

## **A THEORETICAL OVERVIEW OF GAME THEORY AS RATIONAL DECISION-MAKING MECHANISM IN INTERNATIONAL POLITICS.**

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### **ABSTRACT**

This paper aims at analysing Game theory in the context of international politics (competition) for power and balance of power. It x-rays the relationship between Game theory and International politics at international relations (arena). It considers the conceptual framework of the proponents of the thesis, the application of Game theory to international situations and to identify the underlying principles, practice of Game theory in International system. It examines the origin, types of game theory, other models related to Game theory (prisoner's dilemma and chicken) and the criticisms of it in relation to international politics. The study makes use of secondary source to elucidate data while it adopts theory of international politics to mid-wife the analysis.

**Keyword:** Balance of power, collation, consensus, conflict, Diplomacy, international politics, zero sum game

### **INTRODUCTION**

International politics is often described as a game in which the rules, while generally known and observed are often changed and sometimes openly violated. Game theory attempts to provide models for studying world politics. The applicability of this observation to international negotiations and to crises in contemporary international relations is obvious, if often disregarded (Palmer and Perkins, 2007: XX). Two earliest leading proponents/analysts were Thomas C. Schelling (The Strategy of Conflict, Howard University press, 1960) and Anatol Rapoport (Fights, Games and Debates, University of Michigan Press, 1960) used Game theory in international relations as a basis of theoretical and applied analysis (Reynolds, 1980: 217)

The focus of the Game theory approach is on rational choices and conflict resolution. The choices are either limited or unlimited. The ambition of each player in the game is to minimize losses and maximize gains which in game theoretic terms, are referred to as "pay offs". The players are expected to be guided by rational calculations. And in most cases advocates of this approach view international relations as an N-person, Non-zero-sum game. What this implies is that a gain by one country or party is not necessarily at the expense of others. It is not the winner take-all that characterize the zero-sum game. By adopting this approach, its proponents contend that it would enable its to understand the likely behaviour and possible lines of action of others, especially a state's decision can accord a good player the opportunity for flexibility in response or options in policy strategy (Adeniran, 1938: 22).

### **CONCEPTUAL FRAMEWORK**

Game theory can be defined as a body of thought dealing with rational decision strategies in situations of conflict and competition when each participant or player seeks to maximize gains and minimize losses (Varma, 1993: 287). Game theory is essentially the study of collective choice

situations in which individual decisions depend not only upon preferences of the other individuals decisions depend not only upon preferences of the other individuals involved, but on the outcomes which resolve from different sets of individuals' choices (Roberts and Edwards, 1997: 78). It assures that decision makers are perfectly rational, are amoral in their decision makers and have perfect information available to their motives and attitudes are kept out of consideration. Nuclear deterrence for example with its horrible implication, but practical safety in practice would be treated in one way by situation ethics and in quite a different way by traditional ethics. (Rosenau, 1980: 121).

Game theory is a method for determining optimal courses of action in situations the outcome of which depends on the actions of all the participant. It thus focuses on interaction among the participant and so is analysis of system conceived and defined in particular and precise ways while operating within the framework of certain assumptions (Reynolds, 1980: 217). Game theory/strategy is merely a more easily handled when treating deterrence and disarmament. All means are assessed in terms of relative pay off by strategy theorists; bluffing and arranging to be caught bluffing are view as instrumental to certain goals, especially if the adversary is likely to be deterred from aggressive moves when confronted with seemingly randomized manoeuvre, such concepts as saddle point, optimally, utilities zero sum and the notion of a prisoner's dilemmas are unique to strategy/game theory (Haas, 1974: 27).

Game theory is a mathematically based analysis system that utilizes modelling procedures to determine optional human strategies in conflict situations. Game theory is based on two branches of mathematics: combinator and set theory. It employs techniques such as matrices and tree graphs to explore conflict situations which tree graphs to explore conflicts situations which it calls games involving two or more participants engaged in trying to maximize their gains and minimize their losses. A participant may be any decision-making unit (e.g. country, a politician or an administrative agency) and the games considered are games of strategy rather than the games of chance. The game plan or strategy of a participant include all possible options for contingencies arising from the strategy of other participants, or the inter-play of national events. Strategies are evaluated in terms of pay-off. Numerical values are assigned to the outcome of particular plays or moves (Chaturvedi, 2006: 127; Peter, 2012:328).

In essence, the outcome is dependent upon the choices made by each of two or more players. But in deciding how to choose, an individual must take estimates of the preference of others as well as the possible outcomes. This is where the rationality aspect of the game is essential, because any miscalculation on the part of the schemer may precipitate a misfortune. However, the situation is more complicated since each individual must also estimate the intentions of others given these variables. Game theory therefore deals with uncertain situation in which the outcome could be anything. The model also believes, in applying mathematical approaches to political studies especially in some aspects of conscious decision making in situation involving the possibilities of conflict and or cooperation (Varma, 1993: 287). In the context of political science, the game theory may involve two nations at war, diplomats in bargaining, negotiations and Politicians attempting to influence their voters. But common to all these cases are the fact that the goal of the players is usually to win. However, during the inter-play, a situation may arise in which the players reach a saddle point (draw) (Olaniyi. 1997:79).

Game theory is a branch of mathematic concerned with predicting bargaining outcomes. Game such as prisoner's dilemma and chicken have been used to analyse various sorts of international interactions (Goldstein and Pevehouse, 2012:505). Each combination of moves (by all players) results in a set of pay offs (utility) to each player. The payoffs can be tangible items such as money or any intangible items of value. Game theory aims to deduce likely outcomes (what moves players will

make), given the players' preference and the possible moves open to them. Games are sometimes called formal models. Game theory was first used extensively in International Relations in the 1950s and 1960s by scholars trying to understand US-Soviet nuclear war contingencies. Moves were decisions to use nuclear weapons in certain ways, and pay-offs were outcomes of the war. The Cuban missile crisis was a case in point in the post-world war 2. The use of game theory to study international interactions has become more extensive among International Relations scholars in recent years. (Goldstein & Pevehouse; 2012:77).

Game theory is a study of strategic decision making, specifically, it is the study of mathematical models of conflict and cooperation ([en.wikipedia.org/wiki/game\\_theory](https://en.wikipedia.org/wiki/game_theory)). Game theorists argue that constructing the proper game explains why policy outcomes are unforeseen, but not accidental. Games can show how decision makers think. The Cuban missile crisis "game" might have several people play president John Kennedy, who must weigh the probable payoffs of bombing or not bombing Cuba. Other might play President Khrushchev who has to weigh toughing it out or backing down. Seeing how the players interact give us insights and warnings of what can go wrong in crisis decision making (Roskin et al, 2012:35).

### **ASSUMPTIONS OF GAME THEORY**

The conceptual analyses of game theory presented above have given rise to certain commonalities in respect of the approach. These include:

1. That there are players (decision makers). They could be individuals, nations and institutions.
2. That in 2-person zero sum game, players are involved in what is called zero sum game i.e. the amount which one gains, the other loses (one outcome cancels out the other). Hence, there must be a winner and a loser and to that extent, no mutuality of interest.
3. That in 2-person non-zero-sum game, one player does not simply gain what the other loses. Rather, there is variable sum (the outcome total varies from choice to choice).
4. Players are engaged in choosing alternatives which determine their future outcomes. This calls for complete knowledge of strategies.
5. That players are perfectly rational and amoral in their decisions and have perfect information available to them. Consequently, game theory is not interested in main ethics but only in what is called situation ethics.
6. That there must be rules. The game must have a set of well-defined explicit and efficient set of rules well known to the players. The scoring must also be complete (Olaniyi, 1997:80).
7. It is assumed that among various possible outcomes from a particular situation, participants will be able to determine which they prefer, which they rank second, which third, and so on and that the outcomes can be ranked on an utility scale (Reynolds, 1980:217)

### **THE OPERATIONAL PRINCIPLE OF GAME THEORY**

Game theory has an operational principle which is called the Minimax. The rule of minimax says "a player must aim at having minimum risks and maximum pay-offs". That is, he must minimize his worst possible outcome and maximize his prospect of each game. A player may also aim at attaining a saddle point. This explains a situation in which the player happens to end up with exactly the same pay-offs (Varma, 1993:288).

In uncertain situations, the rule of minimax says it is better to select the cost action that will minimize the possible losses in the game. Hence, a player should not go about maximizing his benefit at that point. The ability of a player to get a big pay-off will however depend on "the strategy" he chooses or uses. Varma opined that strategy is regarded as the core concept of games and it has to do with planning or working out methods for players will be out to choose the strategy which best

maximizes gains (pay-offs) and minimize losses. Although, it may not necessarily lead to a high pay-off, but will offer a good chance for modest gain and the slight chance of loss (Varma, 1993:289).

Strategy was defined as an “overall programme of actions which a player adopts in order to achieve a desired condition”. However, it is possible for a player to be influenced by a certain factor both (latent and manifest) over the type of strategy he will adopt at any point in time. But the assumption is that he will not succumb to the influence of a strategy that will contravene the rule of minimax (Goldman, 1972:35).

## **TYPES OF GAME THEORY**

There are several types of game theory, but the most important ones are the following:

### **1. Two-person zero-sum game**

This type of game involves two players in which winning and losing always cancel each other out. That is, whatever one individual wins, the other must lose. Hence, the sum of outcomes for the two players is zero. For example, assuming that the benefits allocated to player A in a game is 2, then player B will be awarded -2. When the utility of the two players added together. What we shall have is:  $2 + (-2) = 0$ . From the foregoing, it can be observed that a two-person zero sum game is a game of pure competition e.g. (war-situation) where there are no joint gains to be had from cooperation, discussion or bargaining (Shubik, 1967:247).

Borrowing a leaf from Charles Worth, example of two-person zero-sum game is provided by a  $2 \times 2$  matrix of a war situation. The assumption is that two nations are at war. The interplay produces a situation which is never competitive (or constant sum); because it is easier for both sides to lose. However, once they have decided to fight, it is out, we may consider the action on the ground as one involving pure competition (Charles Worth (ed), 1976:230).

### **2. Two person non-zero-sum game**

This involves the participation of two players. However, “the players in the contest may share the division of the awards in the same way, and the gain of one need not be equal to the loss of the other”. This explains why it is called non-zero sum games. Such a structure will require that the pay-off is divisible and some principle of distribution is applied. Be that as it may, each player is being awarded benefits according to the level of his performance (e.g. when A is awarded 0, B is awarded -10). Furthermore, each pair of pay-off does not add up to zero. Therefore, one player does not simply gain what the other loses. Two-person non-zero sum game is characterised by “variable sums”. (the outcome totals vary from choice to choice), and “non-cooperative” (the players cannot communicate or make binding agreements with each other). A game known as prisoner’s dilemma illustrates the central features of non-zero sum game (Roberts & Edwards, 1997: 56).

### **3. N-Person Non Constant – Sum Game (For $N > 2$ )**

This game refers to a situation in which the number of players is more than two, hence the diction: for  $N > 2$ , N-Person, non-constant sum game is characterized by coalition buildings in which, two players going up against the third player. When the numbers of players increase to  $n \geq 3$ , new phenomena arise even when the zero-sum restriction remains. It is now possible that cooperation will benefit the players. It is not the case; the game is called inessential. Inessential game, the players will try to form coalition and act through these in order to secure their advantage (Varma, 1993:289; Hirsch, 2020:78).

Game theory becomes a coalition theory when the number is greater than two – winning coalition and losing coalition. The theory has been used more in the field of coalition behaviour, judicial behaviour and conflict situation in international politics where the decision of each player is contingent upon the decisions of others, and the central point therefore, is the independence among the decisions of different players participating in the game. A rule of the game therefore can be defined as

the distribution of resources and the strategic possibilities open to each player in the employment of the resources. Rules are to be specified in terms of the resources that the players are willing to use. Countries with nuclear weapons for example may have a tacit understanding that they will not use them, in which case they are not a part of the rules of the international game. But in case there was threat to use them, as was the case in Cuba in 1962, when the delivery of nuclear weapons tipped ICBM's as the Soviet Union threaten to alter the world-wide balance of nuclear weapons, the threat could be treated as an attempt to change the rules and controverted the equilibrium (Varma, 1993:288).

**4. Prisoner's Dilemma (PD)**

This is a situation modelled by game theory in which rational actors pursuing their individual interests and achieve worse outcomes than they could have by working together. This captures the kind of collective goods and problems common to International Relations. In this situation, rational players choose moves that produce an outcome in which all players are worse off than under a different set of moves. They all can do better, but as individual rational actors they are unable to achieve this outcome. Prisoner's Dilemma type situations occur frequently in International Politics. Examples are arms race between Pakistan and India (Goldstein and Pevehouse, 2012:78 and Iran Israel bitter relations).

**Table:1**

		Pakistan	
		Cooperate	Defect
India	Cooperate	(3,3)	(1,4)
	Defect	(4,1)	(2,2)

Note: First number in each group is India pay-off, second is Pakistan's. The number 4 is highest pay off (Goldstein & Pevehouse, 2012:78).

**Table: 2** **Israel**

Iran	stop	Attack Outcome 1	Do not attack
	Continue	Outcome 3	Outcome 2 Outcome 4

To obtain a game matrix, there is the need to specify both states' Preferences over these outcomes.

**Source: Gunner, 2012.**

**Table: 3** **Israel**

Iran		Attack	Do not attack
	Stop	1,3	2,4
	Continue	3,1	4,2

The first number in each cell denotes Iran's Preference for that outcome and the second number denotes that of Israel.

**Source: Guner,2012**

**5. Game of Chicken**

Game of Chicken sheds light on the concept of deterrence – the strategy to use threat to punish another actor if it takes a certain negative action (especially attacking one's own state or one's allies) in International Politics. It involves convincing another actor not to undertake an action it otherwise would have done. But because not swerving risks disaster for both sides, it is difficult for one side to

convince the other that he/she will risk crashing (fighting a war) if the other sides decide not to swerve. (Goldstein & Pevehouse, 2012:78).

### **THEORITICAL FRAMEWORK**

The study adopted theory of international politics to analyse the intricacies of game theory from the perspective of rational decision making mechanism according to waltz's (1979) that resumption that: The international system is anarchic there is no higher central authority that can enforce rules over individual states; Given this context state act on the basis of self-help they operate with the aim of survival and their interactions with other state reflect their desire to survive; the structure only change if great power take actions that will lead to a change. Most state have no power to change the structure. Given this context, states will try to balance against each other because they will try to increase their chance of survival (Waltz,1970:103)

Mathematic models based on the theory of games have been used to evaluate the competing claims among state by realist and their critics. It is a which view the international system as general field play where all state compete for relevance power and influence theory guess more pomace to realist theory as the dominate theory that best describe politics of international system it is about the decision of state and their foreign actors notably governments (Goldstain & Pevehouse ,2012:10) It deals with the Politics of the international community in a rather narrow way bothering on the diplomacy and relations among states and other political units (Palmer & Perkins 2002:XII) .

Other related theoretical paradigm to theory of international politics like liberalism centers on its tenants : cooperation and human nature benefited despite anarchic nature of the international system cooperation than conflict people learn and adjust international politics is a variable-sum not a zero-sum same and cooperation can be facilitated by interdependence institutions democracy while states that invest on cooperation and mutual trust interests will do much better in the international politics than those that focus on majorly security as stability in the international politics is highly preserved by cooperation rather than conflict (Spiegel, Mathews, Tow & Williams; 2009:39).

Further on the above are critical theory which discussed the politics of knowledge in international politics, origins and rethinking political community postmodernism on power and knowledge in international politics, problematizing sovereign states (beyond the paradigm of sovereignty & Marxism on class, production and international politics, nationalism and imperialism in Marx's writings and others as well (Burchill, Link later, Devetak, Dinnelly, Paterson, Reus-Smit & True, 2005:110-125)

The relevance and linkage of the theory to the study lies in the fact that international politics is normally identify as a game in which it rules change as occasions warrant.

According to Snidal (1985) that:

Game theory is elaborated as a theoretical approach to international politics by contrasting it with metaphorical and analogical uses of games. Because it embraces a diversity of models, game theory is especially useful for capturing the most important contextual features of the international cooperation. Through a discussion of the relation among and extension of different game models, the versatility and scope of game-theoretic approaches to international relations are demonstrated (Snidal, 1985:25)

It takes the forms of simplification and stylization of states' interactions in the three levels of game theory to help – extensive, strategic and coalitional forms (Guner, 2012:3) while Stein (1980) noted that is a state's making its course of action concerning a given issue contingent upon another state's behavior in a different issue area of interest to policy makers as well as to those theoreticians who employ an approach to the analysis of international politics (Stein, 1980:62)

Despite its relevance, the theory suffers one or two shortcoming which include the followings:

- It varies with changes in the structure of international system
- Lack of order and of order at all as the anarchy of politics internationally is often referred to.
- Similarity is not uniformity in the theory of international politics (Waltz, 1979:89)

Proponents, theorists and writers of the theory of international politics include: Hoffman S.(1960), Kline M. (1954), Hamilton D. (1970), Montagu, H. (1976), Alforo C. (1981), Mongethau, H. (1973), Waltz, K. (1979) Gilpin R. (1981) Keohane R. (1977) Nye, S. (1977), Jacobsen CG. (1982) John Von Neumann, Oskar Morgenstern and notable others.

### **THE APPLICATION OF GAME THEORY IN INTERNATIONAL POLITICS: A REVIEW**

When it is taken up that the application of game theory in political science, it is discovered that the best illustration are from Kaplan, Shelling and William, who have all tried to apply it in real of International Politics rather than Domestic Politics. Kaplan describes game analysis as “the best tool available for the analysis of problems of strategy” and thinks that if properly used, it is likely to increase the exploitation of success in polity. But his own analysis in system and process in International Politics does not bear out his claim. On chapters on strategy and statecraft, where he was expected to deal with a technical discussion which is only vaguely linked to empirical decision making. It is difficult to say whether Kaplan means his discussion on the subject to be a guide for policy makers or merely a suggestion of the ways in which they may use that knowledge to some purpose (Kaplan, 1993:290).

What he passes on as propositions for political actions merely generalizations made by a keen mind and not the result of any empirical research. The game theory certainly can not be applied to political phenomena in the way Kaplan has tried to do. Kaplan’s basic dilemma as Mechan has correctly pointed out is a desire to make use of game theory in a way that simply cannot be justified at present. The difficult, or even the impossibility of satisfying the assumptions which lie behind the application of the theory has been acknowledged by other writers also. As Anatol Rapoport points out, applied game theory must in some way provide real solutions to real problem and real problem are exceptionally difficult to handle within the game matrix. The entire approach is based on the concept of rationality which does not seem to work satisfactorily in politics, where socialization process or cultural norms cannot be left out of consideration. The difficulty at the heart of the matters lies in the fact that the number of moves in even the simplest of empirical situations is usually unimaginable. The only way to apply the same theory to service the needs of political enquiry was by directing it to other purposes and this is what Schelling in his study of conflict and William in his study of coalitions have done as their enquiries have become more useful to political studies. William has applied model of the game theory to the understanding of International Politics (Williams, 1993:286; Grune – Yanoff & Shewinzer, 2006:133).

The model used by him is an n-person zero sum game which assumes rational players, perfect competition and side payment or bargaining among the players. He does not perfect the information but base his analysis on the state information available in the system at a particular time. His primary objective in applying the game theory to International Politics is to find out some of the general principles that govern the formation of coalitions and associations whose decisions are controlled by the coalitions. William has applied three major principles developed by him from the models of game theory to empirical or historical data. These are size principle, the strategic principle and the disequilibrium principle. Its understanding of the size principle heads him to conclude that the attempts to form a coalition are not aimed at merely enlarging it. The size of coalition is kept just as large as the decision makers believe will ensure winning. This also depends on the information available regarding the various principle of coalition. If the information does not happen to be adequate then, there would be the tendency to make the coalition larger than warranted by the situation. Coalition begins as proto-

coalition and evolve through the acquisition of numbers to who side payment are made. When one proto-coalition is formed, members left out of it and fearing aggression from it from another proto-coalition with the aim into winning coalition (William, 1993:291; Myerson, 2014:52).

The strategic principle is needed in order to maximize the possibilities of success by transforming a proto-coalition into a winning coalition. If a proto-coalition is situated in a strategically advantageous position in the sense that it can make more profitable pay-offs to its members, there is a possibility that the coalition will ultimately come out of victorious. This, however is based on the assumption that (1) the members will not resign from the coalition they have already joined and (2) the payment to them will not be lowered without their consent. The disequilibrium principle model selected is unstable and lacking in equilibrium and even if a temporary equilibrium is achieved, it is likely to be quickly overthrown. In coalition formations, the elements of instability and disequilibrium are always there. William in this connection discusses the sources of disequilibrium and means of maintaining equilibrium and examines exogeneous and indigenous factors which influence them (William, 1993: 292; Bhuryan, 2016:115).

Schelling (1993) on his part has suggested some fundamental changes in the typology of games, the typology of models and the foundations of strategic thinking. So far as the typology of games is concerned, he believes that the model insists on prior conflict games. But if we are really trying to understand international politics, we cannot ignore the empirical fact that the concept of pure conflict and coordination are two extremes of a continuum. Most of the international relationship involves the study of each particular choice in the play of the game and brings within its purview the psychological factors determining the individual's choice and even his perception and definition of the situation under which the choice is made (Schelling, 1993:292).

Also, Schelling (1993) has revolved a new approach towards the concept of more. His typology of moves is different from formal and abstract typology of the conventional game theory, and would take into conventional game theory, and would take into consideration the psychological aspect of the choice. Schelling has incorporated the commonly used terms like "making treaty", "giving promised", "relinquishing the initiative", "identifying friend and enemies", "delegating authority", "accepting mediation" etc into his concept of moves by the simple device of viewing them as alternative of the individual's pay-offs to himself. Schelling has also tried to bring about changes in the very foundation of strategic thinking. The choice of strategic thinking according to him defined by empirical considerations rather than purely formed operations, and involves, as an essential part of the study, an effort to understand the mixed motives game. Schelling has thus considerably enriched the game theory by the introduction of complex human experience into the procedures of decision making. Schelling has fully incorporated into his own models of thinking the pattern of thought lying behind the game theory. Yet it would perhaps not be wrong to say that he would have, by his other writings contributed as much to the understanding of the problems of strategy in international conflicts even if he had never mentioned the game theory (Schelling, 1993:294; Myerson,2009:5).

Furthermore, in the application of game theory in international politics, it may enable society to understand more clearly what might be a rational course for a government to take in a certain kind of world, but that world is so remote from the real ones that the conclusions are of only academic interest. Within it, it is assumed, the behaviour of governments are closely analogous to that of the players of competitive games. They are for example engage in a struggle with one or a few antagonistic in isolation, rather than a complex interrelationship with many, their aim is always "victory" to "defect" their opponents all costs, they plot strategies to this end, they do thus in a way that is single-minded, rational, ruthless and they wholly ignore intangible extrinsic factors such as domestic opinion, the influence of pressure groups, allies world public opinion, the interest of their opponents, morality, their conception of a world society, and other factors which may have importance in the real world as



international relations/ politics. This theory ignores most of the social factors, influences and aspirations arising from the society of states which in practice play a vital role in determining the behaviour of states in international society (Luard, 1976: 17-18).

Much the same can be said about the emerging theoretical literature that gives a central place to foreign policy in the processes of alliance buildings, the dynamics of international integration, and the competition among super powers for the influences in the third world, while such efforts are theoretical in the sense that they posit external behaviours derived from specified stimuli, they are nonetheless partial and not general theories. They are founded on the premise that external events – individually or as structural characteristics of international system are the prime movers of foreign policy. Virtually, none of them allow for the operation of internal causation. The external behaviour called for in game theoretical models for example, pressure rational decision makers who are impervious to the need to placate their domestic opponents or indeed, to any influences other than the strategic requirement of responding to adversaries abroad (Rosenau, 1989:121).

### **CRITICISM/DEFECTS OF GAME THEORY**

The mathematically oriented political scientists think that the game theory is indispensable to any understanding of political phenomenon, whereas, the political scientist with a bias against the use of mathematical models regards the efforts to do so as puerile and mischievous to understand very clearly the achievement and limitation of the theory. Since the theory depends on man's rational behaviour, what seldomly exists in its perfect form in real life, it can not be very useful in empirical research or even in the exploration of strategic or political alternative. Game theory, is not the empirical study of how the people make decisions but a deductive theory about the conditions that their decisions would have to satisfy in order to meet demands rationally or consistently. For this reason, the view by some writers that it is more of a framework for analysis than a theory. A framework is not a theory, but something which can be useful in the development of a theory. (Varma, 1993:294).

However, one of the merits of the game theory is that by observing the players' attitude and disposition in matters involving decisions as to whether to settle a conflict or wage a war, co-operate in science and technology or promote military alliances etc., propositions could be readily tested while such conditions as fear suspicion, trust reward, punishment, risk etc., which normally affect bargaining behaviour could be determined. The game approach, if well applied, could reshape a lot about international relations (Adeniran, 1983:22).

### **CONCLUSION**

It could be seen and analysed that the concept of game theory in relation to international politics and international struggle for powers are inevitable in the real world of conflict. It connotes the real world of states' existence and survival. It is therefore sensed that the impacts of game theory on international politics can not be underestimated. Its relevance will continue to witness the test of time on the scale of global politics. The indispensability of game theory in international politics manifested itself in the complexities of states and strategies employed in actualizing the concepts of foreign policies and national interest in international politics. Again, the dynamic reality of the international arena further proves its relevance among nation-states.

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