



CHAPTER 3



CHAPTER - 3

FUZZY ANALYSIS OF PROBLEMS OF URCS USING SFCMs AND SFRMs MODELS

In this chapter, we use the new super fuzzy models introduced in chapter two of this thesis to study the URCS problems. This chapter has six sections. Section one gives a brief introduction about the problem and the questionnaire. Section two gives the brief description of the questionnaire. Section three describes the objectives developed in the questionnaire. Section four gives justification for choosing this new model. In section five DSFRMs model is used in the study of the URCS problems. The final section gives conclusion of the study carried out using DSFRMs model.

3.1 INTRODUCTION

After having got the new and a very special type of questionnaire with objective type of answers filled in by over 100 rural students from city colleges, we use them as experts opinion in the super fuzzy models to arrive at the conclusions.

At the outset we make the following observations:

- (i) From the analysis of the filled in new questionnaire, we found the problems of URCS is related to teachers, parents, management and the government.
- (ii) From the collected data we form the attributes related to teachers, students, managements, parents and the government.
- (iii) From the data we obtain the interrelation between the
 - a. students and teachers
 - b. students and management
 - c. students and parents
 - d. students and government,

which discuss about the problem derived from the analysis of the questionnaire. Section three describes the objectives from the questionnaire.

We have selected only those attributes related to students, teachers, parents, management and government which repeated in majority of the answers in the questionnaire. This was the way the attributes were chosen.

This ingenious method was adopted by the following analysis:

From the questionnaire if a student says for instance a teacher is not proper and if more than 60% of the answers record them, then we give the value 1 as the answer can be one of the four 'yes' or 'no' or 'to some extent' or 'to a large extent'.

If it is 40% or less than 40% we put 0.

If students answers are divided into more than two answers and if they are contradictory that is some value is less than 60 and the regulation greater than 40 then we give -1 ; i.e., it is like decrease in 60% on one side increases the 40% on the other side so by the usual cognitive analysis we give the value -1 .

Using this way of association, we obtain the DSFRMs matrix of the URCS problem.

We have used this new technique of getting the very dynamical system from the objective type of this new questionnaire.

Because of this technique, we give uniform weightage and do not require an expert to give the DSFRMs dynamical system.

Further this is new and an ingenious way of using the data to build this specific super model without using the experts opinion but use only the very collected data.

At the outset, we first justify why we have made this innovative method. We have in DSFRMs at least more than two blocks of FRMs so we

need two experts opinion. In general an expert who gives the expert opinion of students versus teachers may not be in a position to give the expert opinion of students versus parents in such a case we should atleast have two experts but the domain space remains the same further we wish to record that the students parents relation cannot be given by any one expert the student and his / her parent and we are not in a position to say how many experts can be used and how many such dynamical systems should be used to analyse the data. For the more experts to we use, the more we introduce arbitrariness.

To overcome all these arbitrariness, we found it deem fit to get a single DSFRMs model which is only based on the collected information from the objective new questionnaire.

At the outset, we have justified our new approach of getting the very model by using the response from the objective questionnaire.

3.2 BRIEF DESCRIPTION OF THE QUESTIONNAIRE

To know about the students problems we finally set a objective type of questionnaire. The URCS suffer due to the cultural difference between the rural life and the city life. The main problem is the classes are conducted in English and they have studied in Tamil medium so they feel a rude shock as they are not able to follow the lectures. Secondly most of them are incapable of speaking or writing even a single statement in English. The unfriendly attitude of the city students adds insults and injury to their sufferings.

We briefly describe the questionnaire.

It consists of six parts.

In Part I a brief particulars about the student's family back ground and his/her personal data is asked.

In Part II attributes about her / his personality is asked in the following way.

Which of the following nature you think you belong to

	Yes	No	To some extent	to a large extent
(i) Self confident	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(ii) Easily angered	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(iii) Patient	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(iv) Good communication skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(v) Inferiority complex	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(vi) Motivated	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(vii) Punctual	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(viii) Regular	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(ix) Hardwork	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(x) Interested in studies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(xi) Lazy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(xii) Proud	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(xiii) Indifferent	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(xiv) Playful	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(xv) Easily offended	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Part III consists of the nature of their teachers as perceived by them (URCS).

	Yes	No	To some extent	to a large extent
(i) Approachable to URCS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(ii) Unapproachable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(iii) Does not know the subject	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(iv) Punctual to class	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(v) Motivates students	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(vi) Takes special care of URCS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(vii) Clears doubts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(viii) Inculcates self confidence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Yes	No	To some extent	to a large extent
(ix) Insults the URCS students in class	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(x) Good in the subject	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(xi) Individual attention is given to every student	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(xii) Indifferent to URCS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(xiii) Whiles away the time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(xiv) Partial	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(xv) Impartial	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(xvi) Cannot command the class	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(xvii) Pampers rich students in the class	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Part IV The nature of the management versus URCS students

	Yes	No	To some extent	to a large extent
(i) Money motivated	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(ii) Indifferent to URCS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(iii) Autocratic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(iv) Encourages URCS with special classes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(v) Punishes URCS for not paying fees in time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(vi) Insults URCS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(vii) Motivates URCS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(viii) Special coaching in given to them (URCS)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(ix) Takes special care to develop communicate skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(x) Ignores the URCS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Part V Next we give the special features associated with the parents.

	Yes	No	To some extent	to a large extent
(i) Poverty (under employment / unemployment of parents)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(ii) Feels education is a waste	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(iii) Encourages the passion of us	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(iv) Forces a course of study on us	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(v) Indifferent to our aspirations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(vi) Quarrels and alcoholic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(vii) Insults us	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(viii) Spoils by pampering	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(ix) Kind and loving	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(x) Wants us to do work all the time no play	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(xi) Sick in bed so cannot help us	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Part VI Finally we give the attributes related with the government in the final part.

	Yes	No	To some extent	to a large extent
(i) Government must give scholarship in time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(ii) Free us from paying all fees except the special fees	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(iii) Conduct communication skill classes in our schools	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Yes	No	To some extent	to a large extent
(iv) Improve our English skills in class or give employment preference to students studying in Tamil medium in this state.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(v) Abolish semester system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(vi) Free books and note books be given to URCS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(vii) Free hostel and good food	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(viii) Govt. is indifferent to our needs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(ix) Govt. encourages only city students and those good in English	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(x) Govt. is unconcerned about URCS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Finally any other information they have in mind can be given.

3.3 DESCRIPTION OF THE OBJECTIVES AS DEVELOPED FROM THE QUESTIONNAIRE

We have obtained the following observations from the elaborate analysis of the filled in, new questionnaire.

At the outset the answers clearly reflected the problems of URCS are not solely dependent on their poverty and rural set up, but their problems heavily related with their teachers, management, government and their parents. So we would be giving the attributes;

- (i) related with URCS studying in city colleges
- (ii) the teachers who teach them
- (iii) the direct impact of the management on these URCS

- (iv) their parents ignorance also contribute to the problems of these students.
- (v) the government policies which are not URCS supportive.

We describe the attributes on these five sets of people as taken only from the new questionnaire in a line or two.

Description of the attributes related with the students who are from rural area and studying in city colleges.

Let us denote it by S_1, S_2, \dots, S_8 where

- S_1 - Self confidence
- S_2 - Communication skills
- S_3 - Irregular to class
- S_4 - Punctual to class
- S_5 - Inferiority complex
- S_6 - Motivation
- S_7 - Hard work
- S_8 - Interested in studies.

These eight attributes are only from the new objective questionnaire which is self explanatory and further these have been derived or selected after a complete scrutiny of the filled in questionnaire.

Now we proceed onto describe the attributes associated with teachers of city colleges T_1, T_2, \dots, T_{12} ;

- T_1 - Motivates students
- T_2 - Takes special care of URCS
- T_3 - Punctual to class
- T_4 - Individual attention is given to each and every student
- T_5 - Clears doubt
- T_6 - Approachable by URCS
- T_7 - Inculcates self confidence

- T₈ - Irregular to class
- T₉ - Indifferent to URCS
- T₁₀ - Unapproachable
- T₁₁ - Do not know the subject
- T₁₂ - Insults URCS in the class room.

Now we describe the attributes related with the management. Let M₁, M₂, M₃, ..., M₇ be attributes related to management which have been chosen from the questionnaire as they have received over 60%.

- M₁ - Encourages the URCS
- M₂ - Insults these students
- M₃ - Indifferent about them
- M₄ - Takes special care to develop communication skills in English
- M₅ - Special coaching class is given to them
- M₆ - Motivates and channelizes them to studies and hard work
- M₇ - Punishes them if they take leave or delay in paying fees.

Now we describe the mainly mentioned attributes related with the parents of these students.

We denote the attributes related with their parents by P₁, P₂, ..., P₈;

- P₁ - Encourages the passion of their child
- P₂ - Forces a course of study on them
- P₃ - Quarrel and Alcohol dominates the home atmosphere
- P₄ - Insults the child
- P₅ - Spoils by pampering
- P₆ - Feels education is a waste
- P₇ - Poverty
- P₈ - Indifferent to the child's aspirations

Most of the attributes are self explanatory.

Finally we describe the attributes selected by the students in their questionnaire about the government.

- G₁ - Indifferent to URCS
- G₂ - Free hostel with good food
- G₃ - Free classes to develop communication skills
- G₄ - Encourages city people
- G₅ - Government courses of study and teaching methods help URCS also
- G₆ - Only special fees no other fees to be paid by URCS
- G₇ - Scholarship should reach within three months of joining the college.

3.4 JUSTIFICATION FOR CHOOSING NEW DSFRMs MODEL

This questionnaire was filled by over 100 URCS. We as said earlier used a new mode to use these answers themselves as the experts opinion in the construction of the dynamical system of the model. We found all possible relations of these students with teachers, parents etc., and the said problems when it was answered by over 60% we took that as the attribute of the model otherwise we did not take it.

Thus the problem of URCS is not the one related with them alone but it was related with parents, teachers management and the government. So we are justified in using DSFRMs model described in chapter 02 of this thesis.

3.5 USE OF DSFRMs MODEL TO STUDY THE URCS PROBLEMS

We give the super row matrix of the DSFRMs model using all the filled in questionnaires.

Let S_D denote the super row matrix which serves as the dynamical system of the DSFRMs model.

$$S_D = \begin{matrix} & T_1 & T_2 & T_3 & T_4 & T_5 & T_6 & T_7 & T_8 & T_9 & T_{10} & T_{11} & T_{12} \\ S_1 & \left[\begin{array}{c} 1 \\ 0 \\ 0 \\ 1 \\ -1 \\ 0 \\ 1 \\ 1 \end{array} \right. & \left[\begin{array}{c} 1 \\ 1 \\ -1 \\ 0 \\ -1 \\ 1 \\ 1 \\ 1 \end{array} \right. & \left[\begin{array}{c} 0 \\ 0 \\ 0 \\ 1 \\ 0 \\ 1 \\ 1 \\ 1 \end{array} \right. & \left[\begin{array}{c} 1 \\ 1 \\ -1 \\ 1 \\ 0 \\ 1 \\ 1 \\ 1 \end{array} \right. & \left[\begin{array}{c} 1 \\ 0 \\ 0 \\ 1 \\ 0 \\ 1 \\ 1 \\ 1 \end{array} \right. & \left[\begin{array}{c} 1 \\ 1 \\ 0 \\ 0 \\ -1 \\ 1 \\ 1 \\ 1 \end{array} \right. & \left[\begin{array}{c} 1 \\ 1 \\ 0 \\ 1 \\ -1 \\ 1 \\ 1 \\ 1 \end{array} \right. & \left[\begin{array}{c} -1 \\ 0 \\ 1 \\ 0 \\ 1 \\ 0 \\ -1 \\ -1 \end{array} \right. & \left[\begin{array}{c} -1 \\ 0 \\ 1 \\ -1 \\ 1 \\ -1 \\ -1 \\ -1 \end{array} \right. & \left[\begin{array}{c} 0 \\ -1 \\ 0 \\ -1 \\ 1 \\ -1 \\ -1 \\ -1 \end{array} \right. & \left[\begin{array}{c} 0 \\ -1 \\ 0 \\ 0 \\ 1 \\ 0 \\ -1 \\ -1 \end{array} \right. & \left[\begin{array}{c} 0 \\ -1 \\ 0 \\ 0 \\ 0 \\ 0 \\ -1 \\ -1 \end{array} \right. & \left[\begin{array}{c} -1 \\ -1 \\ 1 \\ -1 \\ 0 \\ -1 \\ -1 \\ -1 \end{array} \right. \end{matrix}$$

$$\begin{matrix} M_1 & M_2 & M_3 & M_4 & M_5 & M_6 & M_7 & P_1 & P_2 & P_3 & P_4 & P_5 & P_6 & P_7 & P_8 \\ \left[\begin{array}{c} 1 \\ 0 \\ 0 \\ 1 \\ -1 \\ 1 \\ 1 \\ 1 \\ 1 \end{array} \right. & \left[\begin{array}{c} -1 \\ -1 \\ -1 \\ 0 \\ 1 \\ 0 \\ 0 \\ 0 \\ 0 \end{array} \right. & \left[\begin{array}{c} -1 \\ 0 \\ -1 \\ 0 \\ 1 \\ 0 \\ 0 \\ 0 \\ 0 \end{array} \right. & \left[\begin{array}{c} 1 \\ 1 \\ -1 \\ 1 \\ 0 \\ 1 \\ 1 \\ 1 \\ 1 \end{array} \right. & \left[\begin{array}{c} 1 \\ 1 \\ -1 \\ 0 \\ -1 \\ 1 \\ 1 \\ 1 \\ 1 \end{array} \right. & \left[\begin{array}{c} 1 \\ 1 \\ -1 \\ 1 \\ 0 \\ 1 \\ 1 \\ 1 \\ 1 \end{array} \right. & \left[\begin{array}{c} -1 \\ 0 \\ 0 \\ 0 \\ -1 \\ -1 \\ 0 \\ 0 \\ 0 \end{array} \right. & \left[\begin{array}{c} 1 \\ 1 \\ 0 \\ -1 \\ 0 \\ 1 \\ 0 \\ 0 \\ 0 \end{array} \right. & \left[\begin{array}{c} 0 \\ -1 \\ -1 \\ -1 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{array} \right. & \left[\begin{array}{c} -1 \\ 0 \\ -1 \\ -1 \\ -1 \\ -1 \\ 0 \\ 0 \\ 0 \end{array} \right. & \left[\begin{array}{c} 0 \\ -1 \\ -1 \\ -1 \\ 0 \\ -1 \\ 0 \\ 0 \\ 0 \end{array} \right. & \left[\begin{array}{c} -1 \\ 0 \\ -1 \\ 0 \\ -1 \\ 0 \\ -1 \\ 0 \\ -1 \end{array} \right. & \left[\begin{array}{c} 0 \\ 0 \\ -1 \\ -1 \\ 0 \\ -1 \\ 0 \\ -1 \\ 0 \end{array} \right. & \left[\begin{array}{c} 0 \\ -1 \\ -1 \\ 0 \\ 0 \\ 0 \\ 0 \\ -1 \\ -1 \end{array} \right. & \left[\begin{array}{c} -1 \\ 0 \\ -1 \\ 0 \\ -1 \\ 0 \\ -1 \\ 0 \\ -1 \end{array} \right. \end{matrix}$$

$$\begin{matrix} G_1 & G_2 & G_3 & G_4 & G_5 & G_6 & G_7 \\ \left[\begin{array}{c} 0 \\ 0 \\ 1 \\ 0 \\ -1 \\ 0 \\ 0 \\ 0 \\ 0 \end{array} \right. & \left[\begin{array}{c} 1 \\ 1 \\ 0 \\ 1 \\ 0 \\ 1 \\ 1 \\ 1 \\ 1 \end{array} \right. & \left[\begin{array}{c} 1 \\ -1 \\ -1 \\ 1 \\ 0 \\ 1 \\ 1 \\ 1 \\ 1 \end{array} \right. & \left[\begin{array}{c} 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{array} \right. & \left[\begin{array}{c} 0 \\ 0 \\ -1 \\ 1 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{array} \right. & \left[\begin{array}{c} 0 \\ 0 \\ -1 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{array} \right. & \left[\begin{array}{c} 1 \\ 0 \\ 0 \\ 0 \\ 0 \\ 1 \\ 0 \\ 1 \\ 1 \end{array} \right. \end{matrix} = [N_1 \ N_2 \ N_3 \ N_4].$$

This matrix was obtained by using the filled in questionnaires.

Suppose only the node “self confidence” is in the on state and all other nodes are in the off state in the domain space; say

$$X = (1 \ 0 \ 0 \ 0 \ 0 \ 0 \ 0 \ 0)$$

to find the effect of X on the dynamical system S_D of the DSFRM.

$XS_D \leftrightarrow (1\ 1\ 0\ 1\ 1\ 1\ 1\ 0\ 0\ 0\ 0\ 0\ 0\ | 1\ 0\ 0\ 1\ 1\ 1\ 1\ 0\ | 1\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ | 0\ 1\ 1\ 0\ 0\ 0\ 1)$
 $= Y$ (say) (' \leftrightarrow ' denotes the resultant super row vector after updating the thresholding, here thresholding alone takes place as we have not taken any super row vector in the ON state from the range space).

We find

$$YS_D^t \leftrightarrow (1\ 1\ 0\ 1\ 0\ 1\ 1\ 1) = X_1 \text{ (say).}$$

We find the effect of X_1 on the dynamical system S_D .

$$X_1S_D \leftrightarrow (1\ 1\ 1\ 1\ 1\ 1\ 1\ 0\ 0\ 0\ 0\ 0\ 0\ | 1\ 0\ 0\ 1\ 1\ 1\ 1\ 0\ | 1\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ | 0\ 1\ 1\ 0\ 1\ 1\ 1)$$

$$= Y_1 \text{ (say)} \ Y_1S_D^t \leftrightarrow (1\ 1\ 0\ 1\ 0\ 1\ 1\ 1) = X_2 \text{ (say)} \ (= X_1).$$

Thus the hidden pattern of the super dynamical system for the state vector $X = (1\ 0\ 0\ 0\ 0\ 0\ 0\ 0)$ is a pair of fixed point given by $\{(1\ 1\ 0\ 1\ 0\ 1\ 1\ 1), (1\ 1\ 1\ 1\ 1\ 1\ 1\ 0\ 0\ 0\ 0\ 0\ 0\ | 1\ 0\ 0\ 1\ 1\ 1\ 1\ 0\ | 1\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ | 0\ 1\ 1\ 0\ 1\ 1\ 1)\}$.

We see if the student has self confidence alone then certainly he/she has communication skills, he/she is punctual to class, does not suffer from inferiority complex, is motivated, works hard and is interested in studies. The nodes that come to ON state in the super row vector are $T_1, T_2, T_3, T_4, T_5, T_6$ and T_7 all the positive attributes related with the teacher comes to ON state and in case of the management M_1, M_4, M_5 and M_6 come to ON state; only the positive attributes come to ON state. Further he/she feels parents encourages the passion of the child and all other states related with the parents remain in the OFF state. The government related attributes G_2, G_3, G_5, G_6 and G_7 come to ON state.

Thus we see if a student is counseled to be self-confident in the true sense certainly, that can immensely help the URCS who study in city colleges.

Next we study the effect of the on state S_5 alone from the domain space.

Let $X = (0\ 0\ 0\ 0\ 1\ 0\ 0\ 0)$ be the state vector under consideration. Effect of X on the super dynamical system S_D .

$$XS_D \leftrightarrow (000000011101|0110000|00000000|0000000) \\ = Y \text{ (say)}$$

$$yS_D^t \leftrightarrow (0\ 0\ 1\ 0\ 1\ 0\ 0\ 0) = X_1 \text{ (say)}$$

$$X_1S_D^t \leftrightarrow (000000011101|0000000|00000000|0000000) \\ = Y_1 \text{ (say)}$$

$$Y_1S_D^t \leftrightarrow (0\ 0\ 1\ 0\ 1\ 0\ 0\ 0) = X_2 \text{ (say)} (= X_1)$$

Thus the hidden pattern is again a fixed pair of vectors given by $\{(0\ 0\ 1\ 0\ 1\ 0\ 0\ 0), (0\ 0\ 0\ 0\ 0\ 0\ 1\ 1\ 1\ 0\ 1\ | 0\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ | 0\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ | 0\ 0\ 0\ 0\ 0\ 0\ 0\ 0)\}$.

From the resultant pair of vectors we have the following results.

Thus when the students suffer from inferiority complex they are irregular to classes. Now from the resultant super row vector we see the irregular student has only impact on the teachers and no impact on parents, management and the government for all the related vectors are zero. However we see it has strong negative impacts of the teacher, for the nodes T_8, T_9, T_{10} and T_{12} come to ON state, that is teacher too is irregular to class, they are indifferent to URCS unapproachable and insults the URCS in the class room.

Now we work with some ON state of super row vectors from the range space.

Let $A = (1\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ | 0\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ | 0\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ | 0\ 0\ 0\ 0\ 0\ 0\ 0\ 0)$ be the given state vector with only the node teacher motivates the student in the ON state. All other nodes from all other components are in the OFF state. We find the effect of A on the DSFRMs; S_D .

$$A s_D^t \leftrightarrow (1\ 0\ 0\ 1\ 0\ 0\ 1\ 1) = B \text{ (say).}$$

Now let B be the resultant after thresholding.

Now we find

$$BS_D \leftrightarrow (1\ 1\ 1\ 1\ 1\ 1\ 1\ 0\ 0\ 0\ 0\ 0\ 0\ | 1\ 0\ 0\ 1\ 1\ 1\ 1\ 0\ | 1\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ | 0\ 1\ 1\ 0\ 1\ 1\ 1)$$

= A_1 (say); to find the effect of A_1 on S_D^t .

$$A_1 S_D^t \leftrightarrow (1\ 1\ 0\ 1\ 0\ 1\ 1\ 1) = B_1 \text{ (say).}$$

We now find the effect of B_1 on S_D ,

$$B_1 S_D \leftrightarrow (1\ 1\ 1\ 1\ 1\ 1\ 1\ 0\ 0\ 0\ 0\ 0\ 0\ | 1\ 0\ 0\ 1\ 1\ 1\ 1\ 0\ | 1\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ | 0\ 1\ 1\ 0\ 1\ 1\ 1)$$

= $A_2 = A_1$.

Thus the hidden pattern is a fixed pair.

$$\{(1\ 1\ 0\ 1\ 0\ 1\ 1\ 1) \text{ and } (1\ 1\ 1\ 1\ 1\ 1\ 1\ 0\ 0\ 0\ 0\ 0\ 0\ | 1\ 0\ 0\ 1\ 1\ 1\ 1\ 0\ | 1\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ | 0\ 1\ 1\ 0\ 1\ 1\ 1)\}.$$

We see the 'ON' state of the vector T_1 in the super row vector leads to the ON state of S_1, S_2, S_4, S_6, S_7 and S_8 from the students attribute. That is if teacher motivates students we see students have better self confidence, better communication skills, they are punctual to class, URCS are motivated, work hard and are interested in studies. From the teachers attribute; if she/he motivates the URCS, the teacher is invariably punctual to class, takes special care of URCS, gives individual attention to URCS, clears their doubts, quite approachable and inculcates self confidence in URCS. From the management side we see M_1, M_4, M_5 and M_6 come to 'ON' state, which implies the management encourages the URCS takes special care to develop the communication skills in English for the URCS, special coaching class is given to them and motivates URCS to study well and work hard. From the parents side P_1 comes to ON states that is parents are encouraging the passion of the child.

We see from the government part G_2, G_3, G_5, G_6 and G_7 come to ON state; which implies free hostel with good food is provided, free classes to develop their communication skills is conducted, special teaching methods to help the URCS is conducted, they are made to pay only special fees and no other fees and scholarship is granted well with in three months time.

Suppose we have $B = (0\ 0\ 0\ 0\ 0\ 0\ 0\ 1\ 0\ 0\ 0\ 0\ | 0\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ | 0\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ | 0\ 0\ 0\ 0\ 0\ 0\ 0\ 0)$, be a given state vector with the teacher is “irregular to class” that is T_8 is in the ON state. To study the effect of B on the dynamical system S_D .

$$B S_D^t \leftrightarrow (0\ 0\ 1\ 0\ 1\ 0\ 0\ 0) = C \text{ (say)}$$

$$C S_D \leftrightarrow (0\ 0\ 0\ 0\ 0\ 0\ 0\ 1\ 1\ 1\ 0\ 1\ | 0\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ | 0\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ | 0\ 0\ 0\ 0\ 0\ 0\ 0\ 0) = B_1 \text{ (say)}$$

$$B_1 S_D^t \leftrightarrow (0\ 0\ 1\ 0\ 1\ 0\ 0\ 0) = C_1 \text{ (say)}.$$

Thus we get a pair of fixed points given by $\{(0\ 0\ 1\ 0\ 1\ 0\ 0\ 0), (0\ 0\ 0\ 0\ 0\ 0\ 0\ 1\ 1\ 1\ 0\ 1\ | 0\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ | 0\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ | 0\ 0\ 0\ 0\ 0\ 0\ 0\ 0)\}$.

Thus the teacher being irregular to class has no impact on parents, management or government which is a true occurrence in most of the city colleges.

Let us now consider the ON state of the attribute M_1 alone in the range space of the super row vector and all other nodes of teachers, parents and government are in the off state. To find the effect of

$Y = (0\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ | 1\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ | 0\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ | 0\ 0\ 0\ 0\ 0\ 0\ 0\ 0)$ on the super dynamical system S_D .

$$Y \leftrightarrow (1\ 0\ 0\ 1\ 0\ 1\ 1\ 1) = X \text{ (say)}$$

$$X S_D \leftrightarrow (1\ 1\ 1\ 1\ 1\ 1\ 1\ 0\ 0\ 0\ 0\ 0\ | 1\ 0\ 0\ 1\ 1\ 1\ 0\ | 1\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ | 0\ 1\ 1\ 0\ 1\ 1\ 1) = Y_1 \text{ (say)}$$

$$Y_1 S_b^t \leftrightarrow (1\ 1\ 0\ 1\ 0\ 1\ 1\ 1) = X_1 \text{ (say).}$$

$$\text{We find } X_1 S_D \leftrightarrow (1\ 1\ 1\ 1\ 1\ 1\ 1\ 0\ 0\ 0\ 0\ 0\ 0\ | 1\ 0\ 0\ 1\ 1\ 1\ 0\ | 1\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ | 0\ 1\ 1\ 0\ 1\ 1\ 1\ 1) = Y_2 \text{ (say) } (= Y_1).$$

We see the super hidden pattern of the state super row vector Y is a fixed point. If the management encourages all the positive attributes of the students, teachers, parents and the government come to ON state.

We can work with any of the state vector in the ON state.

We have constructed the new Domain Super Fuzzy Relational Maps (DSFRMs) model in chapter II of this thesis. We basically constructed this model using the feedback from the filled in new questionnaire by the URCS studying in city colleges.

3.6 CONCLUSION

We say the students problem was highly dependent on their teachers, management where they study and not on their parents.

However the attributes related with the students is the same. So to have a single model which can cater to all these four classes of attributes depending on the students happens to be the DSFRMs model and this can give the hidden pattern which will be a pair of vectors (X, Y) where one of them is a super row vector and the other just the simple row vector related with the students.

For only by using the attributes related with the URCS as the domain of the DSFRMs and the attributes related to teachers, attributes related with parents, attributes related with the management and the attributes related with the government are taken as the range space attributes of the DSFRMs. So for any given ON state in domain space we see the resultant gives its relation with teacher, with government, with management and with parents.

Likewise even a single ON state of a super row vector say about the teacher will give the impact not only on the student but also on the management, their parents and the government.

Such is also true in case of the ON state of the attributes of the parents or management or the government or teacher, the other nodes comes to ON state and also depending on the positive (or negative) quality of the attributes the nodes related with the students also come to ON state. Thus this is the only newly constructed model which can work in this bulk way. Hence we are justified that using this model the hidden pattern reveals the interrelation with all other attributes. Further we see in most of the cases the hidden pattern is a fixed point which clearly makes one understand if the attributes enjoyed by the URCS is in the ON state it can only give the related attribute of the teachers, parents, government and management and it cannot have a limit cycle for, the impact of the attributes are fixed and by no means they can change in due course of time.

Finally we see if the teacher is impartial and teaches well all good attributes of the URCS come to ON state. To the best of our knowledge this is the only model which can give the effect of all the four attributes; for the ON state of a single attribute. The ON state of a single attribute about the teacher makes not only the ON state of the nodes related to the students but also all the nodes related with government, parents and management. This is true for all other nodes related with parents or government or management.