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The use of the Game Theory Context in the strategic political marketing design. The case of the USA elections.

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Abstract

This study presents a conceptual framework approach that can provide useful information about the political strategy via the rational decision-making process, as well as create an efficient tool for political marketing campaigns. Game theory combines the models of conflict and cooperation for people whose decision-making is considered rational. How can this be implemented in voting behavior, influencing a wide range of issues, relations and behaviors? We consider the political competition as a strategic game, where we have to identify the opposing players, the purpose of the game and its rules. Game theory helps us understand the decision-making process towards strategic issues during political competition. The modeling of the voting behavior can explain the way people form theirs in the challenging environment of the political competition. In the present study we will investigate the way game theory can be involved in American elections, trying at the same time to depict behaviors and political marketing strategies. Using the game theory and the political marketing approach, our study examines the different strategies that politicians used during the last American election of 2016, explaining how their strategy influences the result of the elections. We focus mostly on financial, social and environmental issues, but also on issues about security, immigration and international relations. We measure the intensity of the candidates' focus on these issues and we present two game theory matrixes as examples base on this innovative concept.

EL Classifications: G34, G14, M41.

Key words: game theory, political marketing, strategy, decision making

1 Introduction to the Game Theory Context

It was in the early 18th century that Game theory arises and becomes widely known, operating as an independent scientific field in the mid-20th century. Economic study and science firstly used this theory that has been established as an independent field since 1928 with the study of Neumann and in 1944 with a work written by Oskar Morgenstern. In Game theory the emphasis is placed on the decision-making process in a competitive environment with strategic interdependence via zero or non-zero-sum games. The "opponents" in Game theory are named players and decide their respective strategy and actions towards the other. The strategies used in this context are either pure strategies, where each player chooses a single strategy, or mixed strategies, where there is a combination of different strategies with different frequencies. In game theory, there are also some general assumptions. It is considered that players ("opponents") are rational and not responsive to emotion. They are purely driven by the purpose of winning over the opponent. Each player acts taking into consideration the "principle of common knowledge", meaning that each player is aware of the possible choices of himself and his opponent. Finally, players choose strategies at the same time without knowing each other's movements and there is no cooperation for mutual help.

Another fundamental term of Game Theory is the Nash equilibrium, named by the mathematician John Forbes Nash. The Nash Equilibrium is a method of strategically resolving "non-cooperative games", where there are two or more opponents. Nash balance describes a strategy profile a^* which is the best choice of a player i and the best option if one chooses other than a^*_i .

Many modern sciences are influenced by the Game Theory in their evolution, such as microeconomics and macroeconomics, engineering, biology, but also field of sciences, such as sociology and political science. Competitive games exist also in the business world, as well as in the electoral competition between candidates from different parties.

Every game has specific rules, certain strategies, which the players can choose from and which lead to specific results. The rules, the strategy and the interaction are three of the main determinants of the game. The results can arise as a consequence of the players' interdependent behavior. During the game at least two decision makers are interacting. Interactions are strategic, mutual, interdependent decisions. With the implementation of the Game Theory on these interactions, mathematic concepts are applied in the decision-making process.

According to Kreps (1990a) the game theory allows economists to make better explanations and predictions. In the current study, we try to examine how the application of game theory in political competition can be considered as a tool to form political marketing strategies as well as to make electoral predictions. It can also provide explanations in political science as well as extended mathematical applications in politics.

2 The Three main axes of political competition: Persons, Parties, and Issues.

The voting behavior is influenced by three main factors that form the political competition: the political parties, the candidates and the political programs.

Voters form their political preferences evaluating the political personalities, the political parties and the political programs. In the past, political parties could easily interpret and influence political behavior in an extensive network of voters as the diffusion of the information was monitored and filtered by the gatekeepers (Papathanasopoulos, 2000). Nowadays, the information is not easily controlled by the political parties. Different sources of information with the use of the new technological means (web 2.0/3.0) and the social media have changed the influence exerted by the political parties (Corner & Pels, 2003; Markaki & Chadjiapantelis 2013). This information influence the development, management, and formation of the electoral competition. Today, politicians and voters have a dynamic interaction. Ideological position does not lead strictly to a particular voting behavior. The party preferences are related to the political agenda of each political pre-election period, thus, the confidence in the program of a political

party can very often lead to specific political behaviors (Markaki 2007; Markaki & Chadjipantelis 2013, 2015, 2016, 2018).

In the 1980s, the indifference of the electorate towards the traditional political parties was explained by the dominant theory of media malaise (Markakis, 2007). Recent researches (Markaki & Chadjipantelis 2013, 2015, 2016, 2018) also certify that the political parties do not exert anymore an important influence, as far as the formation of political preferences is concerned.

According to the model of the rational voter, the voter is not strictly identified to a particular political party, but is interested in politics and examines the information available before forming a specific voting behavior (Markaki, 2007). In some countries, such as Greece, there was for many years an intense interaction between the political party and the electorate. The political parties have used the traditional clientelistic system to their advantage and became mediators between the voters and the state. It is noteworthy that the voters of 45 years of age and older tend to be far more loyal to a political party than others age groups (Markaki 2007). Connections with the political parties can affect crucial aspects of people's life such as the voters' ability to get a job, to have educational opportunities and make friends. Additionally, these political connections have additional privileges for the political persons or for the politicians, eg. organize and motivate networks of voters and supporters (Huckfeldt & Sprague, 1987; Markaki & Chadjipantelis, 2013, 2014, 2017). Party executives exert influence in networks using systematic action and organized interaction with others. They act as "vote sellers", exerting pressure and influence to less concerned voters (Ascensión & Meléndez-Jiménez, 2009; Inglehart & Norris, 2000; Markaki 2016). According to Markaki's and Chadjipantelis' research (Markaki & Chadjipantelis 2013, 2018) more than two-fifths of the respondents in their research of 347 persons mention that someone has contacted them so as to influence them about a particular candidate during the pre-election period.

Another important factor of influence is the social orientation of a candidate's activity. That activity can provoke impact in the voter's everyday life (Frederick, 1994; Markaki, Sakas, Chadjipantelis 2011). Thus, the socially oriented "activity" of the political persons increases the electoral support towards these persons. This activity is also presented and dispersed in the social and the traditional media channels creating an important impact (Markaki & Chadjipantelis, 2020).

According to recent research (Markaki & Chadjipantelis 2013, 2015, 2016, 2018), the candidates constitute an important factor that influences the voting behavior. The political persons represent role models, they develop their image and reputation via a strong communicative approach (McNair, 2003; Markaki & Chadjipantelis 2013, 2015).

During the last decades, politics focus mostly on mediation and communication strategies (Corner & Pels, 2003; Markaki 2007; Markaki & Chadjipantelis 2016, 2018). As the boundaries between the opposite political parties, e.g. the Right and the Left are not evident image management, style development and communication strategy are important components of a candidate's political marketing strategy (Corner & Pels, 2003; Markaki 2007).

Well known politicians have a particular style of communication, and the diffusion of their political messages is supported by communication strategies, the use of social media and the modern campaign management. The lack of political interest has been replaced by the political infotainment based on the social media such as Instagram, Twitter, Facebook (Markaki & Chadjipantelis 2016, 2018). The importance and the type of the political elections also affect the influence exerted by the political persons. In the municipal elections candidates play a primary role. In the national elections the political parties and their leader play the most important role. In all types of elections, the political persons have a dominant influence, as their role is to develop, implement and adapt policies. Their intelligence, their flexibility, their code of ethics, their insight cannot be attributed to the political parties.

Finally, recent researches (Markaki & Chadjipantelis 2013, 2015, 2016, 2018) prove that the political program does not affect intensively the voting behavior even though the political issues influence the political agenda. Thus, there is an important discussion about how political issues and political programs influence voting behavior given the fact that issues such as national, financial and social can influence people's life and the quality of life in a society,

Summing up, it is important to mention that the strategic political marketing must take into consideration a wide range of approaches and aspects so as to form a political campaign that can have an impact in voting behavior.

3 Sample and Methodology

3.1 Background

All the necessary data and information was put in a dataset file on a state level. We collected the electoral results from the beginning of the electoral process on a party level and for the representatives of both the final party candidates in each state (Donald Trump and Hillary Clinton). In the dataset, using a 3-point Likert scale we include the political reference regional, intermediate, and national level for each candidate in each state. The intermediate level represents an emphasis on both the regional and the national level. Additionally, we use the content analysis method and a 5-point Likert scale, so as to assess the frequency and intensity in references concerning specific issues. In an in-depth analysis of key issues, a total of 6 issues, as parameters, have been taken into account with aggregated data deriving from each political campaign in a State level. The issues that have been taken into account are the following: society, economy, environment, safety, migration and international cooperation. The content analysis for the collection of the data was performed on different electronic and audiovisual sources of information such as Television, videos, radio, social media, websites, blogs, and interviews in newspapers. We evaluated for each of the issues the selected strategy. One more strategy that was taken into consideration is the behavioral attitude during the political competition, which was assessed using a 3-point Likert scale: aggressive towards the other candidate, aggressive towards the opposite political party and consensual.

After having completed the evaluation, we created game theory matrixes for each issue. In the left column was placed the winner of each state, which created 4x4 or 3x3 or 3x4 matrixes repeated 50 times, number corresponding to the states in the USA. Then we used the mean for each strategy so as to have one matrix at the end. This representation of the games leads us to find the dominant strategies and therefore ending up mostly with 2x2 matrix games. Then, we solved the game using the mixed strategy process.

4 Results

4.1 Application of the Game Theory in the American elections. Two examples

Overall, we observe a clash of aggressive discourses towards the rival in the discourse strategies of Clinton and Trump, while Trump opts for an overall more aggressive discourse for the party as well. It seems that the discourse attitude of Hillary Clinton in the elections varied from state to state, with some results indicating that she was successful and others indicating a loss. In the seven states where Clinton adopted a more moderate tone, it was Trump who emerged as the clear winner. However, when she adopted a more aggressive speech, either towards the party or personally towards her rival candidate, the competition became less clear-cut, with no clear victor. Therefore, a more aggressive strategy was more suitable for Hillary Clinton. Trump's strong communication style, whether directed towards Clinton or the Democrats, served as the impetus for him to win the majority of the States. With the exception of South Dakota, where Trump's discourse is moderate due to the State's strong Republican tradition, Trump selected an aggressive stance in contrast to Clinton's moderate language in the following seven States, which resulted in a victory for him.

TABLE 1

4.1: Comparison of results and strategies in selected states

State	Election Results	Clinton's Discourse	Trump's Discourse
District of Columbia	Democratic	Moderate	Aggressive towards Clinton
Indiana	Republican	Moderate	Aggressive towards Clinton
Montana	Republican	Moderate	Aggressive towards the party
Rhode Island	Democratic	Moderate	Aggressive towards the party
South Dakota	Republican	Moderate	Moderate
Utah	Republican	Moderate	Aggressive towards the party
Texas	Republican	Moderate	Aggressive towards Clinton

Additionally, Trump's focus on the interaction between the national campaign and the state level has also been a key component of his electoral strategy.

However, Clinton's strong emphasis on running a more federally focused campaign had a negative impact on the result. When compared to the election results, Clinton's stance on society, the environment, and the economy demonstrates that the political campaign's priorities were not the best plan for a successful election result. The public viewed Trump's emphasis on immigration and security to be more successful than Clinton's emphasis on the environment in the states where she placed particular emphasis. The economy, terrorism, and foreign policy were the concerns that the voters decided on, according to Pew Research Center, which explains why Clinton's political campaign was unsuccessful. On the traditional "Republican" states, Trump's victory was evident, while on the traditional democratic States, a competition in 6 States resulted in a swift towards the Republicans. This is based on the orientation of the States based on previous results as well as the results of the elections today.

4.2 From strategies to Game Theory

In order to apply game theory, we attempted to depict in tables the competition between various political communication tactics.

We notice that in a 2x2 game, where both candidates must decide between two strategies—attack on the opponent and consensual approach towards the opponent—different strategies collide about the angle of the attack on the opponent.

The following example illustrates this in a game where the payouts depend on the total number of votes earned or lost:

TABLE 2

4.2: Trump and Clinton Strategies

		HILLARY	
		ATTACK ($\pi y = 6/10$)	CONSENSUAL ($1 - \pi y = 4/10$)
TRUMP	ATTACK ($\pi x = 3/10$)	-33	81
	CONSENSUAL ($1 - \pi x = 7/10$)	55	8

We must first investigate whether the opposition is employing pure or hybrid strategies. We calculate the equilibrium point. The maximin is 55, and the minimax is 8. As they are not the same the opponents' tactics are not pure, i.e., neither the first nor the second tactic (attack or

consensual) is utilized, but both in conjunction. In order to understand the potential and frequency of each method, the game is now solved utilizing a mixed strategy. The figure above is thus presented in the following form:

TABLE 3
4.2: Trump and Clinton Pure Strategies

		HILLARY			
		Attack	Consensual		
TRUMP	Attack	-33	81	x	81
	Consensual	55	8	1-x	55
		y	1-y		
		-33	8		

As x we symbolize the probability of Trump to use attack as a strategy and 1-x is the probability to use consensual strategy, while as y the possibility of Clinton to use attack and as 1-y the possibility to use consensual strategy.

For x:

$$-33x+55-55x=81x+808x$$

$$-88x+55= 73x+8$$

$$47=158x$$

$$x= 47/158=0,297$$

For y:

$$-33y+81-81y=55y+8-8y$$

$$-114y+81= 47y+8$$

$$72=158y$$

$$y=72/158= 0,455$$

So, to have Nash equilibrium, to Trump must be indifferent if he will play Attack or Consensual. And therefore, in order to calculate the payoffs:

$$-33\pi x+55(1-\pi x)= 81\pi x+8(1-\pi x) \rightarrow \pi x=0,29=3/10$$

Same, for Clinton, in order to calculate πy :

$$-33\pi y+81(1-\pi y)=55\pi y+8(1-\pi y) \rightarrow \pi y=0,45=4/10$$

Therefore, Clinton's consensual strategy in most cases seems to have cost her the elections, Trump's attack is of his advantage. When they both attack, Clinton seems to predominate, however, as mentioned above, Clinton chose for most of the States a consensual strategy. Trump's attack strategy on Clinton's consensual has a high payoff and also Trump's consensual strategy predominates on either Clinton's attack or consensual one.

Furthermore, in another example regarding the reference level, i.e. local, national or intermediate during the election campaign, the depiction of the conflict of strategies is shown in the table below where we kept the strategy "local" and merged the national with the intermediate level.

The depiction of the game is presented as follows:

TABLE 4
4.2: Level of action

HILLARY		
TRUMP		
	Local	Intermediate/ National
	Local	2
	Intermediate/ National	24

We also need to consider here again whether opposing players are using pure or mixed strategies. To investigate this, we calculate the equilibrium point: so maximin i.e. the maximum of the minimum values is 2 and minimax i.e. the smallest of the largest values is 2 again. This indicates that there is a point of equilibrium, so this resolution of the conflict comes through a game of clear strategies. Thus, Trump wins when he focuses on the local level during the election campaign, even if Hillary addresses the voters with a focus on intermediate / national orientation.

5 Conclusions

Three fundamental components make up modern politics: the existence of a large electorate, the competition between two or more parties or candidates, and a system of laws to regulate the process. These three components interact to form modern politics. Each political party's core principle is winning the elections.

The employment of contemporary political communication technologies is necessary due to the complexity of communication, the fragmentation of the social web, the ease with which social order can change, as well as the necessity for transparency, control, and involvement.

There are many transmitters and receivers in the new form of political communication. The 1980s were a particularly significant time for political communication because, in contrast to earlier times, it was systematized and established.

Political journalism has developed and varied the political media as a result of the deregulation and digitalization of communications, yet it has been sidelined as a result of the profusion of information sources and the rivalry among them. Currently, the administration of impressions and publicity is totally automated but experimental. The goal of political communication using a variety of tactics is to make the candidate an electable figure. The majority of election coverage in the past focused on the statements and actions of the candidates. Now, the emphasis is mostly on how candidates succeed or fail in the elections' game, that is, on the strategic processes they employ to adjust to the circumstances, their personalities, and the political climate in which they operate.

Policy evaluation, the level of commitment among the parties, and the degree of social agenda consensus on political problems are the three elements of political communication influence.

The planned communication behavior of politicians and the methods they employ to shape the political attitudes and behaviors of the target audience can be summed up as follows: the importance of mass communication is growing, and it has an impact on the procedures and practices of democratic societies. Political communication also functions as a mediation communication through electronic means. Relationships between voters and political parties are continually deteriorating.

The electorate is becoming more unsteady and erratic. When it comes to promoting and securing political support as well as influencing political preferences, political communication through electronic media is without a doubt the most effective method, especially when it comes to unstable or undecided voters who are the key factor in determining the outcome of an election.

Political communication specialists can sway preferences by using the media to project the image of the political world they desire. Both the transmitter side of the message and the receiver side have an impact on how political preferences are formed. The transmitter's expertise, sense of trust, natural appeal, and dependability can have an effect on the electorate. A good example of this would be the Democrats' claim that George W. Bush's smile covered up his sarcasm as a privileged boy during the 2000 presidential election.

From the perspective of the recipient, there are two factors that must be taken into account: the degree of political activity and the recipient's pre-existing political convictions.

The constructionist approach of Newman et al. (Negrine, 1996), who claim that we have the world on the one hand and the media on the other, is a very helpful method to understand how voters receive political communication and behave politically. Their interaction is not straightforward and simple. Through a variety of events and pieces of knowledge that have varying effects on them, the voters formulate their political and personal decisions.

A specialized procedure with the aim of establishing and upholding connections between the political parties or the political individual's objective aims is referred to as political communication strategic planning. It incorporates the tools and resources as well as the standards, demands, and circumstances that are prevalent in both society and the electorate. Strategic planning for political communication refers to a particular procedure.

Here is where our suggested conceptual framework is put to use. Party election strategies include the dissemination of a message with the intention of swaying the public and winning the election. The traits and qualities that are most important when developing a plan are revealed when the political struggle in pre-election periods is seen as a game between two actors—in our example, parties. As rational persons who have been previously described, the candidates should be the political marketers and communicators influencing the electoral campaigns.

Game theory provides the opportunity to quantify and thoroughly analyze the laws regulating political systems, political rivalries, and eventually electoral conduct in an effort to "win" the game. Applying the fundamentals of game theory, we assume that players who are political rivals (parties or candidates) are logical, solely motivated by the desire to defeat the rival, and emotionally insensitive. The "principle of common knowledge" governs how political opponents behave since each participant is aware of the options available to them as well as those available to their adversaries. They are unaware of one other's movements as they choose their plans simultaneously, and there is no cooperation for mutual assistance.

Therefore, political marketers can use game theory to anticipate an opponent's action, react correctly, and provide more accurate justifications and predictions.

In the study, we looked at how using game theory in political science may be used to predict elections as well as develop political marketing strategies. In addition to extending the interdisciplinary of the mathematical applications in politics, we were able to demonstrate the added value of utilizing Game Theory as a tool to understand and anticipate political competition. Game theory is used in political marketing to bridge the gap between political parties and how voters ultimately cast their ballots.

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