

Introduction

Game theory has excisted existed for millennia and has been in applied to many formssituations; ranging from historical events (such as <u>Spains' Spain's</u> rebellion on <u>against</u> Rome in 75 BCE ([McCain_2010],]), biological models (such as natural selection), market environments (<u>such as oligopolyoligopolies</u>)-, politics (<u>such as election bidding</u>), and computer science to name few. This field of applied mathematics captures behaviour behavior in strategic situations (<u>called</u>-games–), wherein the success (payoff) of the choice made by an individual (<u>the (player–)</u>) is dependent on the ehoiceesmade choices made by others² (<u>other players</u>) (Myerson, 1991)–.

The three main mathematical models of games are the *extensive* form, the *strategic* form, and the *coalition* form. The bases of difference in <u>one each</u> of these models <u>is are</u> the amount of detail provided: the players, their preferences, their information, the strategic actions available to them, and how these influence the outcome?

The *strategic* form, also called the normal of a game, has <u>much little fewer</u> details compared with the extensive form. For In the extensive form, the *position-positions* and *move-moves* of the game are closely followed, and the rules define the probable outcomes in planned or random moves —(gambling–). By contrast, in the *strategic* form, the <u>players players</u> choice, i.e., a *-strategy* <u>selected</u> from a set of possible strategies, determines the outcome, i.ee., *payoff*. All players choose a *strategy*, and <u>once after</u> the choices are revealed, the game ends with each player getting some *payoff*. Each player's payoff is influenced <u>by</u> <u>by eachthe player's players' choice</u> <u>choices</u>. Payoffs can be quiet complex <u>entityentities</u>. For <u>our</u> model, we represent payoffs by numerical values. Hence, we assume that the numerical payoffs depend on <u>the</u> choices of all the players.

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www.enago.com | www.enago.jp | www.enago.com.tr | www.enago.com.br | www.enago.de | www.enago.tw | www.enago.co.kr | www.enago.ru **Comment [A1]:** Using 'and has' here makes the two verb phrases equivalent.

Comment [A2]: This phrase is not needed, it is more conversational. It is always best to use formal style of writing for academic manuscripts.

Comment [A3]: This should be plural to match the subject 'playoffs.'



3 Three objects define the *strategic* form of a game: 1) the set of players, $N = \{1, 2, ..., n\}$, $N = \{1$

sequence of <u>the</u> players' strategy sets: $X_1, ..., X_n$ and 3) the sequence of player's pay-off functions.

 $f(a_1,...,a_n),...,f_n(a_1,...,a_n).$

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www.enago.com | www.enago.com.tr | www.enago.com.br | www.enago.de | www.enago.tw | www.enago.cn | www.enago.co.kr | www.enago.ru **Comment [A4]:** Sentences should not begin with numerals.