without errors. Coding error is one of the processing errors and generally is regarded as a kind of non-sampling error. Prior to the 1385 Census, the data coding and entry quality was simultaneously analyzed within a sampling survey with an aim to estimate errors in the unit or district responsible for data entry. However, in the UN publication, "Principles and Recommendations for Population and Housing Censuses" it has been recommended that

the quality control devices and instruments such as Acceptance Sampling be used in the censuses particularly in processing stage.

The advantage of this device over the routine samplings is the small size of the samples, and as such reduction in expenditure and in inspection time. Today, use of the Acceptance Sampling in the Census' processing stage and also in the other statistical projects is very popular.

In other words, one hundred percent control of coding operations calls for heavy cost and relatively long time. To ensure the coding accuracy, the Acceptance Sampling was employed in 1385 for confirming or rejecting coding operations and it has been used in the 1390 Census too.

2.8. Tables

2.8.1. The 1390 Pilot Censuses in 1388 and 1389

In 1388 the extraction of the tables was not included in the Tables Committee's agenda; however, the committee had enough time to carry out studies on the pattern of tables and publications and became prepared for extraction of the tables in the 1389 Pilot Census. In 1389, the committee, when fulfilling the above activities, managed to extract some tables, within the pattern of the 1385 Detailed Results Issue, using the 1389 Pilot Census findings and studying the results obtained.

2.8.2. The 1390 Census Implementation

Considering the assessment of the users' comments on the 1385 Census Results regarding the census printed publications' applicability in scientific activities and expert sessions, the information dissemination on the 1390 Census findings both in electronic and printed publications was included on the related agenda. Besides, the other data requested by the users will be extracted by SCI Information Center and provided to them. In this respect, the Committee for Compilation of the Census Tables and Publications has considered two main activities as follows:

A. Determination of the Census publications

The list of the 1390 Census issues whose publication has been approved by the Census Headquarters of the country is composed of:

- The Detailed Results Issue (Total Country, Ostan and Shahrestan)
- General Issue (Total Country, Ostan)
- City Population Issue (by Age and Sex)
- Tehran's 22 Districts Issue
- Bakhshs' (Counties) Profile and Village Gazetteer Issue
- The Census Selected Results Issue

B. Design of the publications' pattern

The above-mentioned committee has designed the tables' pattern based on the 1390 Census forms; the tables' pattern of the country's preceding censuses and the comparative studies of the other countries. Then, with the preparation of manuals for extraction of tables on its agenda, the committee has prepared the manuals for all tables accompanied by the Census Selected Findings.

2.8.2.1. The 1390 Census Publications

2.8.2.1.1. The Detailed Results Issue

This publication contains 8 sections and 93 tables.

Section 1. The Population's General Characteristics (9 Tables)

Section 2. Migrations and Migrants Characteristics (9 Tables)

Section 3. Education and Population Characteristics by Literacy and Educational Attainment (10 Tables)

Section 4. The Employed and Unemployed Population's Activities and Characteristics (15 Tables)

Section 5. Marital Status and Fertility (9 Tables)

Section 6. Disability and Characteristics of the Households with Disabled Individuals (6 Tables)

Section 7. The Households' General Characteristics (20 Tables)

Section 8. The Household's Housing Characteristics (15 Tables)

2.8.2.1.2. Total Results

This publication is composed of 3 Chapters, Total Country Tables, Comparative Data on the 1365 and 1390 Censuses and Ostan Tables, By the Population's General Characteristics, Fertility, Literacy, Education, Household, Disability, Housing, Migration and Activity.

2.8.2.1.3. The Population of the country's cities by age and sex

This publication consists one of two tables dealing with the country's population distribution, by age and sex and Ostan and the other one with the population of the country's cities, by age, sex and Ostan.

2.8.2.1.4. Tehran's 22 Districts

The tables of this publication comprise characteristics of population, housing, household, activity, marital status, literacy and education, migration and disability.

2.8.2.1.5. Bakhshs' (Counties) Profile, and Village Gazetteer

This publication is made up of 16 tables dealing with data on villages in terms of population, residential status, the village's natural condition, number of households, literate and employed population, sex, major occupational groups, village's facilities, and type of the village's road.

2.8.2.1.6. The Census Selected Findings

This publication is the first one on the Census's results. Upon the confirmation of the Census's File, the Preliminary Results will be published and placed at the disposal of the interested users.

2.8.2.2. The 1390 Census Results Review

After the extraction of the results and confirmation of the final file, the stages for controlling the tables start. This phase of the census activities will be accomplished according to the manual for controlling the Census's file and tables.

2.9. Post enumeration

In view of the fact that a census comprises very broad operations, errors such as omissions, re-enumerations, etc. may occur in spite of the accessibility of controlling devices. Post enumeration is one of the common methods for the coverage assessment in the census. According to UN principles and recommendations for taking population and housing censuses, "post enumeration" is the full enumeration and re-enumeration by a sample representative of the population under enumeration by which the data collected for each individual counted in re-enumeration will be compared with corresponding cases in the census. Comments will be made after making contrastive analysis and necessary researches on the coverage errors rate and accuracy of the data collected in the census. The post enumeration has been implemented in the 1390 National Census of Population and Housing for the assessment of the census coverage.

Chapter 3. Map and Spatial Data

3. Map and Spatial Data

3.1. Updating the Statistical Maps from 1386 to the 1390 Census Implementation

The statistical maps are part of the necessities for taking censuses and surveys. The maps are usually used to optimize conduct of the censuses. Thus, the more complete and updated they are, the better the geographical coverage control could be done and the more accurate results obtained. The statistical maps used by the Statistical Centre of Iran are divided by two major urban maps (in blocks with 1: 2000 scale including maps of cities and block villages) and rural maps with 1:50000 scale. Due to the dynamic nature of the cities various changes may occur in them which can affect censuses and surveys. Therefore, a part of the country's urban and rural maps are prepared in each year by the private sector and with the supervision of Map and GIS Group of Ostans' Statistics and Information Office and according to manuals for updating statistical maps provided by the SCI Map and Spatial Data Bureau and will be updated and monitored by the same Office.

3.2. Geographical File

3.2.1. Preparing the Geographical File and matching it with the maps

All statistical projects have been conducted based on the list of geographical localities and regions which are annually updated and changes caused by updating the statistical maps and administrative divisions are applied in them.

3.2.2. Preparing Geographical File Software

Considering the sensitivity of political divisions and geographical file, a software was designed for the geographical file intended to be used before the census implementation for adding the Enumeration Areas to it and application of changes in the folder of maps.

3.2.3. Preparing Geographical File containing data on the Enumeration Areas

After preparation of the Geographical File, it was found essential that the data on demarcation of E.As be added to it in order to prepare the 1390 Census list (before implementation). To suit this purpose, the Geographical File Software has been used. Phases of Geographical File design before implementation are as follows:

- E.As demarcation exported files control (in this phase, E.As demarcation Shape Files are controlled after improving the errors, and in case there still remain major errors the files will be returned to the Ostan again.
- Import of final Shape Files to the Geographical File Software
- Preparing the Geographical File list output including data on E.As demarcation from the software in Access format
- Access File final control to eliminate errors
- Forwarding the E.As demarcation Geographical File to the System Designing Committee and receiving 5.1 Forms (E.As characteristics)

3.2.4. Implementation of the First Phase of Updating Map Folder and Geographical File prior to the 1390 Census

It may well be that changes occur in E.As features from the time of map preparation to the census implementation time resulting in making necessary changes in 501 Form list.

In such cases, first the E.A maps should be amended so as to show the situation of the E.A at the time of the Census and then the form inside the map folder should be amended with changes in the map. To amend the map it is necessary to verify and amend all E.As.

The priority should be given to the urban E.As that is determined by the Ostan map experts with regard to the urban areas' conditions.

Having made changes in the map folder, the Ostan Geographical File expert, with the software for updating the Geographical File and E.As list (prior to the 1390 Census implementation), begins to apply all changes of the folders to the file and as such update the list after the Ostan map senior expert's confirmation.

3.2.5. Implementation of the Second Phase of Updating Map Folder and Geographical File prior to the 1390 Census

To prepare the Census list depends on updating the E.As map folder and applying the changes in the map folder to the Geographical File which includes the following activities:

3.2.5.1. Updating the E.As Map Folder during the Census Implementation

In this phase, according to the manpower planning for the census implementation, for every 250 E.As one map experts has been assigned. The map expert's functions consist of controlling map changes in the specific time span, maps and 501 Form of the maps folder, confirming maps folder, responding and removing the Geographical File ambiguities at the end of the census taking. Ostan map supervisor is bound to determine the area of the map experts' performance and to follow up the arrangements for preparation of the map of the activity area of the map experts (preferably corresponding with the map of regions' limit)

3.2.5.2. Elimination of Discrepancies from the 501 Forms and Map Folder of Enumeration Areas

After the Census implementation and delivery of the documents, the map folder will be detached from the E.A documents by the verifier and packed in boxes prepared in

advance in each Census Staff and delivered by the technical deputy to Ostan Map Group after being attached with special label.

3.3. Updating Geographical File

After the end of the Census implementation and control of the E.As map folder by map expert and certainty of the match between the form and map of each E.A, all of the E.As should be confirmed and controlled again by the map affairs supervisor.

3.3.1. Preparing Final Geographical File for the Census data extraction

After the implementation of the 1390 Census, the changes made in the E.As map during the Census will be applied to the list of the E.As with monitoring of the group expert and map expert using the software for updating Geographical File and list of the E.As. Finally, with the certainty of the match between 501 Forms and the E.As map, the final list of 1390 Census will be prepared by the Ostan Geographical File expert under the supervision of the Ostan map supervisor to be put at the disposal of the data extraction group.

3.4. Demarcation of Enumeration Areas

3.4.1. The household Enumeration

One of the existing issues in the censuses is lack of correspondence between the volumes of the E.As before and after the implementation of censuses. In order to reduce this deficiency and in view of the fact that the rate of changes in urban blocks is more than that in the rural areas, including a great size of changes after implementation, it is essential to apply a method for having an access to the rate of changes in blocks and data on the households therein. Accordingly, Ostans were assigned to design and implement the enumeration of the households in urban blocks and in block villages aiming at improving the number of households, registering the map changes and giving an estimate very close to the reality. To suit this purpose, a listing form was completed for

identification of all places and households whose blocks had been constructed from the 1385 Census afterwards or subject to considerable changes.

3.4.2. Design of Enumeration Areas Software

E.As demarcation operations are of prime importance in each census. For this reason, the E.As demarcation software after being designed has been provided to Ostan for accurate E.As demarcation operations.

3.4.3. Basic Data required for E.As demarcation

For E.As demarcation and preparation of software and manuals basic data are needed as follows:

- Duration of Listing Form Completion
- Duration of Household Form Completion
- Estimation on households in 1390 and consequently on the 1390 Census E.As households and on group, region up to Shahrestan level
- Size of E.A. for urban and rural areas (400 urban households and 380 rural households)
- Census implementation method (individual, collective, etc.) (individual method is confirmed)
- 1385 household up to block and village levels
- Institutional household up to block and village levels
- Private settled and institutional households, etc. up to block and village levels

3.4.4. Preparing Manual for E.As demarcation

To carry out more accurate E.As demarcation and to avoid any ambiguities in implementation, the Map and Spatial Data Office managed to compile the manual for E.As demarcation.

3.4.5. Preparing Final Report on E.As demarcation operations

After preparation of Geographical File and its being forwarded to the System Design Committee for confirmation, the final report on E.As demarcation operations including number of E.As, census enumerator, group, region, by urban and rural areas at the levels of Ostans and Shahrestans of the country has been prepared and forwarded to Organizing and Executive Group and finally used in implementation as the basis for selection of manpower, equipment and facilities required for the census implementation in Shahrestans of the country.

3.4.6. Preparing the Maps Folder in Ostans

Phases of preparing Maps File in Ostan are as follows:

- Receiving 501 Forms from the System Design Committee and printing them in Ostans
- Converting E.As from Shape Files into Dwg Files and doing the related edits according to the Map and Spatial Data Bureau's Manuals and cartography of maps
- Preparing map files, by E.As, groups, and the regions of the Census using Xref files of maps of Ostan rural areas, cities, and block villages
- Preparing colorful plates
- Preparing the Census's Map Folder (including plate of E.A map and Form 501)

3.4.7. Geometric surveying of changes incorporated into the Folder of maps and preparing File of maps after the Census implementation

After implementation of the Census, it is necessary to register properly all changes occurred in the map of E.As before and during the Census enumeration. Considering the fact that the changes occurring in the map of the E.As during the Census enumeration are mostly drawn by the numerators with a low geometric accuracy, it is necessary to do an accurate surveying on the changes by Ostan map experts visiting the fields to prepare accurate and updated maps according to the 1390 Census List for presentation of the

Census results. After this phase, the connection of the whole Census results up to the block and village levels in GIS can be included on the agenda. Also, a design for connection of data within the aforesaid system to the Parcel level for two cities of Tehran and Qom will be conducted.

Chapter 4: Publicity

4. Publicity

4.1. Publicity and Data Dissemination in the 1390 National Census of Population and Housing

The Census of Population and Housing provides a good opportunity to achieve various objectives such as creating confidence and ground for cooperation in public relations with a special focus on the promotion of the “Statistical Awareness” in the society. Access to accurate information and statistics at national, Ostan (Provincial) and Shahrestan (Sub-provincial) etc. levels at first requires a broad confidence-building in respondents (households). The main strategy for design of publicity and data dissemination in the 1390 Census is based on the above-mentioned concerns. In the 1390 Pilot Census carried out in 1389, some appropriate instruments were tested to plan for a very extensive design of the publicity and data dissemination in the 1390 Census.

The objective of designing the 1390 Census publicity and data dissemination is to inform people, government agencies and the other institutions public, or private about the time of the Census and how it is to be taken and to prepare and encourage people to cooperate sincerely with the enumerators so that they provide adequate and accurate responses to the questions. In this way, in addition to informing people about the implementation of such a great national event, increasing public awareness and people’s recognition of and confidence in the existing statistics in the society are of prime significance.

4.2. Experiences of the other countries in publicity for censuses

The publicity is one of the activities to which the countries attach special importance when planning for their censuses. The 1390 Census Publicity Group began in advance to study the publicity records in taking censuses of the other countries such as South Africa, New Zealand, Indonesia, United States, Ireland and England. The major publicity and data dissemination activities done in the country are as follows.

4.3. Implementation of the Research on Social, Psychological, and Communicative Factors Affecting People's Attitude towards the National Census of Population and Housing in 1384

This Research has been carried out as one of the most important measures for recognition of people's attitude towards the 1385 national Census of Population and Housing and also the effective tools for the Census publicity.

The Publicity and Data Dissemination Group has indeed carried out the research to identify social and commutative factors affecting information sources (enumerators and respondents).

4.4. Publicity tools and facilities in the 1390 Census

4.4.1. The 1390 Pilot Census in 1388

Considering limitation of the areas under the test and to avoid any sensitivity in such areas, the information dissemination was accordingly conducted in a limited extent, only through mass media's interview with the census executive officials.

4.4.2. The 1390 Pilot Census in 1389

Considering the limitation of the areas under the test and accordingly no need for a common or broad information dissemination, the following applied tools have been employed for the census information dissemination:

- 1- Mass Media including Islamic Republic of Iran Broadcasting, Press, and News Agencies
- 2- Environmental Publicity including banner, placard, tract and poster
- 3- Local informed persons (holding seminars attended by the city and village council heads, village assistants and Friday Prayer Imams (Preachers)
- 4- Information dissemination packages (distribution in the local informed persons' sessions)

- 5- Education: including students contests, school teachers and masters' information dissemination and the Census Bell in Shahrestans put to the test.
- 6- Executive organizations
- 7- Executive officials: including distribution of information dissemination packages among the households not cooperating
- 8- Despatch of messages
- 9- Holding opinion poll
- 10- Information dissemination through the National Portal of Statistics and International Organizations Sites

4.4.3. The 1390 National Census of Population and Housing

With regard to efficacy of the present experiences and credits allocated to the publicity, programs and tools used in the census include the following:

- A. Tools and facilities for environmental publicity
 - Special label for Census motor vehicles
 - Publicity tracts in three types, for schools, for rural cooperatives and for mosques
 - Posters
 - Brochure in three types
 - Banners and placards
 - Billboards, city monitors, buses' bodies, subway stations, banners for bridges
- B. The pupils and schools participating in the census
 - Students' contest on painting, wall newspaper, composition writing among the pupils
 - Preparation and experimental distribution of Compact Disk containing multimedia software of Census Bell for the elementary Fifth Grade in the

Ostans' centers and design of an opinion poll for the efficacy of this software

- Conduct of the Census Bell with the presence of Shahrestan executive officials
- C. Participation of the city and village council members, mayors, County heads, village assistants and Friday Prayer Imams (Preachers) in the Census
- D. Benefiting from the local informed persons (health attendants, agricultural promoters and village assistants) as the census propagators in rural areas
- E. Preparation of information dissemination packages for local informed persons
- The Great Leader's message, the President's decree and the other authorities' messages and high ranking religious references' edict on the census occasion
 - Brochure introducing the census
 - Brochure introducing the selected statistics of Shahrestans
 - The Census Commemorative Stamp
 - Incentives
- F. Despatch of messages (data dissemination and encouragement for cooperation) to 50 percent of the country's households
- G. Benefiting from Mass Media including Press, News Agencies, and Digital Media.
- H. Benefiting from the National Media (Islamic Republic of Iran Broadcasting) at national and Ostan levels.
- I. Benefiting from facilities of the government agencies, institutions and other public organizations
- Inserting the motto for the Census at the letterhead of the administrative correspondence
 - Data dissemination through the government agencies Sites
 - Preparing and mounting banners
 - Mounting poster and tract in the bulletin board

- Publicity through monitors, billboards at the disposal of the related organizations

J. Other publicity programs

- Holding messages contests through the national media
- Holding seminars in Shahrestans attended by local informed officials
- Awarding prize to the households participating in the census through drawing lot
- Census commemorative postage stamp
- Inserting the census logo into a number of the university sites, the news sites and ministries'
- Setting up the 1390 Census sub site at National Portal of Statistics
- Data dissemination through International Organizations' Sites.

K. Other activities

- Preparing speech texts for the executive officials of the census, Friday Prayer Imams (preachers), school masters
- Preparing the Census mottos

4.5. Design of Opinion Poll: Measuring efficacy of the Census data dissemination and indexes for the statistical awareness promotion in the households responding to the 1390 Census items

The above-mentioned opinion poll has been held in simultaneity with the 1390 Census implementation.

The respondents' opinion poll in the statistical projects for assessing the statistical awareness indexes has been held for the first time in the Pilot Census in 1389 with 2500 sample households in such Shahrestans as Charoymagh, Kohbanan, Deylam, Ghasreshirin, and some areas in Tehran aiming at determining the efficiency of the methodology of publicity in the Pilot Census and familiarity with the Statistical Centre of Iran and assessing the indexes for increasing statistical awareness in the country.

The next experiment has been conducted in the course of the 1390 Census field operations within the time span of 8th to 12th Aban. The census coverage level has been total country, urban and rural areas. The target population was the private settled households in the urban and rural areas in 1390.

The Census methodology is the sample survey and around 500 urban and rural E.As from areas under the census coverage have been selected to do the sampling. The data collection method is personal visit to 15000 households (30 households per E.A.) and interview with an informed member of the household filling in the questionnaire as well as the acceptable maximum relative error in the estimates being 3.5 percent.

Chapter 5: Field Operations

5. Field Operations

The volume of field operations for a census implementation is broad to the extent that numerous and regular measures should be taken in advance to conduct the related planning. To achieve this purpose, the preliminary activities have begun from 1387. Since then, the 1390 National Census of Population and Housing Executive Organization started to perform its functions after the establishment of the Census Headquarters and specialized groups and committees. As said earlier, The Pilot Censuses have been carried out in 1388 and 1389 the results of which being very effective in the 1390 Census implementation.

5.1. Field Operations Methodology

5.1.1. 1390 Pilot Census in 1388

The implementation of the field operations whether individually or collectively was taken into consideration in the Pilot Census. In individual method, every enumerator personally acts to list his or her own E. A. filling in, at the same time, the census forms when visiting the households. Whereas, in collective method, the manpower is organized in a way that the field operations teams will be present simultaneously in the field, then the leader of each team acts to list the related area of the operations and upon identification of the household and asking the respondent to prepare the required documents assigns one of the subordinate enumerators to fill in the household questionnaire. In this way, the division of labor is fulfilled in rotation and the operational team follows the work accordingly in the areas under the supervision of the head of the group to the end of the operations of the specified E.As.

5.1.2. The 1390 Pilot Census in 1389

In 1389 Pilot Census, in addition to the individual method, the collective interview method has been tested in all rural areas of Ostans put to the test and in 50 percent of the urban areas in 4 Ostans.

5.1.3. The 1390 National Census of Population and Housing

After the implementation of the 1388 and 1389 Pilot Censuses and obtaining the results, the design group has found the collective method inappropriate due to such various issues as spending a longer time, omission of a number of households and the difficulty in registering the household line number. For the same reasons, the field operations have been done in the individual method in 1390 Census.

5.2. The Census Executive Organization

5.2.1. The 1388 Pilot Census

For a favorable test of the Census and with regard to the items to be tested in 1388, ten Ostan centers, Tehran, Khorasane-e-Razavi, Kerman, Esfahan, Khozestan, Gilan, Golestan, Bushehr and Kordestan, and the second largest shahrestan in population in other 20 Ostans have been selected. Considering the limitation of the 1388 Pilot Census, the Executive Organization has been designed in a 10-Ostan and 20-Ostan areas separately.

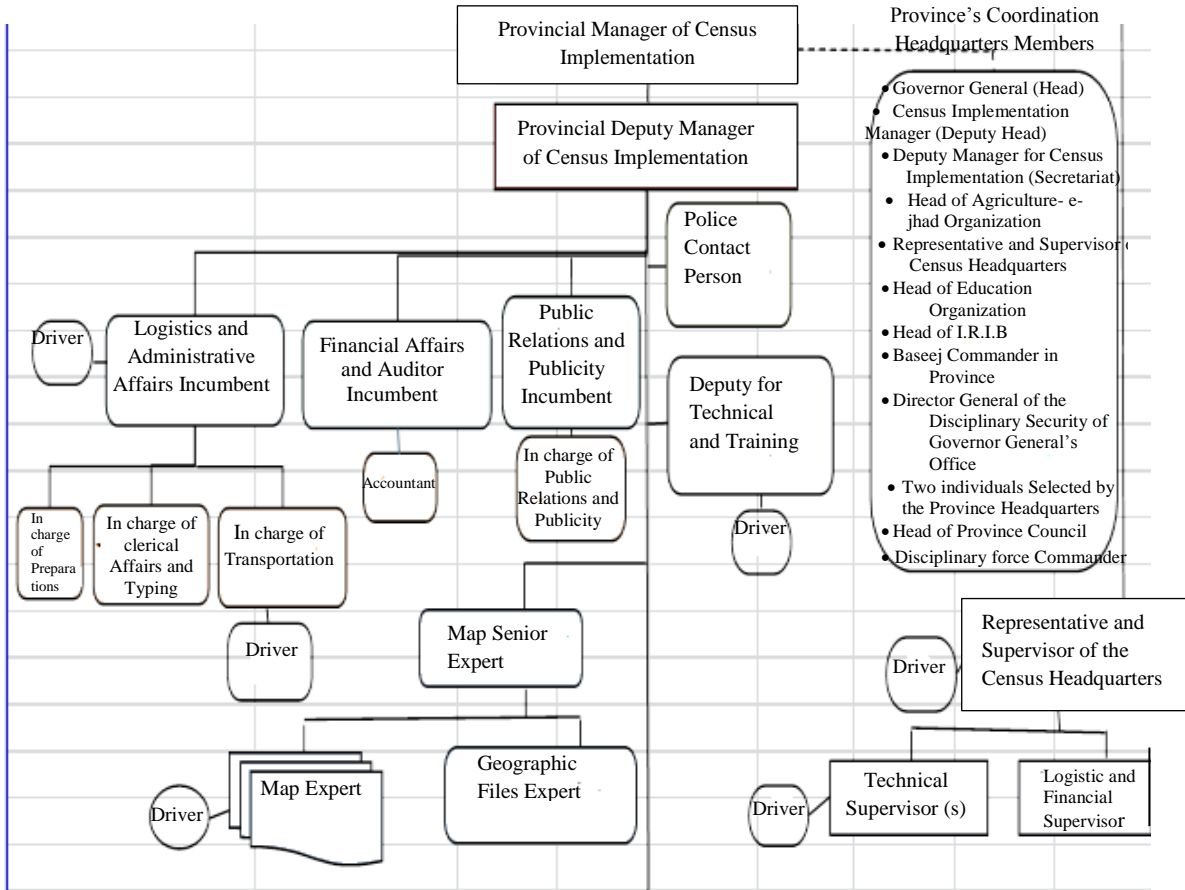
5.2.2. The 1389 Pilot Census

The 1389 Pilot Census that has been conducted one year before the main Census was aimed to be in match with it, to the extent possible, in implementation. For this reason, all the stages of the Census have been tested in a part of 5 Ostans. Also, an organizational chart has been designed for all areas attempting to assign the ranks for the Pilot Census in match with those engaged in the main Census.

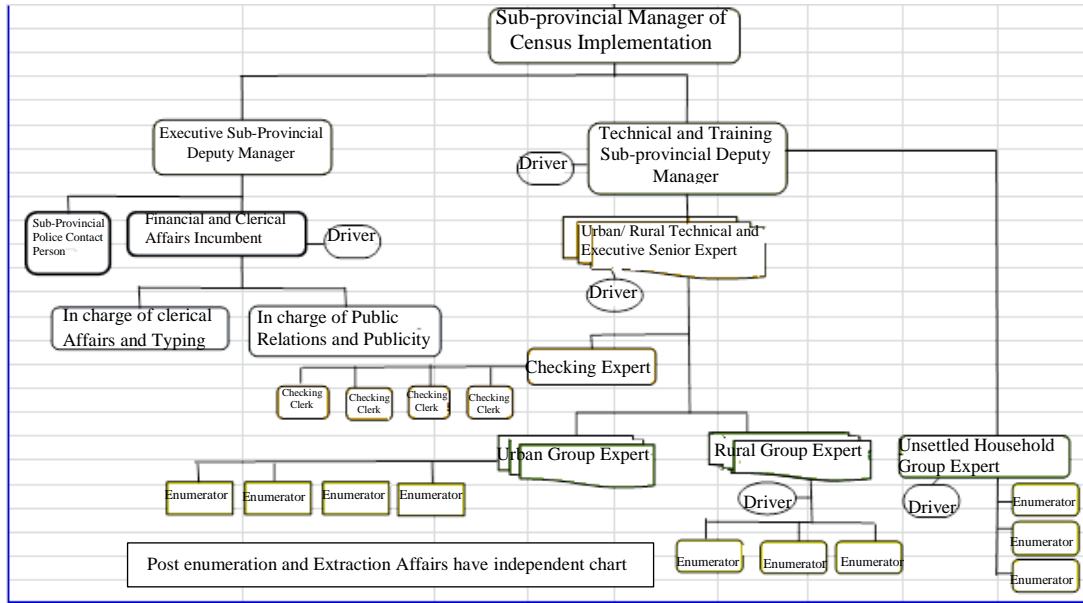
5.2.3. The 1390 National Census of Population and Housing

The study of the existing issues in the organizational chart of Ostans and Shahrestans in 1385 and the 1390 Pilot Censuses in 1388 and 1389 resulted in assigning an executive deputy under the executive manager of Shahrestans in the 1390 Census organizational chart. Therefore, the Shahrestan technical and executive deputy has been divested of his executive functions and only entrusted with performing his technical and educational functions and on the other side, the executive deputy who stands at the same ranking with the technical and educational deputy in the chart has taken the executive duties of the Shahrestan Staff. However, in the census implementation due to nonconformities between the two ranks in a certain number of Ostans the executive deputy has not shown the sufficient efficiency as expected in practice or his role has remained unseen in the census implementation and his functions have been taken by the technical and educational deputy. Moreover, since there are seven metropolitan cities in the country one independent chart has been designed for either of the cities Ahvaz, Tabriz, Esfahan, Shiraz, Mashhad and Karaj in addition to the Greater Tehran. It is noteworthy to add that the Security and Protection Committee has been set up in addition to the other ranks in the chart to make the necessary arrangements by communicating with the military officials for security of the enumerators and transport of the consignments.

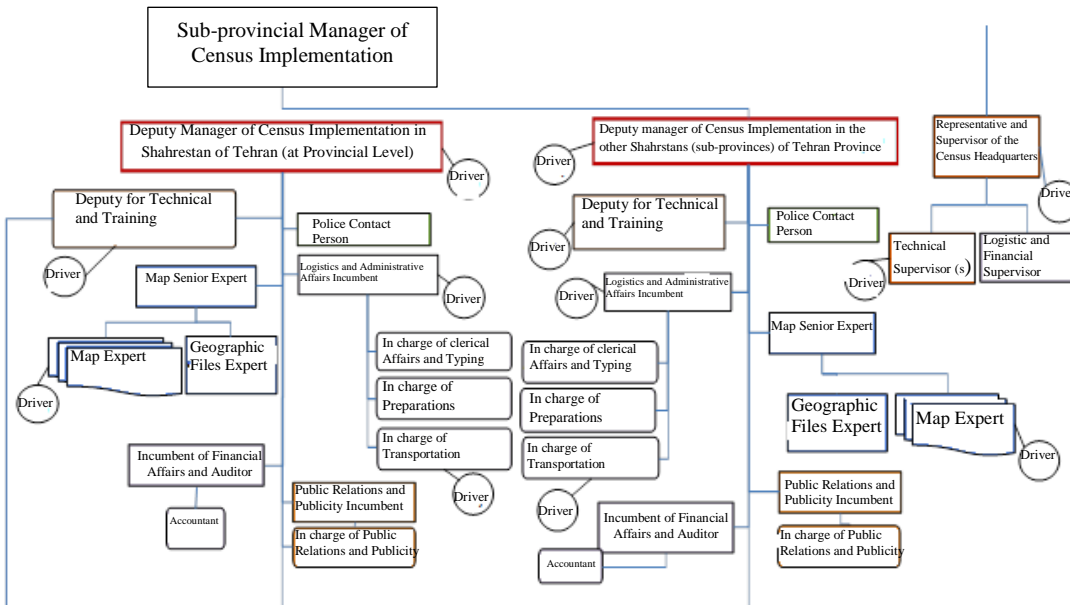
Organizational Chart of the 1390 National Census of Population and Housing Ostans (Provinces) Headquarters



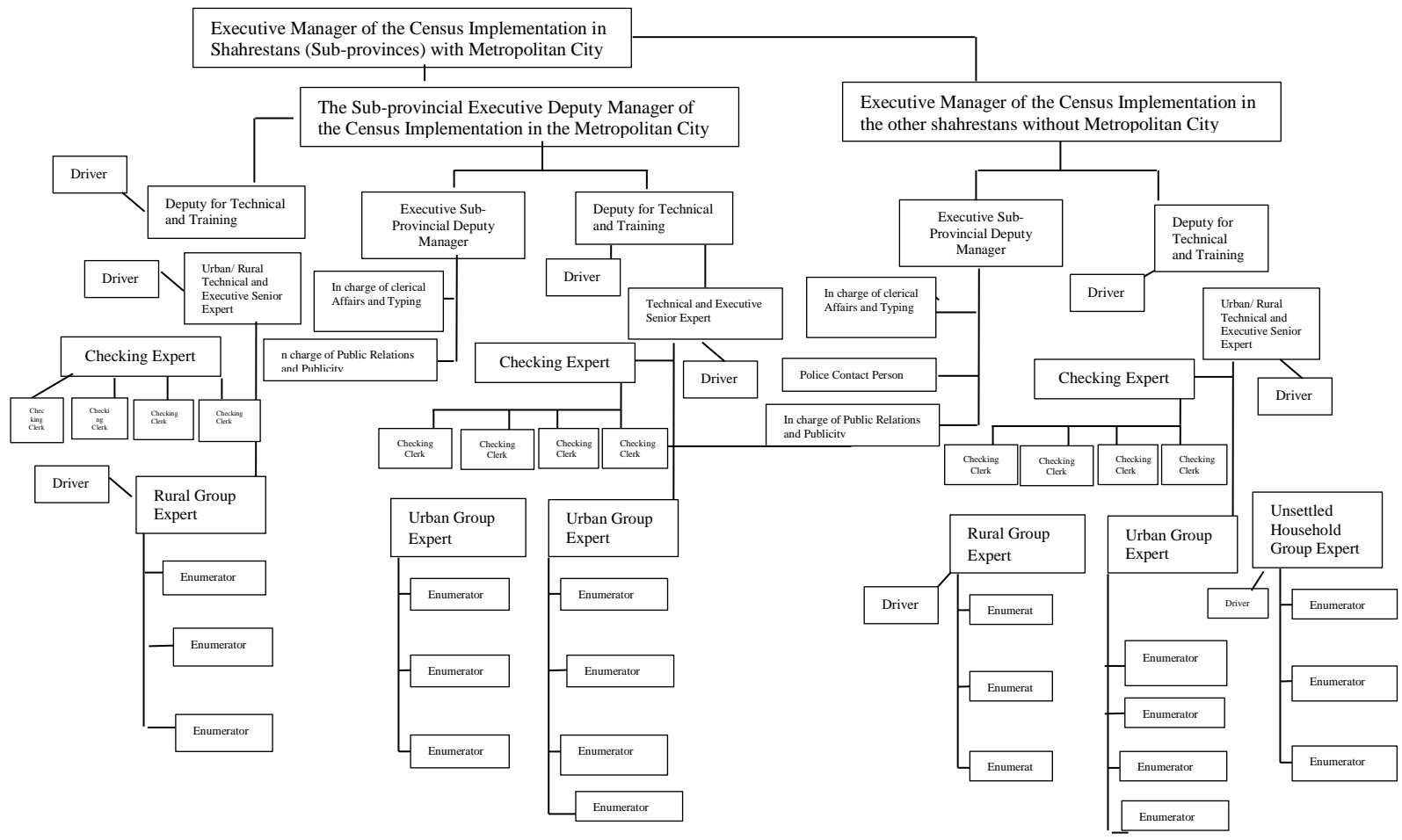
Organizational Chart of the 1390 National Census of Population and Housing (Sub-Provincial Headquarters)



The Greater Tehran the 1390 Census organizational Chart



Organizational Chart of the 1390 Census in the other Provinces with Metropolitan Cities (Esfahan, Fars, Alborz, East Azarbayjen, Khozestan, Khorasan- e- Razavi)



5.3. Manpower

5.3.1. The 1388 and 1389 Pilot Censuses

Due to the limited area of implementation, the manpower required has been composed of the existing executive cadre at the SCI and a limited number of skilled enumerators

5.3.2. The 1390 National Census of Population Housing

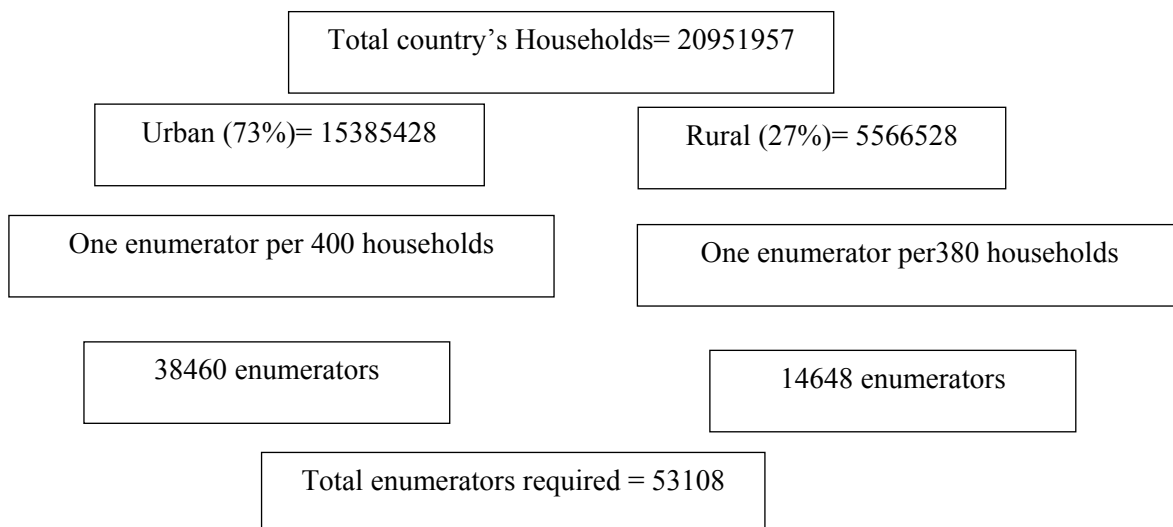
5.3.2.1. The enumerator's work load

Considering the questionnaires designed for the 1388 Pilot Census and the records of the previous censuses in the country, an average time for completing the Household Questionnaire has been set to last between 18 to 19 minutes.

The 1388 Pilot Census's findings indicate that the time taken to complete the questionnaire exceeds the anticipated time. However, since the questionnaire with booklet format was replaced by one-sheet format with front and back sides and completed in the 1388 Census Pilot Census and in the 1390 Census in the interview method, the average time for the questionnaire completion is set to be 20 minutes for both events. The reason for such a decision is due to the fact that the self-enumeration (Booklet questionnaire) and Internet methods are found to be not applicable.

5.3.2.2. Manpower Estimation

Manpower Estimation for the Executive Ranks of 397 Shahrestans of the Country



5.3.2.3. Grouping and Assigning number of Executive Ranks

- One group expert Per 4 urban enumerators
- One group expert Per 3 rural enumerators
- One technical and executive senior expert Per every 4 groups
- One checker Per every 4 enumerators
- One senior checker Per every 4 checkers
- One Sub-provincial technical and training deputy On the average per 8 technical and executive experts
- One Census implementation deputy for each Shahrestan and 22 Regions of Tehran and 6 metropolitan cities
- Logistics and headquarters Officials depending on the country's administrative divisions in each Shahrestan and Province
- One map expert Per every 250 E.As

5.3.2.4. Number of Executive Organization Ranks at the Provincial Level

Position in the Census	Number
Members of Province's Headquarters (excluding manager and deputy manager)	253
Province's Census Implementation Manger	32
Province's Census Implementation Deputy Manger	32
In charge of Public Relations and Publicity	32
Incumbent of Financial Affairs and Auditor	32
Incumbent of Logistics and Administrative Affairs	32
In Charge of Transportation	32
In charge of Clerical Affairs and Typing	59
In Charge of Preparations	32
Police Contact Person	32
In Charge of Publicity	54
Accountant	32
Provincial Technical and Training Manager	34
Map Senior Expert	37

Position in the Census	Number
Map Expert	221
Geographic File Expert	32
Drivers of Province's Headquarters	435
Collective Households Enumerator	459
Collective Households Checker	118
Unsettled Households enumerator	141
Unsettled Group Expert	47
Unsettled Household Checker	47

5.3.2.5. Number of Executive Organization Ranks at Sub-provincial Level

Description		Number
The Household based on the 1390 Area	Total	20951957
	Urban	15385428
	Rural	5566528
Enumerator	Total	53707
	Urban	38781
	Rural	14926
Reserve (5%)		2685
Group Expert	Total	14062
	Urban *	9560
	Rural	4628
	Combined	162
Checker		13565
Checking Expert		3610
Technical and Executive Senior Expert		3610
Technical and Training Manager		595
Drivers		18960
Census Implementation Manager		397
Census Implementation Deputy Manager		397
Deputy Manager in Metropolitan City		10

Description	Number
Incumbent of Administrative and Financial Affairs	396
Police Contact Person	397
Incumbent of Public Relations	397
Incumbent of Logistics and Clerical Affairs	585

*Due to vicinity between some urban and rural E.As the enumeration of the rural E.As has been entrusted to the city group expert

5.4. General and Private Qualifications of the Census Executive Ranks

It is necessary to determine the general and private qualifications of the executive ranks prior to the census implementation with regard to its scope.

The census managerial ranks' qualifications usually consist of knowledge of the census literature, experience in the census implementation, ability to manage the subordinates, familiarity with the census technical concepts, and recognition of the area of the census implementation. The census executive ranks' private qualifications are assigned by the country's Census Headquarters in a booklet entitled Directions for the National Census of Population and Housing Implementation. To avoid any prolongation on the matter the above-mentioned points appear to suffice.

5.5. Sources for hiring manpower

The specialized and skilled employees from the Statistical Centre of Iran and from the Information and Statistics Office of the Provincial government organizations, and also universities and free labor forces have been involved in the census implementation. For enrollment and selection of the free labor force an online system at <http://s90.amar.org.ir> has been designed for all interested users willing to be engaged in this enterprise.

5.5.1. Internet System for the Executive Groups' enrollment

There are various expenditures for preparation of the executive ranks in such a great project including expenditure on training enumerators per man-hour, expenditure on providing the optical CDs, training textbooks, etc. Of course, to these should be added the expenditure on the higher ranks engaged in the census implementation and administration.

Around 53000 enumerators are engaged in the 1390 National Census of Population and Housing. Therefore, the cost on training this number of enumerators who will be involved in the future census implementation can be estimated by man-hour. Consequently, the idea of creating the enumerator's data bank for the surveys and censuses of the SCI was recommended so as to take an effective step to accelerate the efforts, saving the expenditures and to manage favorably those participating in surveys and censuses through designing electronic forms and creating personal data bank. To operationalize the idea, it is essential to create an appropriate and standard Data Bank: For enrollment of those willing to take part in the 1390 National Census of Population and Housing the Web System has been designed for the same consideration and for setting up the aforesaid Data Bank. Of course, it is evident that due to specific nature of the census activities, the face-to-face assessment should be made of the applicants for cooperation in the census in addition to using the Data Bank. In 1390, the activity has been done with a little delay which should be avoided in the next census.

5.5.2. The 1390 Census Identification Card

To prevent any misuse by swindlers and to attract the respondents' trust, identification cards have been designed for the executive ranks bearing the first name, surname of the executive ranks, national number, identification code and position of the individual in the census with photography and special hologram and the signature of the Census Implementation Manger in the Sub province.

The executive ranks' identification cards have been prepared in three colors.

- Orange for enumerators, group supervisors and map experts
- Yellow for checkers and senior checkers
- Green for map senior experts, experts

5.6. Insurance of the executive ranks

In the 1390 Census, all free executive ranks including enumerators, checkers, group experts, senior checkers, technical and executive senior experts and technical managers (totally 75000) have been insured. Other individuals invited to cooperate are under the coverage of their own related organizations.

5.7. Census' Credits and Expenditures

Credits allocated to the 1390 Census and 1388 and 1389 Pilot Censuses are exhibited in the table below:

Table 5.1. Credits and expenditures of the 1390 Census and 1388 and 1389 Pilot Censuses (Rials)

Year	Credits suggested	Credits approved	Description
1388	5,420,000	2,000,000	
1389	6,000,000	4,000,000	
1390	133,000,000	700,000,000	Miscellaneous independent line (expenditure credit)
1390	32,189,430	16,205,000	Miscellaneous independent line (Capital asset ownership credit)

In 1388 and 1389 no financial monitoring (Dispatch of financial inspectors to Provinces) was rendered due to the limited implementation and volume of credits. The Pilot Censuses were implemented after allocation of the related credits to the provinces concerned. However, under the organizing, executing and logistic group, the financial and administrative inspector has been anticipated and approved in the 1390 Census's Organizational Chart.

The sum of 210 billion rials has been allocated and received from the Treasury according to the 1390 Census expenditure credits miscellaneous independent line.

The sum of 5 billion rials has been allocated and received from the Treasury according to capital asset ownership credit miscellaneous independent line.

The sum of 4921168000 rials on account of the maps and supplies for demarcation of E.As has been allocated to provinces in two phases.

In Chapter 4 of the manual containing directions for administrative, financial and preparatory affairs and in forms prepared by the organizing and logistic group there are some points regarding the financial forms and instructions for completing them.

However, it seems unnecessary to mention the points again in this report.

5.8. Providing and distributing the Census's supplies

Considering the terminal objective of the 1389 Pilot Census that has been to extract the data in ICR method and the attempt has been made to use the consumer items such as forms 2,3, and 4 and the special pen to complete them in a way to lessen the problems for the character reader device, the type of correction fluid, and the same facilities for the operational teams as well as to prevent different tastes in various provinces, it was decided to provide the supplies for the Census in a centralized manner at the SCI to be forwarded to the provinces. This has been operationalized in 1390.

Chapter 6. Data Processing, Extraction and Dissemination

6. Data processing, extraction and dissemination

6.1. Technical Support

The 1390 National Census of Population and Housing Technical Support Committee was set up in 1388 to back up the data extraction stage technically. In compliance with IT Policy-making Council's Guidelines and data processing innovations, the Committee has taken the following measures:

- To prepare the Data Processing Site and to provide and equip the network and to estimate the electricity needed for the site
- To examine the Data Processing Site optical fiber connection and to determine the band width required for transferring ICR images between the Data Center and Data Processing Site. To assign the band width to be 10 megabytes per second to transfer the data between the Center and the Site. Also, to set-up Intranet (Local Internet) for Data Processing Site.
- To determine number of nodes required for stationing archivists, systems analysts and Data Processing Site Network supervisor and to dedicate 200 more nodes in addition to 350 nodes in the main hall, peripheral hall, server room and scanners room.
- To estimate the electricity to be consumed by Data Processing Site based on number of servers, computers, the network equipment and general consumption. The electricity needed for the Data Processing Site is estimated to be 430 Kilowatt totally.
- To examine UPS required for Data Processing Site and to receive the size and measures of racks containing UPS batteries.
- To arrange UPS and backup batteries (3 cabinets) together with standing power panel

- To estimate the cost of point-to-point and wireless connection between Data Processing Site and the SCI.
- To prepare IMAGE of softwares required for the Data Processing Site.
- To prepare Data Processing Site passive network.
- To prepare Internet service, band width and connections with Provinces and the SCI Data Center.
- Preparation, architecture and establishment of the security of the Server containing the Pilot Censuses Web Site.
- To carry out complementary expert studies and to estimate the budget for using Mobile Data Center.
- To determine the characteristics of the softwares required for data extraction site: servers, scanners, switches, routers, computers, other data storing facilities and to cooperate in determining general and particular characteristics and in tenders.
- To prepare PDAs and deliver PDA devices to the supervisors

Other services rendered in connection with the Technical Support Committee's functions

- To prepare the server dealing with the census documents management system stationed at the Data Center and to plan for the Census documents system training
- To prepare and deliver one server for testing the automatic editing.
- To prepare two ML570 servers to test the softwares
- To prepare backup file of the 2006 Census images for using SAN device
- To set up, back up and optimize the imputation server
- To examine the Census documents management system and to make arrangements for the system training
- To set up the Census Headquarters and training classes Site
- To prepare and set up the scanners for scanning the Census Forms

- To back up completely the Data Processing Site regarding hardware, installing operating system and the softwares required, virus finding and data storing and data security policies

6.2. Data Processing

6.2.1. Data Processing Methodology

- **1388 Pilot Census**

The first Pilot Census of the 1390 National Census of Population and Housing was simultaneously conducted in 30 Provinces in Aban, 1388 with enumeration of 25000 sample households selected from urban and rural E.As in all of the country's Provinces in order to evaluate the efficiency of the Forms designed for the Census.

- **The 1390 National Census of Population and Housing**

The 1390 Census data collection and processing methodology has been selected considering the findings of the two Pilot Censuses, combination of ICR technology and the Internet (stages of receiving the documents from the Sub-province's Technical Deputy, total country coding, and villages' final editing.

To test quick access to the results of the next Census in 1395, the data collection and processing method has been performed in three urban E.As (2 E.As in Tehran and 1 E.A. in Shahrestan of Asara in Alborz Province) using PDA devices.

- **The technologies used**

- Intelligent Character Recognition

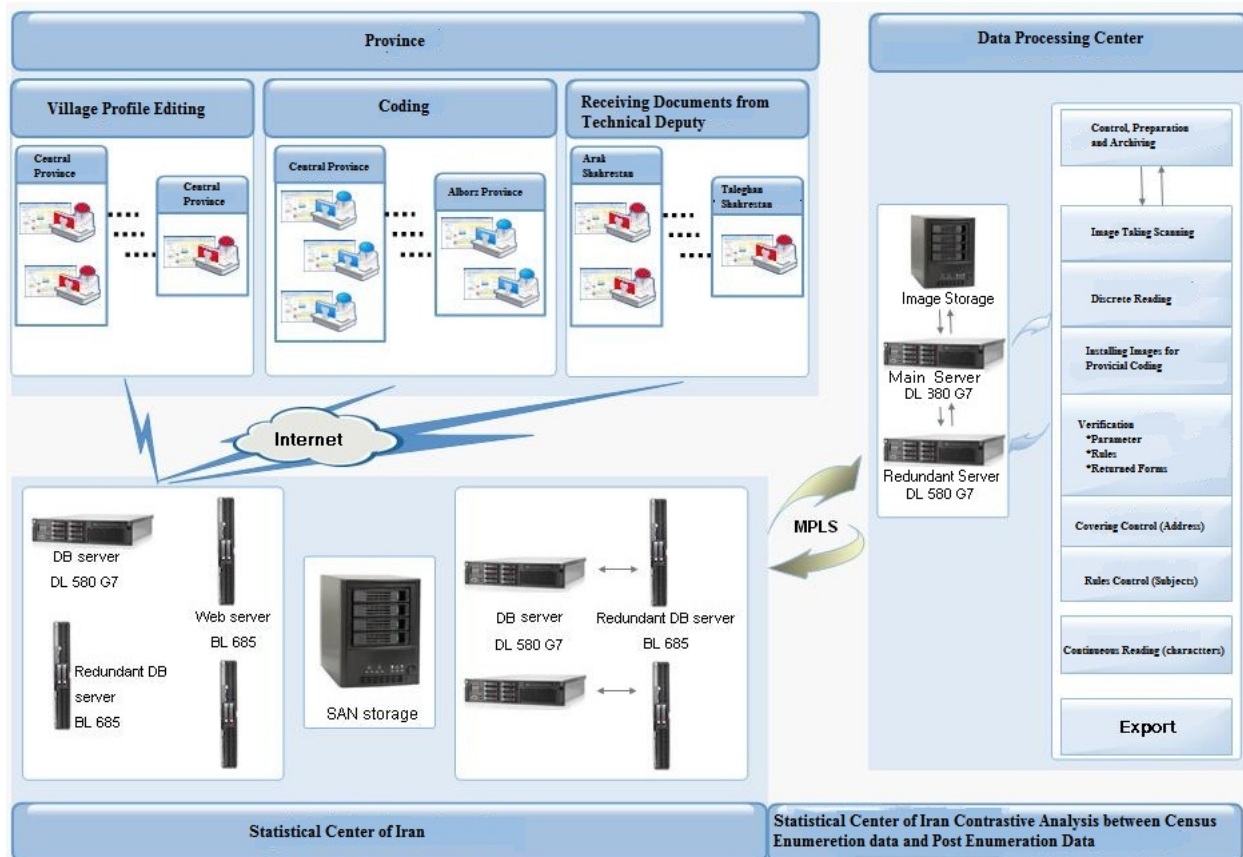
The ICR software identifies the images of the hand-written characters with a defined certainty and then turns them into data. This software is composed of the following stages:

- Taking the questionnaires' images (black and white with 200 dpi clarity) as system input
- Using ICR softwares for turning images into data
- Making corrections and storing in the related data bank
- Using management softwares to control the data processing

- Using data entry and control softwares in data processing
- Determinant factors in using ICR to obtain favorable results include:
 - The questionnaire's format and size
 - Arrangement of fields
 - Using self-code fields
 - High quality of printing
 - PDA (Personal Digital Assistant)
 - A pocket computer to be used for data adjusting and keeping. Data processing with PDA consists the following phases:
 - Data input and control softwares (data preparation, address editing and subject-matter editing)
 - Data reporting
 - Data backing up
- Determinant factors in using PDA to obtain favorable results include:
 - CPU speed
 - Screen size
 - Procedure for data input into the touch screen (using pen or finger blow)

6.2.2. Data Processing Implementation Architecture

- Data Processing System (enumeration and post enumeration) using ICR



- Architecture for 20 million household questionnaires in the 1390 Census
- The maximum data integrity with the existing system at the SCI (Geographic File System and Data Base for codes classification)
- All user interfaces displayed in Persian language
- The softwares required (scanner and server) were prepared apart from the available set at SCI
- Establishing the link with Management and Control System from work stations in remote connection
- Hardware/ software characteristics of the Data Processing Site facilities
 - Server characteristics:
 - OS: Windows 2008
 - DB: Sql server 2008
 - Hardware:

- HP Proliant DL580 G7
- HP Proliant DL380 G7 (Redundant)
- HP Proliant BL685c G7 (Web-server)
- Computer characteristics for operators:
 - OS: Windows XP
 - SW: Office 2003 , .Net FrameWork 3.5
 - Hardware :
 - M.B: GIGABYTE H61M-USB3-B3
 - CPU: Intel CI3 3.1 GHZ-2100
 - Ram: DDR3 2GB
 - H.D.D: 500GB SATA
 - Monitor: Sumsung BX1980N + LED
- PDA characteristics:
 - Device Name: HTC HD2
- OS: Windows mobile 6.5
- DB: Sql Compact Edition 2005
- CPU: Qualcomm Snapdragon QSD8250 1 GHz processor
- RAM: 448 MB
- ROM: 512 MB
- Resolution: 480* 800 pixel , 4.3 inch
- SD: 2GB
- GPS
- Battery: Standard battery, Li-Ion 1230 mAh, Up to 490 hours on alert

6.2.3. Preparation of software

The Census enumeration and post enumeration data processing using ICR and the related softwares.

The following modules have been implemented using C#VB. Net 2008 languages and SQL Server 2005 Data Bank:

- Image taking (scanning): preparing the image of the forms by Scanner device for subsequent processing phases
- Discrete reading: automatic extraction of characters from the images of the Census forms
- Continuous reading and automatic coding: automatic extraction of words form the images of the Census Forms and code assignment
- Verification (characters and rules): to examine the accuracy of data extracted from the Census Forms and to correct them if necessary
- Covering control: geographic coverage control of the work unit (E.A, sample cluster) and control of errors caused by inadequacy of E.As, missing blocks or villages, the Census Forms and the other errors of covering control
- Rules (subjects) control: to correct logical errors of the data of the questionnaires of a work unit based on subject-matter algorithm
- Management system: users management, work flow management, system adjustment, reports, transferring finalized data to the main bank (Export)
- **Census data processing through web-based systems**

The following modules have been implemented using C#, Java, ASP. Net, VB. Net 2008 languages and SQL Server 2005 Data Bank:

- Receiving documents from the Technical Deputy:
Inputting the data of the E.A. documents by the sub-provincial Technical Deputy
- Manual coding: dedicating a code from the standard classified set to the descriptive data
- Village editing: correction of logical errors of the villages' data

The Census Test System: administration of tests to the Census supervisors, enumerators, checkers, and Data Processing Site users.

This system has been run under Ω web using VB. Net 2008 language and SQL Server 2008 Data Bank.

Census Monitoring System

The data input system of the provincial supervisors' forms and receipt of reports required for the system has been run under Ω Web using C# 2008 language and SQL Server 2008 Data Bank.

▪ Periodical Data Dissemination System

During the Census implementation the following facilities have been provided to the users through this System:

Systems of Form 307 data input by provinces accessible at sub-provincial level in 3-day periods, receipt of country and provincial reports and the reports of Form 313 by the Census Headquarters' users, receipt of population estimation reports by the Census Bureau and receipt of Provincial reports by the supervisors of each province. The system has been run under Ω Web using V.B. Net 2008 and SQL Server 2008 Data Bank.

Structure of Forms' Information and Control Labels

A set of files required for production of forms and labels designed for controlling and preparing the Census documents have been created.

Census Data Processing using PDA

The following modules have been implemented using VB. Net 2005 language and SQL Compact Edition 2005 Data Bank:

- Data preparation and control of the data inputted
- Address editing
- Subject-matter editing
- Data reporting
- Data backup

Preparation of Manuals

- **Enumerator's manual**

Due to sensitivity of ICR technology to the quality of paper forms and the way the questions are to be answered, general points and recommendations for completing and keeping the Census forms (Form 2. The Household Questionnaire, Form 3. Institutional Household Questionnaire and Form 4. Village Profile) have been described in the enumerator's manual

- **Checker's manual**

With regard to importance and accuracy of the data resulting from the Census, a manual has been provided for the technical checker to correct the errors in preparation of documents and completion and packing of the forms.

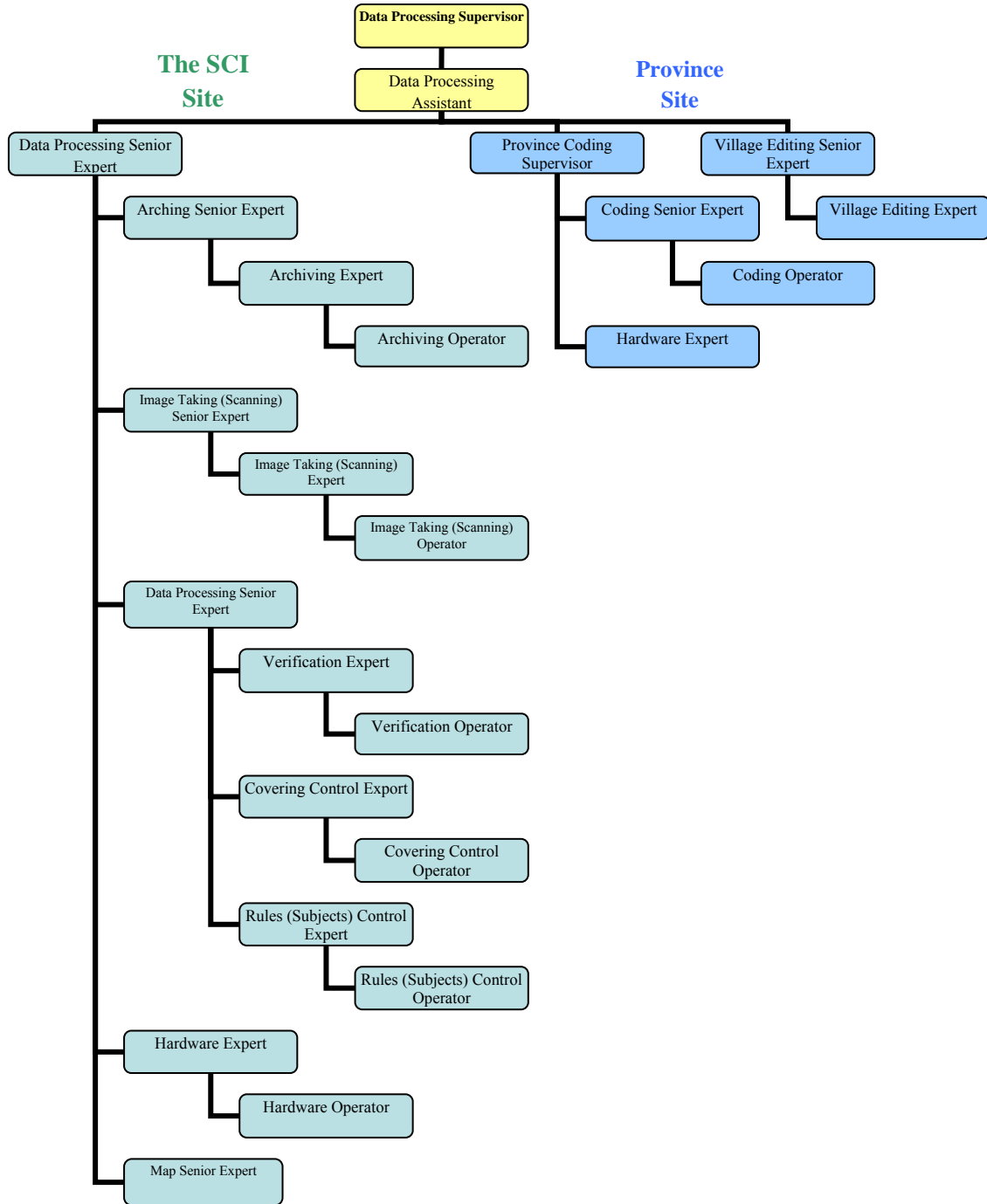
Archiving Manual

To facilitate access to any set of the classified documents in phases of the 1390 Census data processing operations which have been carried out in centralized manner at Tehran's Data Processing Site, and considering the volume of the documents, steps have been taken to provide archiving space and the racks required. The documents which are transferred from provinces to be put in the archive for the data processing phases are composed of the Census forms placed in the boxes. The necessary descriptions can be found in the manual regarding the archiving procedure, delivery of documents, operations of control and preparation of documents.

The Data Processing Softwares Manual

The manual containing instructions for the data processing stages (receipt of documents from the technical deputy, image taking (scanning), verification, covering control, subject-matter control and coding) in terms of the duties of aforesaid ranks has been prepared

6.2.4. Data Processing Implementation



**Data Processing Executive Organization Model
(centralized/ decentralized)**

6.3. Data Extraction and Dissemination

6.3.1. Data Extraction Architecture (imputation and tabulation)

The data extraction phase is one of the last phases in the Census implementation the results of which are of prime importance. The activities dealing with this phase have been started since 1390 summer. This phase includes two main operations, imputation and tabulation implemented respectively. The imputation operations have been implemented in the following three areas:

- The enumeration machine editing operations
- Post enumeration machine editing operations
- The census automatic editing operations in Fellgi-Holt method

The Net technology has been used to implement machine editing algorithms in the Census enumeration and post enumeration. Meanwhile, the Sharepoint technology is used in test and display of the reports. The Census automatic editing operations are, too, implemented using the net technology.

The tabulation operations implementation occurs after the completion of the Imputation and Editing Group's activities. For this purpose, the data storage technologies, OLAP and ETL are used to build the Facts and Dimensions tables, the Microsoft reporting technology, Report Builder to build reports, and Share point to display and issue reports in Excel Format. After this phase and confirmation of results of tabulation, the results will be displayed at the SCI's site in Excel Format.

6.3.2. Preparation of Imputation Operations Software

One of the major issues in censuses and surveys is incorrect data and non-response. This may occur during enumeration stages, the individuals' response and data processing. Therefore, it is necessary to reduce effects of the errors caused by these stages so as to correct the errors about the household's member or members using the available information. This purpose can be achieved by imputation and editing operations based on special algorithms. The two Fellgi and If-Then-Else methods have been employed in the

1390 Census. In If-Then-Else method for imputation of each column a flow chart is designed and implemented with the software considering importance and effects of the various items in the post enumeration form. This method has been widely used for the first time in the 1385 Census. The same method has been employed in the 1389 Pilot Census and 1390 Census's enumeration and post enumeration. In Fellgi method, only 4 main columns of "sex", "relationship to the head of the household", "age" and "marital status" are corrected. In this method, the experts may design an editing matrix by which, and considering the similar households in the same Shahrestan, the values with errors could be improved. This method will be used and implemented only for the 1390 Census. The softwares designed in both methods are introduced as follows:

A. If-Then-Else Edit Software

Due to the nature of the operations in the imputation process of the Census enumeration and post enumeration, the design of the If-Then-Else Software enjoys the same structure for both enumeration and post enumeration and the main difference lies in primary data and the implementation area. Because of the larger volume of data in the census enumeration, the imputation operations are fulfilled at provincial level but in post enumerations at total country level. The If-Then-Else is made up of the following components

- User graphic interface for test of softwares and algorithms
- Imputation operations:

Therefore, in general implementation of the program a particular order has been employed in operations for each column. Other characteristics of the program include:

- Imputation operations for all information within the form.
- Column-major imputation operations
- The program implementation after its sudden stop, on the continuation of the data not imputed

- The possibility of returning the data to the primary situation and to implement the program again
- **Database Preparation**
- **Reports**

During the program implementation, the complete data of any change will be kept in the database. After the end of imputation operations, the partial report of all errors in case of the individual and housing and also the report of frequency of errors in province and Shahrestan will be presented on Sharepoint Portal. These reports will be prepared using the Microsoft Report Builder technology and displayed on Sharepoint Portal. This technology facilitates exporting of the reports to the favorite formats of Excel, Word, and pdf.

Software and Hardware Platforms

In view of the fact that the software is designed based on the Net technology, the Net 3.5 environment is needed for its implementation. Also, the Sharepoint Server of the Center's Portal has been used in testing and reporting phases whereas the SQL Server 2008 R2 is needed as Data Bank.

In case of the hardware, with regard to the difference in number of households involved in the enumeration and post enumeration, the number of servers dedicated to the census imputation will increase and as such the data of one or more provinces will be placed on the server.

B. Automatic Editing Software

This software imputes the data automatically with the help of input data matrix. In fact, a matrix is prepared based on the relations between the questionnaire items and then with multiplication of the data by the edit matrix the error records are identified and in the next phase error households are detached from errorless households and error values are corrected using the values of similar households in the same Shahrestan. Considering the household's size and geographical area, for each error household a number of errorless households similar to the error

households are selected and then the error items are imputed based on the most similar household's items so that the least change occurs in correcting the error households. The software is composed of the following components:

- User graphic interface for the software implementation:
 - Imputation operations implementation:

This is fulfilled with the use of net technology and C# language. The program will be implemented in provinces separately and Shahrestan by Shahrestan. The program's structure is composed of functions with the following applications:

 - To measure the distance between error households and errorless households
 - To measure the least distance
 - To measure all sub-sets of the household's error set
 - Replacement of the least number of accurate values from donor household in candidate household
 - Database preparation: Reports
 - **The Software and Hardware Platforms**

In view of the fact that the implementation of this method has continued to this data, the configuration of the server required has not been designed yet.

6.3.3. Preparation of Tabulation Operations Software

In the 1388 and 1389 Pilot Censuses, the data storage tools have been used. In the 1388 Pilot Census taken by mail, internet and questionnaire, the analytical reports of the tables have been extracted. Whereas in the 1389 Pilot Census the reports have been designed with a more integrated structure benefiting from the preceding census's experience. To overcome the problems in the 1390 Census, the Microsoft Report Builder technology will be employed in addition to data storage tools. With

its high flexibility in designing, this technology provides the ground for extracting the reports in a format with the maximum closeness to the format expected. Finally, the reports prepared will be presented on the Sharepoint server in order to be reused by the users without any need for exporting the reports to the Excel format.

Identification of Data Storage Technology

The data storage is a database which is used for reporting and analysis. The data stored in storage will be fetched from operational data sources. These data may go through various processing stages to obtain appropriate quality and format.

General characteristics of these systems are:

Integrated, centralized, large, archived, aggregated, time-based, nonvolatile, and subject-oriented.

- **Software and Hardware Platforms**

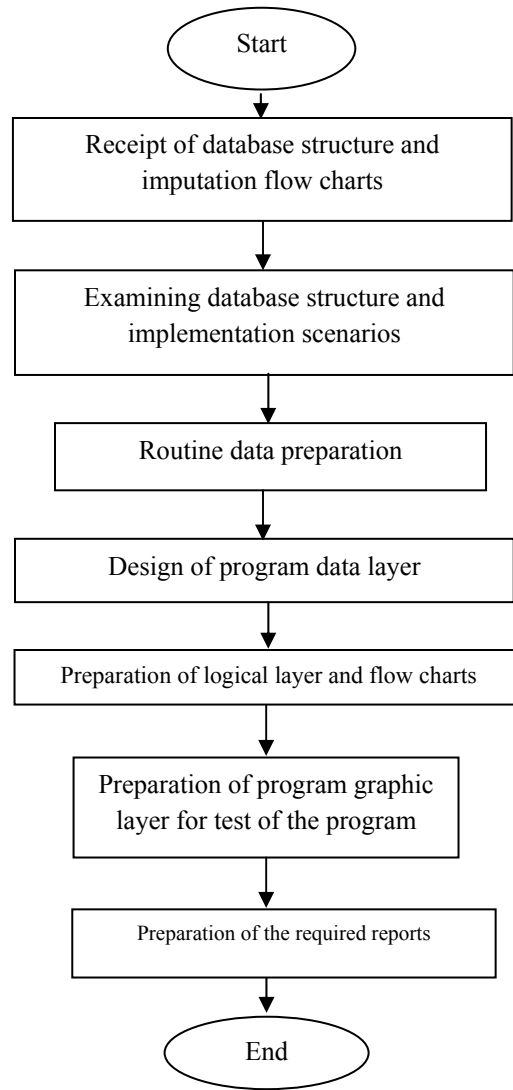
In preparing the logical layer of the reports and producing facts and dimensions tables, the Java Virtual Machine is needed for the software used. Also, the Sharepoint server of the SCI's Portal will be used in displaying the reports.

All designing stages will be performed on the same servers on which the imputation stage has been carried out without any need to prepare other servers.

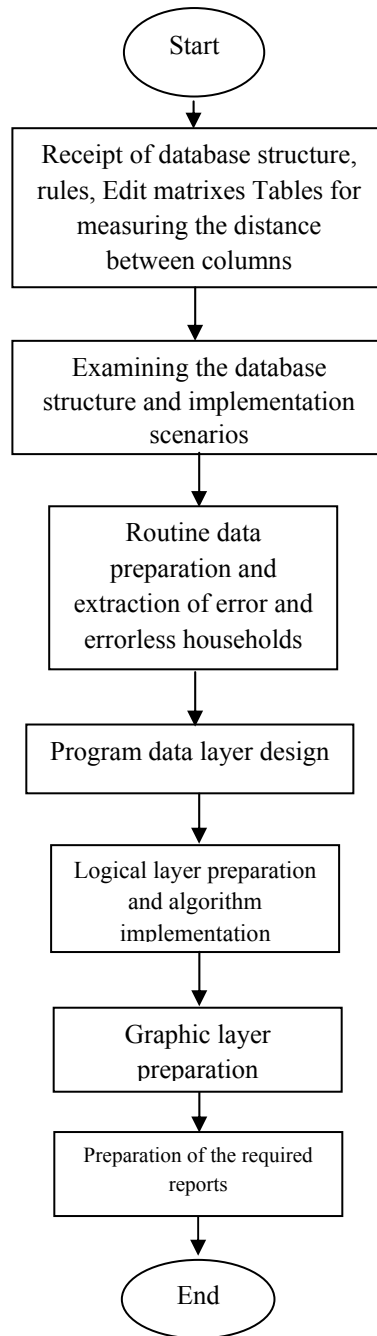
6.3.4. Extraction Stages implementation (Imputation and Tabulation)

The Census data extraction is implemented in the two stages of imputation and tabulation. In postenumeration only imputation stage is performed. In continuation, the work flow of each stage has been described.

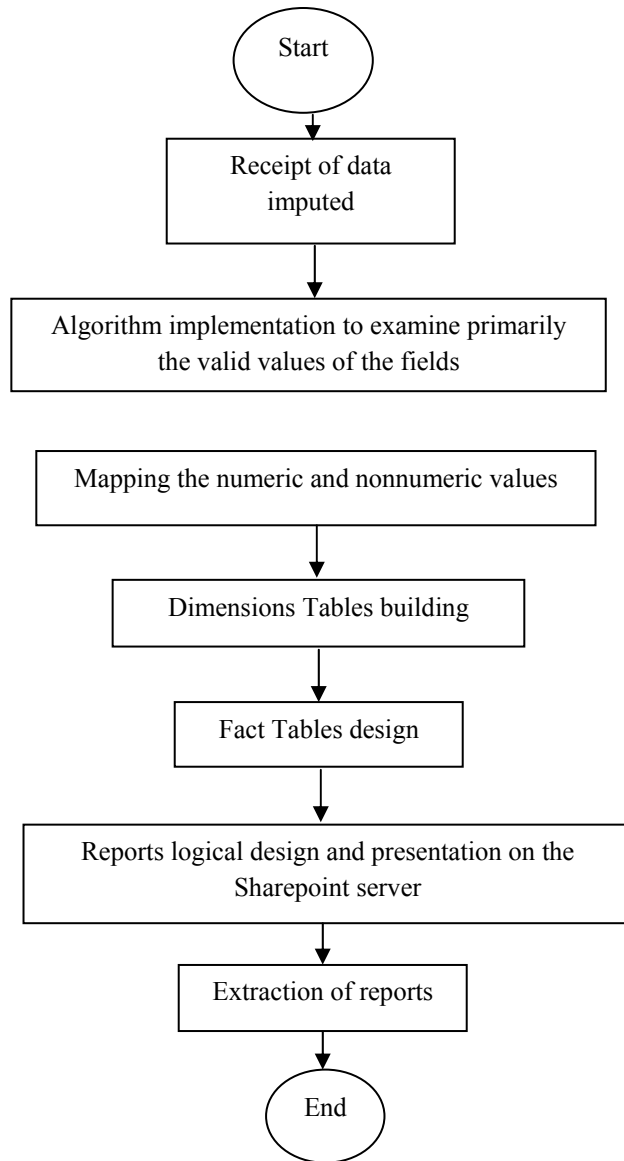
A. If- Then-Else Work Flow



B. Automatic Edit Work Flow



C. Tabulation Work Flow



6.3.5. Information Dissemination

The last phase of data extraction is presentation of the results. After implementation of imputation and tabulation phases, the tables generated on the web (Export to the Excel format possible) are submitted to the Tables Committee for examining the results. After approval of the results, the reports presentable in Excel format will be placed in the National Portal of Statistics and also presented for production of the statistical issues, of course, taking a longer time.

6.4. Conclusion

Findings

One of noticeable points in the 1390 Census is quick information dissemination using the existing facilities. Mobile phone is the most accessible and fastest tool in information dissemination. For this reason, message transmission system has been applied in various phases of the Census such as:

- Dispatching the results of various stages of enrollment and training of the executive groups
- Identification of the enumerators:
 - Setting up more than 100 message numbers for the public.

Chapter 7. Monitoring

7. Monitoring

The concern of the Census monitoring is to see if the Census has been able to achieve its objectives in compliance with the related standards, to control the trend of various Census activities and to provide the appropriate managerial information to the managers of various ranks in the Census Organization.

In implementation of various stages of the Census, numerous factors may affect its quality. To identify such factors and to attempt to keep the strong points and eliminate the weak points will improve the Census quality.

In the design of the Census monitoring, a particular attention has been paid to a certain number of census activities because of their importance in achieving the objectives and their tendency to various errors and accordingly some forms and manuals have been prepared to control the errors.

7.1. The Monitoring Executive Organization

With regard to the executive organization, the monitoring of the 1390 Census has been conducted in the following two methods:

Inter organizational Monitoring:

This monitoring includes all managerial ranks of the Provincial Census Organization,

Extra organizational Monitoring:

This monitoring is designed so as to monitor and evaluate the work flow in the Census's Executive Organization from the highest to the lowest ranks starting from the preparatory activities phase ending in post enumeration phase. The extra organizational monitoring is performed by the technical supervisors.

Total number of extra organizational supervisors in the 1388 Pilot Census are 30 persons and the monitoring is composed of three phases, the first phase taking 4 days to monitor manpower hiring and training, the second and third phases lasting 5 and 6 days respectively to monitor field operations and data input, totally 15 days.

The second Pilot Census of 1390 Census has been conducted in Aban, 1389 in 5 provinces of the country (Tehran, Bushehr, Kerman, East Azarbayejan and Kermanshah). After planning for the activities and training the supervisors, the Monitoring and Evaluation Group has acted to dispatch 5 supervisors to 5 provinces. These supervisors have monitored various phases of training, hiring manpower, field operations (enumeration and verification) and postenumeration.

Total number of extra organizational supervisors in the 1390 Census are 42 persons and the monitoring is composed of six phases, the first phase taking six days to monitor logistics, publicity, hiring manpower, training, and the second phase taking seven days to monitor logistics, publicity and training (third phase), the third phase lasting eleven days to monitor logistics, field operations and verification, the fourth phase lasting five days to monitor publicity and field operations, the fifth phase to monitor field operations and verification and the six phase to monitor the postenumeration, totally 41 days.

7.2. The 1388 Pilot Census

7.2.1. Phases to be tested

In order to monitor all phases of the 1388 Pilot Census, six forms have been designed.

7.2.1.1. Manpower hiring

7.2.1.2. Training

7.2.1.3. Field Operations

A. Field operations in urban areas: self-enumeration and Internet

B. Filed operations in urban areas: mail

C. Filed operations: face-to-face interview

7.2.1.4. Data input and verification

7.2.1.5. Evaluation of Provinces and executive ranks

7.2.2. Methods for completing the monitoring forms and reporting

As already mentioned, in the 1388 Pilot Census, 6 forms have been designed for the monitoring. The supervisors have used PDA device to register and present their monitoring reports. When testing the application of PDA, they have benefited from its advantage in monitoring phase.

7.3. The 1389 Pilot Census

7.3.1. Phases to be tested

7.3.1.1. Training methodology (classroom training and E-learning)

7.3.1.2. Teaching methodology (using slides and text reading)

7.3.1.3. Design of the test items

In the Opinion Poll the classroom participants in five provinces are asked if they see the match between the test questions and materials taught and the test questions effective in the aptitude evaluation. The results have indicated that 63.7 percent of the participants have found the test questions to be in match with the materials taught and 83.4 percent have found them effective in aptitude evaluation. Thus, it can be concluded that the test questions have been properly designed.

7.3.1.4. Implementation methodology (individually and collectively)

7.3.1.5. Work load estimation

7.3.1.6. Executive organization

7.3.1.7. Notice card for the absent household

7.3.1.8. Certificate for the Census termination

7.3.1.9. The questionnaire items (in terms of household and enumerator)

7.3.1.10. Publicity and data dissemination methodology

7.3.1.11. Map

7.3.2. Methods for completing the monitoring forms and reporting

Considering the experiences gained in the first Pilot Census of the 1390 Census and potentiality of PDA device, the monitoring work has been done easier and better than the preceding year by designing a limited number of monitoring forms. Therefore, two out of six designed forms have also been designed in PDA with the reports dispatched by the supervisors in the two ways:

1. SMS
2. Receipt of sdf information files

7.4. Monitoring phases of the 1390 Census

In order to monitor all the Census's phases, 2 forms (701 and 702) have been designed and the items intended by the Census Group within the frame of 98 activities inside one form and a number of the Listing's errors inside another form as well as all errors that might occur in the household's questionnaire and post enumeration questionnaire have been taken into consideration. The major monitoring phases are described as follows:

7.4.1. Manpower hiring

To monitor the manpower hiring and the quality of the manpower hired it has been studied to see if the executive organization and characteristics of the ranks predesigned in the Census Organization Chart have been realized.

7.4.2. Training

Holding timely training courses, setting training program according to training syllabus, timely implementation of pilot-run field operations, holding tests, opinion poll and the instructor's evaluation of the classroom participants.

7.4.3. Publicity

Preparation and installation of the educational placards, the headquarters' banners and placards, holding news conference, information dissemination through the press, holding the Census opening ceremony, holding opinion poll of the public by publicity operator.

7.4.4. Logistics

Timely distribution of training materials composed of manuals, auxiliary training facilities (films and simulation forms) and equipment for the training classes.

7.4.5. Field Operations

The enumerator's performance in asking questions of the household, the procedure for completing the forms, giving certificate to the household in the end of the Census enumeration, using the absent household's notice card and controlling the technical points of the manuals.

7.4.6. Verification

The forms verified and the procedure for packing them

7.4.7. Postenumeration

Proper identification of places in post enumeration areas, of the household's place of usual residence and of the individuals and households entering and leaving

7.4.8. Evaluation of Provinces

During their presence of 41 days in provinces, the supervisors will monitor the implementation of the Census in all stages, give reports and evaluate the Province's performance in 6 phases.

In monitoring phase lasting from 5 to 11 days, the supervisors entering the Monitoring System will act to examine online the items in question in either phase and then insert the results into the system.

7.5. Monitoring and Reporting Methods

As mentioned earlier, in monitoring the Census implementation, the supervisors will dispatch their reports online through the Monitoring System designed under Web. The tables extracted from the supervisors' reports in short response, and detailed response and provincial evaluation will be seen and followed up by the heads and supervisors of the related groups.

7.6. The Monitoring Results of the 1390 Census

The experiences gained in the preceding censuses prove that the occurrence of non-sampling errors is more probable in field operations than the other phases. In this phase, due to the broad geographical scope of the Census and benefiting from the unemployed individuals for collecting the data on one hand and high probability of occurrence of the respondent's errors on the other hand and also the limited time for data collection, identification of the errors and their sources is of prime importance and directly effective in the Census' Results. Therefore, the supervisors' reports will, in addition to their being of interest to the managers and planners for the future rounds, prevent wasting human and physical resources which are consumed for this enterprise. During the Census implementation monitoring, the factors affecting the quality of the work can be identified and by keeping the strong points and eliminating the weak points, the ground for improving the Census quality will be provided.

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