An Analysis of Traditional Catastrophe in Tamil Nadu Using NEDIFVAM

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Abstract: Tamil Nadu (TN) is known for its heritage which is manifested in many forms such as occupation, arts, customs, beliefs, values, norms and so on, but in these days the traditional activities are getting disturbed due to many social, political and economic reasons. Agriculture being the backbone of our nation and predominant occupation of people of TN is getting deteriorated due to many interrelated reasons. On other hand bull taming, the renowned victorious game is undergoing turbulence due to the pressure of external organizations with the political support. These traditional chaos will make the present cultural set up undergo transition and in due course of time it will get lost forever. Sociology is the scientific study of human actions and interrelations. It mainly aims in determining the causes and effects of social actions on the existing social pattern. To execute the study of cultural disaster systematically, logical approach has to be employed for which mathematical tools are highly suitable. To analyze such traditional turmoil precisely, Normalized Euclidean Distance (NED) Intuitionistic Fuzzy Valued Associative Memories (IFVAM) is used in this paper. The main aim is to determine the consequences of such traditional calamities so as to formulate certain preventive measures to tone down the effects of the stern impacts.

Key words: Tradition ⋅ Catastrophe ⋅ Social spheres ⋅ Intutionistic fuzzy number ⋅ Normalized Euclidean distance

INTRODUCTION

Traditionalism of Tamil Nadu represents the uniqueness it, which is maintained in static status by the people of it. It is expressed in terms of cultural, political, behavioural and religious aspects, which are interrelated. People have greater affinity towards traditions in earlier days, but now the scenario has changed. The status of traditional values is becoming dynamic in the upcoming times due to the many factors [1]. One of them is human attitude which has strong influence on the deprivation of our traditionalism. The conventionalism is reflected in our customs, occupation, beliefs and its related components. In our state the significance given to agriculture and domestic animals is very high. The people indeed have linked the religious norms with the tradition values to make it flourish to the next generations.

At present the human outlook has brought a lot of changes in traditional occupation and its related practices which altogether resulted in traditional catastrophe.

This has also provoked negative impacts on political position of the state [2] In recent times several commotions centered around traditionalism have been taking place. The aim of this paper is to analyze the reasons for such disorder by considering the association between the factors related to human attitude and traditional occupation [3] To make inference analysis systematic and scientific, normalized Euclidean Distance Intuitionistic Fuzzy valued associative memories is used.

Several researchers have done their works integrating Euclidean Distance IFVAM, but in this paper, normalized Euclidean Distance IFVAM is used so as to scale the values to unit norm for easy computation.

The paper is structured as follows, section 2 discusses the preliminaries; section 3 presents the methodology; section 4 elucidates the association between the factors in terms of Intutionistic Fuzzy number:section 5 presents the results and discussion; section 6 concludes the paper.

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Preliminaries

Definition 2.1: If X is a collection of objects denoted generically by x then a fuzzy set A in X is a set of ordered pairs $A = \{(x,\mu_A(x))/x \in X\}$ where $\mu_A(x)$ is called membership function or grade of membership of x in A [4].

Definition 2.2: The intutionistic fuzzy set A is given by $B=\{(x,\mu_B(x), \mu_B(x))/x \in X\}$, where $\mu_B(x)$: $X \to [0,1]$ and $\mu_B(x)$: $X \to [0,1]$ such that $0 \le \mu_B(x) + \mu_B(x) = 1$ and $\mu_B(x)$, $\mu_B(x)$ denote the membership and non-membership of $x \in B$, respectively [5, 6].

Definition 2.3: The uncertainty index of intutionistic fuzzy number is $\pi_B(x) = 1 - \mu_B(x) - \mu_B(x)$, where $0 \le \pi_B(x) \le 1$

Definition 2.4: The normalized Euclidean distance between two intutionistic fuzzy sets A & B is defined as

$$D(A,B) = \frac{1}{2}\sqrt{\frac{1}{n}\sum_{i=1}^{n}\left(\mu_A(x_i)-\mu_B(x_i)\right)^2 + \sum_{i=1}^{2}\left(\mu_A(x_i)-\mu_B(x_i)\right)^2 + \sum_{i=1}^{2}\left(p_A(x_i)-p_B(x_i)\right)^2}$$

Definition 2.5: Fuzzy Associative Memories is a rule or association between attributes expressed as fuzzy sets.

Definition 2.6: Fixed point is the attainment of unique state vector in the dynamical system

Definition 2.7: The repetition of the state vector of the form $X_1 \to X_2 \to X_3 \to$ indicates the reach of limit cycle [7].

Definition 2.8: The synaptic matrix is obtained by using NED to A(L,R) & B(L,R) where A(L,R) = {max,min} and B(L,R) = {min, max} of intutionistic fuzzy numbers, L and R represent the left spread membership and right spread non-membership values.

Steps to Find the Hidden Pattern Using NEDIFVAM: The methodology of determining the fixed point is given below [8-11].
1. The associated factors are represented as intutionistic fuzzy attributes.
2. The adjacency distance matrix E is calculated by using
3. The initial state vector X_1 is kept in ON position and it is multiplied with E. The resultant vector is thresholded and the first two highest values are assigned 1 and others as 0, finally it is taken as Y_1.

4. The vector Y_1 is multiplied with the transpose of E, the resultant vector X_2 obtained is thresholded in the same fashion.
5. The procedure is repeated until the equilibrium status that is the limit point or the fixed point of the dynamical system is obtained.

Association of Factors of Traditional Catastrophe Using NEDIFVAM: The factors contributing to the deterioration of our cultural characteristics are analyzed under the viewpoint of association of human behavioural sphere with occupational sphere

Attributes related to the Human Behavioural sphere of society on cultural catastrophe as the nodes of domain space.

C1. Self centered attitude of society
C2. Modernization without morality
C3. Disinterest in preserving the heritage
C4. Money centered mentality of man
C5.Unstable administration

Attributes related to the Human traditional occupational sphere of society on cultural catastrophe as the nodes of rang space.

A1. Disproportionate allocation of finance to the victims
A2. Political reluctance for marginal empowerment
A3. Dominance of external organizations on native affairs
A4. Conversion of agricultural plots to apartments
A5.Deficit of propagation of government reforms and measures
A6. Lack of productivity and large number of ignorant farmers

The association connection matrix given by the first expert

I	A1	A2	A3	A4	A5	A6
C1	[0.8,0.1]	[0.8,0.2]	[0.7,0.1]	[0.9,0.1]	[0.7,0.2]	[0.6,0.2]
C2	[0.7,0.3]	[0.5,0.2]	[0.6,0.3]	[0.6,0.3]	[0.8,0.1]	[0.4,0.3]
C3	[0.9,0.1]	[0.7,0.3]	[0.7,0.3]	[0.7,0.2]	[0.9,0.1]	[0.6,0.2]
C4	[0.9,0.1]	[0.9,0.1]	[0.8,0.1]	[0.9,0.2]	[0.9,0.1]	[0.7,0.2]
C5	[0.8,0.1]	[0.7,0.2]	[0.9,0.1]	[0.5,0.4]	[0.7,0.1]	[0.8,0.1]

The association connection matrix given by the second expert

II	A1	A2	A3	A4	A5	A6
C1	[0.7,0.1]	[0.9,0.1]	[0.8,0.1]	[0.8,0.1]	[0.6,0.2]	[0.7,0.2]
C2	[0.7,0.2]	[0.6,0.2]	[0.7,0.3]	[0.6,0.2]	[0.8,0.1]	[0.5,0.3]
C3	[0.8,0.1]	[0.7,0.2]	[0.7,0.2]	[0.8,0.2]	[0.8,0.1]	[0.6,0.1]
C4	[0.75,0.1]	[0.8,0.1]	[0.9,0.1]	[0.9,0.1]	[0.7,0.2]	[0.9,0.1]
C5	[0.9,0.1]	[0.7,0.1]	[0.7,0.1]	[0.5,0.5]	[0.7,0.3]	[0.8,0.1]

The association connection matrix given by the Third expert

III	A1	A2	A3	A4	A5	A6
C1	[0.8,0.2]	[0.7,0.1]	[0.9,0.1]	[0.9,0.1]	[0.3,0.2]	[0.8,0.2]
C2	[0.7,0.1]	[0.6,0.3]	[0.7,0.2]	[0.7,0.2]	[0.8,0.1]	[0.7,0.3]
C3	[0.8,0.1]	[0.8,0.2]	[0.7,0.3]	[0.8,0.1]	[0.8,0.1]	[0.6,0.2]
C4	[0.6,0.1]	[0.9,0.1]	[0.8,0.1]	[0.8,0.1]	[0.7,0.2]	[0.7,0.1]
C5	[0.85,0.1]	[0.8,0.2]	[0.7,0.2]	[0.6,0.3]	[0.6,0.3]	[0.8,0.2]

A(L,R)

[0.8,0.1]	[0.9,0.1]	[0.9,0.1]	[0.9,0.1]	[0.7,0.2]	[0.8,0.2]
[0.7,0.1]	[0.6,0.2]	[0.7,0.2]	[0.7,0.2]	[0.8,0.1]	[0.7,0.3]
[0.9,0.1]	[0.8,0.2]	[0.7,0.2]	[0.8,0.1]	[0.9,0.1]	[0.6,0.1]
[0.9,0.1]	[0.9,0.1]	[0.9,0.1]	[0.9,0.1]	[0.9,0.1]	[0.9,0.1]
[0.9,0.1]	[0.8,0.1]	[0.9,0.1]	[0.6,0.3]	[0.7,0.1]	[0.8,0.1]

B(L,R)

[0.7,0.2]	[0.7,0.2]	[0.7,0.1]	[0.8,0.1]	[0.3,0.2]	[0.6,0.2]
[0.7,0.3]	[0.5,0.3]	[0.6,0.3]	[0.6,0.3]	[0.8,0.1]	[0.4,0.3]
[0.8,0.1]	[0.7,0.3]	[0.7,0.3]	[0.7,0.2]	[0.8,0.1]	[0.6,0.2]
[0.6,0.1]	[0.8,0.1]	[0.8,0.1]	[0.8,0.1]	[0.7,0.2]	[0.7,0.2]
[0.8,0.1]	[0.7,0.2]	[0.7,0.2]	[0.5,0.5]	[0.6,0.3]	[0.8,0.2]

The Synaptic Matrix E

0.04	0.06	0.06	0.03	0.12	0.06
0.08	0.07	0.05	0.05	0.03	0.09
0.04	0.04	0.03	0.05	0.04	0.06
0.12	0.04	0.04	0.04	0.07	0.07
0.04	0.05	0.07	0.06	0.07	0.03

The below procedure is applied to all the input vectors [12-15]

Let

$X_1 = (1\ 0\ 0\ 0\ 0)$

$X_1 E = (0.04\ 0.06\ 0.06\ 0.03\ 0.12\ 0.06) \circledcirc (0\ 1\ 0\ 0\ 1\ 0) = Y_1$

$Y_1 E^T = (\ 0.1\ 0.1\ 0.07\ 0.19\ 0.13) \circledcirc (0\ 0\ 0\ 1\ 1) = X_2$

$X_2 E = (0.16\ 0.09\ 0.11\ 0.1\ 0.14\ 0.1) \circledcirc (1\ 0\ 0\ 0\ 1) = Y_2$

$Y_2 E^T = (0.1\ 0.17\ 0.1\ 0.19\ 0.07) \circledcirc (0\ 1\ 0\ 1\ 0) = X_3$

$X_3 E = (0.2\ 0.11\ 0.09\ 0.09\ 0.1\ 0.16) \circledcirc (1\ 1\ 0\ 0\ 0) = Y_3$

$Y_3 E^T = (0.1\ 0.15\ 0.08\ 0.16\ 0.09) \circledcirc (0\ 1\ 0\ 1\ 0) = X4$

$X_3 = X4$, The limit points are (11000), (01010)

Let

$X_2 = (0\ 1\ 0\ 0\ 0)$

$X_2 E = (0.08\ 0.07\ 0.05\ 0.05\ 0.03\ 0.09) \circledcirc (100001) = Y_1$

$Y_1 E^T = (0.1\ 0.17\ 0.1\ 0.19\ 0.07) \circledcirc (01010) = X_3$

$X_3 E = (0.2\ 0.11\ 0.09\ 0.09\ 0.1\ 0.16) \circledcirc (1\ 1\ 0\ 0\ 0) = Y_2$

$Y_2 E^T = (0.1\ 0.15\ 0.08\ 0.16\ 0.09) \circledcirc (0\ 1\ 0\ 1\ 0) = X4$

$X_3 = X4$

Let

$X_3 = (0\ 0\ 1\ 0\ 0)$

$X_3 E = (0.04\ 0.04\ 0.03\ 0.05\ 0.04\ 0.06) \circledcirc (000101) = Y_1$

$Y_1 E^T = (0.09\ 0.14\ 0.11\ 0.11\ 0.09) \circledcirc (\ 01100) = X_4$

$X_4 E = (0.12\ 0.11\ 0.08\ 0.1\ 0.07\ 0.15) \circledcirc (100001) = Y_2$

$Y_2 E^T = (0.1\ 0.17\ 0.1\ 0.19\ 0.07) \circledcirc (0\ 1\ 0\ 1\ 0) = X_5$

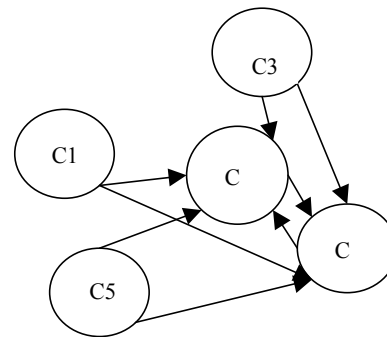$X_5 E = (0.2\ 0.11\ 0.09\ 0.09\ 0.1\ 0.16) \circledcirc (1\ 1\ 0\ 0\ 0) = Y_3$

$Y_3 E^T = (0.1\ 0.15\ 0.08\ 0.16\ 0.09) \circledcirc (0\ 1\ 0\ 1\ 0) = X6$

$X_5 = X6$

By repeating the same fashion we get the limit points as tabulated

Input vectors	Limit points
(10000)	(11000) (01010)
(01000)	(11000) (01010)
(00100)	(11000) (01010)
(00010)	(11000) (01010)
(00001)	(11000) (01010)

The triggering pattern is represented graphically

DISCUSSIONS

Each factor is kept in ON position to determine its impact, if C1 is in ON position, then the factor C2 and C4 are stimulated which in turn induces A1 and A2. Similar results are obtained when other factors are kept in ON position. Thus money centered mentality of man and modernizations without morality are the core aspects which act as the point of centre for the cause of traditional catastrophe. Therefore certain preventive measures have to be developed to strengthen the value system of the society, which in turn will make the political and cultural spheres of the state strong.

CONCLUSION

In this paper the new approach of normalized Euclidean Distance IFVAM is used so as to scale the

distance to unit norm for easy computation. This technique is also applied to the social issue of traditional catastrophe in Tamil Nadu to determine the main cause of it. The present political and cultural status of the state is highly critical. Restoration of our societal setup is very much needed in these days, to accomplish this task reformative measures are suggested in this article.

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