The Authors names and the article titel

Literature Review of Game Theory

Game theory can be defined as the formal study of conflict and teamwork. The game theoretic concepts apply each time the actions of numerous agents are inter-reliant. The agents maybe individuals, groups or firms. Ideas driven from game theory provides a language to express, structure, analyze, and comprehend strategic scenarios. Under game theory the objects of study are games, which are formal model of interactive situations. → need theses

The games presented in this article are Two-Person Zero-sum Games. These are games that involve only two players; they are called zero-sum games because one player wins whatever the other person loses. Von Neumann and Morgenstern (1944) developed two arguments supporting the minimax of two-person zero-sum games. The two points are equilibrium argument and the guaranteed value argument. The guarantee value argument says that a row player can get the value v, and the column payer can guarantee not paying no more than v. The equilibrium argument is more of mathematical in nature. Here one proves that there is a unique equilibrium pay off which is the value, however the guaranteed value is more questionable. In many two-person zero-sum games we are told they don't guarantee the value, it is in fact it is impossible to do so in pure strategies. In the article game theory, the case of players in zero sum games with entirely opposed interests is embodied in the class of two player zero sum. Here the familiar example is the rock paper scissor and chess games. (Theodore, 2001).

The specific example is the Ex Ante and Interim viewpoints in Discussion VII where the economists distinguish three stages in differential information environments. In the case where no one has his private information, which is Ex-ante and the case in which the agent has his private information only; ex post is where all information is revealed to all. In the case of the article Ex ante who is the protagonist knows only the acceptance system which is normally identified by all players.

In the article Journal of artificial intelligence research (2014) it suggests that the correlated equilibrium spreads the concept of Nash equilibrium. According to this article the conical explanation assumes that there is a central association device which models the space of possible outcomes of the game rendering to probability distribution, and then recommends an action to play to each player. (Ludek, 2014). According to the article of my study it conveys the argument of Von Neumann and Morgenstern, which they suggested that if a game is to recommend strategies to the players in a game, then those commendations must constitute a Nash equilibrium. It assumes that the alleged recommendation of game theory should be for each player to play some specified strategy which is familiar to all players, according to the article of my study game theory is not supposed to make this kind of recommendation, it recommendation should respond optimally to somebody's private information. The players are faced with a game situation not just a game. From both of the articles studied above we realize they have one common suggestion that Nash equilibrium is for studying models of a calculated performance.

The article makes reference of John Muth which it says that he characterized expectations as rational if they are basically the same as the forecasts of the relevant economic theory. In games the applicable theory whatever it maybe it certainly forecasts simple rationality, utility maximization on the part of the players, thus each layer expects all players to be rational in

rational expectations. Thus, the "relevant theory" predicts not only simple rationality on the part of all players but also mutual knowledge of rationality *(KR).* But formerly all players "expect" or understand *KR;* So, the relevant theory predicts not all KR but also K^2R. Proceeding in this manner we get K^mR for all *m,* which amounts to *cKR.* So, in games, Muth's rational expectations comprise *cKR.*

The author of tins article says that the theory he has presented differs from strategic game literature, he says this paper does not deal with equilibria it just recommends that a player in a game should maximize against her subjective probabilities for the other player actions.

The author according to this article he likes Von Neumann. This is because most of the works he has sighted and referenced are Von Neumann's' that shows that he likes reading Von Neumann's articles.

The author who is depicted as hated in this article from my own perspective is Nash, this is because the author of this article criticizes him by using an example of a child, he says that the building blocks of rational expectations are rarely true in real life. He says that they either hold in a given situation or they do not hold, he goes on to say that it makes no sense to say that they should hold.

The interesting article in the references of my article is the article of dual reduction and elementary games by Roger B Myerson, this is because it defines the correlated equilibria of a game. The duals of these linear constrictions generate Markov chains on the players strategy sets. I should dedicate much more time to read this paper because it explains game theory in detail and its applications in real life situations. The stationary distributions of Markov chains can be

interpreted as the strategies in a reduced game, this is the concept I want to understand most and it is answered in this article.

Rodger B. Myerson is an American Economist who was born in the year 1951 in Boston, he won the Nobel prize in 2007 together with Leonid Hurwicz and Eric S. Maskin for their mechanism design theory. Myerson earned both his bachelor's and master's degrees in applied mathematics from Harvard university in 1973. He was awarded doctorate from Harvard University in 1976 in the thesis he examined cooperative games, which was a subject he explored further in his landmark paper optimal auction design. His main contribution was about the mechanism design theory which tries to stimulate market conditions so as to maximize gains for all parties. He proposed the revaluation principle, wherein buyers are offered an incentive for honestly reporting what they would pay for goods or services.

In this whole article I have learnt a lot of knowledge about game theory how it is applied in real life situations in business. Game theory is an interesting field to study and devote my time to. The application of this theory in the study of situations rather than the game itself is interesting and all the theories explained and proved in this article are all new things that have enlightened my knowledge of mathematics. If I find more time I will dedicated it in studying the many theories put across in this paper to gain a better understanding and their applications.

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