

CHAPTER - VIII

APPLICATION OF INTUITIONISTIC FUZZY SOFT MATRICES

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Television, an effective medium of mass communication, plays a predominant role in the daily routine of the public. It is the first one to switch -on and the last one to switch - off in many houses. Though the taste differs based on the age of the viewer, all in the family are in the habit of viewing the programs of their taste. Monthly tariff, payable to the service provider for viewing TV programs, gains prime significance in the monthly budgets, irrespective of the level of income of the family. This indoor medium has multidimensional values. In addition to entertainment, matters relating to science and technology, social and cultural aspects, sports and games, economics and business, wild life and adventure and many more are telecasted. Viewing of such programs undoubtedly enrich wisdom of the people, especially the children. They are privileged to view and learn everything around the world. Many programs motivate and develop creativity among such younger generation.

It is quite natural that every coin has two sides. Though better exposure is the prime advantage, long time viewing is common in case of children. Such long time viewing of television programs by children not only causes health hazards to the children but also affects their overall performance in their academic activities. Many researchers observed that viewing programs that shows terror, horror, super power heroism, barbaric fights and so on has short term negative impact on their behaviour. The researchers insisted that the parents should effectively supervise their children viewing television in terms of time of viewing and the programs to be viewed. Many research studies in India and abroad bring to light the prevalence of excessive viewing of television by children and its ill – effects on children. So the author of this thesis intended to identify the various problems encountered by the children, based on the opinion of the parents regarding the ill - effects of excessive viewing of television and analyse the same using intuitionistic fuzzy soft matrices.

To ascertain the ill-effects of television viewing by the children, an interview schedule was administered to the parents and response was elicited regarding the behavioural changes of their children. Based on the pilot study the authors grouped the problems into 5 categories as follows:

1. Physical – Obesity , Eye problems and Food intake
2. Mental – Lack of Concentration , Depression and Feeling fear
3. Behavioural – Aggressive Behavior, Experiencing harmful practices and Avoiding outdoor games
4. Social – Not mingling with friends and relatives, Avoiding functions and festivals, Preferring to be lonely at home
5. Academic – Poor performance in tests and exams , Late to school and Frequent failure in completing home works .

The respondents were grouped into 5 categories based on the age of their children which forms the alternative set or universal set $U = \{ u_1, u_2, u_3, u_4, u_5 \}$ and the categories of problems were used to form the criteria set $C = \{ c_1, c_2, c_3, c_4, c_5 \}$.

Group of Respondents (Universal set U)

(Based on age of children)

u_1 – 6 to 8 years

u_2 – 9 to 10 years

u_3 – 11 to 12 years

u_4 – 13 to 14 years

u_5 – 15 to 16 years

Criteria Set C

c₁ - Physical

c₂ - Mental

c₃ - Behavioural

c₄ - Social

c₅ - Academic

In order to collect data an interview schedule was developed, pre-tested and administered to the respondents. A sample of 200 respondents (40 in each group) was selected adopting convenient sampling technique. Care was taken to include the parents of children of age group ranging between 6 years and 16 years and pursuing education in government, government aided and private schools in Coimbatore. Five point scaling technique (Strongly Agree, Agree, Neither agree nor disagree, Disagree and Strongly disagree) was used and they were asked to respond based on the prevalence and intensity of each of the 5 categories of problems of their children.

The membership function and non – membership function was ascertained based on the response. The number of respondents who marked either “Strongly agree” or “Agree” was counted and its proportion to the total respondents of a particular group was used for framing membership function. In the same manner, the response under “ Disagree” or “Strongly disagree” was used for framing non-membership function.

Therefore the corresponding intuitionistic fuzzy soft set is

$$(F,C) = \{F(c_1) = \{(u_1,0.5,0.4) (u_2,0.7,0.2) (u_3,0.8,0.1) (u_4,0.7,0.3) (u_5,0.6,0.3)\}$$

$$F(c_2) = \{(u_1,0.5,0.4) (u_2,0.6,0.4) (u_3,0.9,0.1) (u_4,0.8,0.2) (u_5,0.7,0.3)\}$$

$$F(c_3) = \{(u_1,0.6,0.4) (u_2,0.7,0.3) (u_3,0.9,0.1) (u_4,0.8,0.2) (u_5,0.8,0.2)\}$$

$$F(c_4) = \{(u_1, 0.7, 0.3) (u_2, 0.8, 0.2) (u_3, 0.6, 0.4) (u_4, 0.5, 0.4) (u_5, 0.6, 0.4)\}$$

$$F(c_5) = \{(u_1, 0.8, 0.2) (u_2, 0.9, 0.1) (u_3, 0.7, 0.3) (u_4, 0.6, 0.4) (u_5, 0.6, 0.3)\}$$

Therefore the intuitionistic fuzzy soft matrix is

$$A = \begin{matrix} & c_1 & c_2 & c_3 & c_4 & c_5 \\ \begin{matrix} u_1 \\ u_2 \\ u_3 \\ u_4 \\ u_5 \end{matrix} & \begin{bmatrix} (0.5, 0.4) & (0.5, 0.4) & (0.8, 0.2) & (0.7, 0.3) & (0.6, 0.4) \\ (0.7, 0.2) & (0.6, 0.4) & (0.9, 0.1) & (0.8, 0.2) & (0.7, 0.3) \\ (0.6, 0.3) & (0.7, 0.3) & (0.6, 0.3) & (0.6, 0.4) & (0.8, 0.2) \\ (0.7, 0.3) & (0.8, 0.2) & (0.6, 0.4) & (0.5, 0.4) & (0.8, 0.2) \\ (0.8, 0.1) & (0.9, 0.1) & (0.7, 0.3) & (0.6, 0.4) & (0.9, 0.1) \end{bmatrix} \end{matrix}$$

Then the intuitionistic fuzzy soft complement matrix is

$$A^c = \begin{matrix} & c_1 & c_2 & c_3 & c_4 & c_5 \\ \begin{matrix} u_1 \\ u_2 \\ u_3 \\ u_4 \\ u_5 \end{matrix} & \begin{bmatrix} (0.4, 0.5) & (0.4, 0.5) & (0.2, 0.8) & (0.3, 0.7) & (0.4, 0.6) \\ (0.2, 0.7) & (0.4, 0.6) & (0.1, 0.9) & (0.2, 0.8) & (0.3, 0.7) \\ (0.3, 0.6) & (0.3, 0.7) & (0.3, 0.6) & (0.4, 0.6) & (0.2, 0.8) \\ (0.3, 0.7) & (0.2, 0.8) & (0.4, 0.6) & (0.4, 0.5) & (0.2, 0.8) \\ (0.1, 0.8) & (0.1, 0.9) & (0.3, 0.7) & (0.4, 0.6) & (0.1, 0.9) \end{bmatrix} \end{matrix}$$

$$V(A) = \begin{matrix} & c_1 & c_2 & c_3 & c_4 & c_5 \\ \begin{matrix} u_1 \\ u_2 \\ u_3 \\ u_4 \\ u_5 \end{matrix} & \begin{bmatrix} 0.1 & 0.2 & 0.6 & 0.4 & 0.2 \\ 0.5 & 0.2 & 0.8 & 0.6 & 0.4 \\ 0.3 & 0.4 & 0.3 & 0.2 & 0.6 \\ 0.4 & 0.6 & 0.2 & 0.1 & 0.6 \\ 0.7 & 0.8 & 0.4 & 0.2 & 0.8 \end{bmatrix} \end{matrix}$$

$$V(A^c) = \begin{matrix} & c_1 & c_2 & c_3 & c_4 & c_5 \\ \begin{matrix} u_1 \\ u_2 \\ u_3 \\ u_4 \\ u_5 \end{matrix} & \begin{bmatrix} -0.1 & -0.2 & -0.6 & -0.4 & -0.2 \\ -0.5 & -0.2 & -0.8 & -0.6 & -0.4 \\ -0.3 & -0.4 & -0.3 & -0.2 & -0.6 \\ -0.4 & -0.6 & -0.2 & -0.1 & -0.6 \\ -0.7 & -0.8 & 0.4 & -0.2 & -0.8 \end{bmatrix} \end{matrix}$$