APPLICATION OF GAME THEORY TO ASSESS CONFLICTING ELECTION STRATEGIES – AN EMPHIRICAL STUDY

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ABSTRACT**:**

This paper proposes about to study the winning chances of person in the public elections of a (District head quarters of Andhra Pradesh in India) under certain strategies and to test the authenticity of game theory in human being endeavors, conflicting strategy results with that of facts. It is closely related with the strategies between a game of chance.

Keywords: Game of chance, Optimum strategy and Public elections.

INTRODUCTION**:**

Game theory analyses the choice of optimum strategy in different conflicting situations concerning to the parties participated for achieving individual objects out of the common goals of competitors. It is a decision taking tool under the situation of competitors conflicting each other to surpass and succeed in their goal by overcoming the rival competitor and advises to what extent the decision options can be utilized either to win or minimize cost/hurdles in case of failure. The main features of Game application involves rationality behavior by the competing firms/individuals such as framing options, practicable decision strategies, plans, alternative way packages and models etc., which are useful as well as conceived by the

competing parties to grab the goal exclusively. The decision maker is required to take decisions based on the objective related environment consistent to the chosen path.

All the participants in the game are independent decision makers and the outcome of the game depends on the outcome of strategies used by the competing parties. The game theory deals with human being process taking steps for achieving a target and applicable to individuals, groups, organizations for measuring achievements under variety of contingencies.

SUBJECT DESIGN: Now the game theory is proposed to analyse the situational bound goals to win the elections of a Sarpanch in 'X' Village of Warangal District, between A and B contestants. Here the names are not revealed by keeping in mind the sensitivity feelings of competing individuals and public. The elections were held during the year 2008. It is a village, eight kilometers far away to mandal head quarter having a voters population of 1516 based on the profession of agriculture, seven arrack shops, 5 kirana shops, and with ancillary activities of goat / sheep rearing and taddy profession etc. The village was a peaceful one having no place for threatening situations, but voter people resort to give weight age to the personal characters of contestants as well as accompanying material or money flow and entertainment facilities arranged by competitors in favoring their votes. Both the contestants were belonging to scheduled castes having on average or equally socio-economic cultural conditions except individual character differences, which have cognizant opinions in the public.

ELECTION STRAGEGIES AND BEHAVIOUR: - Normal situation people will prefer to elect a representative leader who is having leadership qualities such as knowledge, justice, equality, quick decision taking, public care character, and corruption-less. It is hereby assumed that people reflects and reacts to the practical strategies and behavior exhibited by the political contestants with full liberty under certain conventional ethics and morals.

OBJECTIVES OF THE STUDY:

a) To study the winning chances of person in the public elections, under certain strategies by using game theory.

b) To analyse and highlight the collected qualitative data in arriving a suitable conclusion.

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    c)   To test the authenticity of game theory in assessing the results of human being endeavors, conflicting strategy results with that of facts.

SOURCE OF DATA**: -** The main source of data is primary, collected from the voter public in 'X' village by serving the questionnaires to all. The questionnaire covers the decision strategies followed by A and B contestants for winning the elections, such as political, economic, community relations, behavioural attitude, existing influencing factors etc., during the electioneering and voting period in the village, which helps in the analysis of data and while drawing inferences. It includes quantitative and qualitative data.

Note: Here the Village name and contestant's names are not revealed for social and legal obligations.

METHODOLOGY**:-** The primary data collected through serving questionnaires with census method was arranged properly in a matrix table for further processing and applied game theory for mathematical assessment of winning chances of either A or B political contestants. According to the nature of data in matrix table the zero – sum the game is applicable and proved the existence of saddle point. Along with the quantitative data in matrix table, the qualitative data also taken into account while drawing inferences and conclusions.

HUMAN RELATION APPROACH OF CONTESTANTS**: -** Both the parties generally applied common options that are available in the village level election environment to woo voter public. With regard to personal character 'A' contestant was more assimilative, rather helping one, attends at needy hours. But, whereas 'B' also exhibits the same character with imbibed, in built cunning nature and undisclosed personal grudge keeping in his mind immediate personal benefit mileage.

STRATEGIES APPLIED BY THE CONTESTANTS**:-** A and B contestants were in the race of Sarpanch elections have taken all possible steps to strongly capture the goal by one over subduing the other by all possible steps before them. They have taken many individual options to attract voters favor and flexible according to the requirements, needs, entertainment habits of public. Except their original inbuilt characters, the competing parties have organized, gathered, influenced, and facilitated joyful days, which they think inevitable. All the decision strategies can be grouped into the following.

1) A_1, B_1 :   Use of personal contacts to get support from voter public.

2) A_2, B_2 :   Use of enhanced step of personal contact as well as offering

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money wherever necessary to achieve strong ambition of winning.

3) A_3, B_3 : In addition to above strategy, added entertainment facilities such as liquor, food etc. This is a costly and final step to empower all decision options.

STRATEGIES IN MATRIX TABLE**: -** The same is explained in the following para to make suitable to adjust in matrix table.

Two contestants, A and B, participated in the elections. Contestant A used the strategies such as personal contact (A_1), personal contact + offering money (A_2), personal contact + offering money + entertainment (A_3). Contestant B adopted the same of A strategies: Personal contacts (B_1), personal contact + offering money (B_2), personal contact + offering money + entertainment (B_3).

Matrix Table:

The collected data is arranged in the matrix table. The analysis of the table is as follows:

Contestant B

	1	2	3
1	416	800	1216
Contestant A 2	617	1000	1312
3	916	1200	1500

Contestant B

	1	2	3	*RowMin*
1	416	800	1216	416
Contestant A 2	617	1000	1312	617
3	916	1200	1500	(916)
Column Max	(916)	1200	1500	

Minimax $= 916 = \bar{U}$
Maximin $= 916 = \underline{U}$

$\bar{U} = \underline{U} = U$

Saddle Point exist, game is strictly determinable.

A $\longrightarrow$ A_3, B $\longrightarrow$ B_1,

The matrix indicates the value as outcome of different decision option strategies applied by A and B competitors in a individually collected data thorough questionnaires served in the village under study. The matrix indicates the gain of A contestant with equal loss to B

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contestant with the adopted strategy. This matrix indicates votes polled by laying different strategies A_1, A_2, A_3 and B_1, B_2, B_3 respectively. The gain of A contestant is equal to the loss of B Competitor which it comes under zero-sum game. Wherein the A obtains maximum votes against the minimum losing of votes by B. Here the elements in this matrix written with reference to A, which confers that if A obtain B loses and vice – versa. The values in the matrix table will indicate the following points.

(i)   Contestant A has obtained votes of 416 by adopting A1 strategy, against B1 strategy adopted by B contestant, indicating securing of 416 votes by A and the same loss to B.

(ii)   By observing the B_3 strategy of B against A_2 strategy of A, there would be securing of 1312 votes for 'A' against loss of the same to B under the B_3 and A_2 strategies. At this strategy, even the extra cost of entertainment incurred by B would not allowing or helping him to obtain the votes as obtained by A. With low cost strategy (A_2), 'A' obtained 1312 votes.

(iii)   In this way, the A3 strategy of A contestant, B_1 strategy of B contestant i.e. 916 votes provides an indication that A gained 916 votes whereas it remained a losing to B. With the application of A_3 strategy decision options involving personal contact with voters, offering other means of money and entertainment has helped A contestant in gaining 916 votes and winning of sarpanch post, even though it would become a costliest affair. But, in case of B contestant, he can opt decision strategies up to B1, if he further chooses to apply B_2 and B_3 strategies it would have become loss creating negative working results. The game theory advocates that B should not apply B_2 and B_3 strategies as it does not support logically, further additional steps would enhance benefit to A contestant only.

(iv)   The column maximin and row minimax substantiates 916 votes of optimum strategy level in case of A and B contestants as denoted in the table.

(v)   The decision strategies of A1 to A3 and B1 to B3 logically and naturally supported comparatively the inbuilt good character of A contestant. The game theory in its analysis provided dividend of more votes to comprehensively good leader character person i.e. A. It can be expressed comparatively.

Saddle Point exists : As explained in the table both the contestants use same strategy every time during election period which indicates saddle point existence and the equilibrium point

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has the value of maximum gain in favor of A with a minimum loss for B contestant and determinable with the help of zero sum - game.

Conclusion: Success strategies or decision options with human face would enable to obtain more support in public elections.

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