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How data management helps the information management: regrouping data using Principal Components Analysis.

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Abstract

The present study estimates the central factors that influence political behavior. We use data of 1995-1996, of 2006 and of 2010 so as to see how people understand, evaluate and regroup different factors using Principal Components Analysis. The PCA method reveals hidden or latent structures in the data. PCA is used as an exploratory tool in a complex phenomenon such as political behavior so as to get structural components (factors). Instead of using the original variables we use the proper similarity coefficients. So, the matrix of similarity coefficients was analyzed, since it is difficult to check the normality assumption for the original variables. Our sample was constituted by 681 individuals that participated in the interview process. This research is one of the first attempts to depicture different voters’ profiles. From this research exist, today, only some data. Thus, the relationship or the differences among variables cannot be explored. The study presents a historical research that took place in a period when many political and social changes happened, e.g. the change of the main leading figures of the Greek political scene, the deregulation of radio and television as well as the development of internet.

Keywords: voting behavior, political marketing, social networking, Principal Components Analysis, data analysis

1. Formation of Political Preferences: different aspects of a complicated process

The formation of political preferences is based on social, individual and often technological conditions (Apospori, Avlonitis, & Zisouli, 2010) influenced by the mediating role of political persons and political institutions (Abelson, Kinder, Peters, & Fiske, 1982). Their role is particularly important in the configuration of voters’ political behavior (Huckfeldt & Sprague 1992) even though today people form their political behaviour less ideologically oriented. Thus, the role of political personnel gains more and more importance in political life (Drummond, 2006; Kaase, 1994).
Democracy requires citizens’ active participation in public life (Rosenthal, 1998). Participation takes many forms such as participation in campaigns, financial support towards parties and candidates, participation in the elections (Davidson & Cotter, 1989), activity via new forms of social networking (Kaplan & Haenlein, 2010).

According to Riley (1983) politics are considered via three levels:

- the cognitive: includes people’s convictions and experiences
- the valuable: includes values, rules and moral codes
- the sentimental: includes people’s feelings and sentiments.

But these levels are not constant and permanent; They are redefined functioning in the context of democratic pluralism (Pildes & Anderson, 1990). The paper presents characteristics that constitute the above levels and demonstrate their importance. In these characteristics is based the modern design of social networking (Kaplan & Haenlein 2010).

The formation of political preferences is not only influenced by media or political marketing practices. On the contrary, people’s political preferences are influenced and depend on many other factors: moral, demographic and social (Achen, 1992; Deblinger et al., 1999) which can be very deeply political and at the same time very deeply personal (Brody & Sniderman, 1977).

Beck et al. (2002) pointed out that the configuration of political preferences is influenced by five basic factors categorized as follows: cultural, social, personal, mercenary and psychological.

The study shows in a descriptive way how the candidates’ characteristics, the identity of a political party, the mass media influence, the social issues as well as the integration of a country in a wider European environment can exert influence in voting behavior.

2. Methodology

The data collection took place in Athens and in the Prefecture of Arkadia, in 1995-1996. 681 individuals participated in the interview process. The questionnaire contained 66 questions, which aimed to analyze the criteria that Greeks use in order to make specific voting choices.

We used structured interviews with closed questions. This method provided us with certain type of factual, descriptive information (De Vaus, 2002). For the measurement of the answers it is used the 5 point Likert scale, as well as ranking and multiple choice options.

Principal Components Analysis (PCA) is a way of identifying patterns in data, and expressing the data in such a way as to highlight their similarities and differences. Since patterns in data can be hard to find in data of high dimension, where the luxury of graphical representation is not available, PCA is a powerful tool for analyzing data.

The method reveals hidden or latent structures in the data. Generally speaking PCA is used as an exploratory tool in a complex phenomenon such as electoral behavior in order to get structural components (factors). Instead of using the original variables we use the proper similarity coefficients. So, the matrix of similarity coefficients was analyzed. This is due since it is difficult to check the normality assumption for the original variables.

Taking into account the original data, further analytical techniques should be used. The extracted factors give evidence for the structure of the data and especially the main latent theoretical factors such as “party identification”, “issue voting”, “media orientation” and “candidates-voter proximity”.

3. Results

3.1. The Sample

59% of the respondents were men and 41% of the respondents were women. Their ages varied from 18 years old to 65 years old and above: at the age between 18-24 were 15.4% of the respondents, at the age between 25-34 were 17.9% of the respondents, at the age between 35-44 were 33.3% of the respondents, at the age between 45-54 were 2.6% of the respondents at the age between 55 - 64 were 20.5% of the respondents, at the age between 65 and above were 7.7% of the respondents. As far as it concerns their education level 23.1% of the respondents were of primary education level, 17.9% of the respondents were of secondary education level, 38.5% of respondents of
high school education and 20.5% went to University.

3.2. Frequencies

For 40% of the respondents unemployment and financial situation consist the major problems of Greek society in comparison with issues such as road network (11.5%), entertainment (4%), information management (2%), protection of the environment (4%), income (7.5%), bad political planning (6.5%) or politicians’ detachment (14%).

Only 14% of the respondents find politics very interesting and 12% of the respondents went to participate in politics intensively. Almost 30% consider that politics do provoke hope to people. For most respondents politics bring about disappointment (43%) and mistrust (52%). On the contrary only for the 10% of the respondents believe that politics bring about passion.

Responding to a question concerning the influence of different factors in political preferences almost 40% of respondents are influenced by ideology, 40% of respondents say that their family influence them in a very little degree but 52.5% of the respondents say that they have the same political preferences as their family. 55.2% say that they are not influenced by friends but 16.5% supports that they are influenced by their professional environment.

Almost 55% of the respondents consider the political program as a very important factor for the configuration of the political behavior. 25% of the respondents say that they are not influenced by media. 21.3% of the respondents say that satisfaction of their personal purposes constitutes a very important factor of influence in political preferences. 70% of respondents consider the politicians’ political positions in different issues of prime importance.

For those responders who have changed their political preferences 70% support that it happened because of disappointment from the political party they used to vote for.

For 67% of the respondents the contacts with political personnel and for 66.4% the politicians’ promises do not play an important role in voting behavior. Contrary to that, the reliability of political parties help the 66.1% of respondents to form their voting behavior.

As far as it concerns the general evaluation of political parties the political program constitutes for 32% of the respondents the most important characteristic, for 22% the effective leadership has a crucial role and for 26% the cooperation of the partial executives becomes crucial characteristic of the political reality.

For most respondents (47.9%) the way political parties act today differs radically with regard to the past but for almost 15% of respondents there is no significant difference.

For most respondents (60%) television and press constitute the most influential media even though the way news are presented does not satisfy them (40%).

As far as it concerns the press most of the respondents read articles (67.5%), financial analysis (48.3%) and sport analysis (45%).

People choose means of information regarding to quality (89.7%), objectivity of the information provided (86.4%) and variety of program choices (79%).

The radio is favorite for its political discussions for 44% of the respondents.

Criteria for choosing a candidate are: morality for 90% of the respondents, political experience for 73.3% of the respondents, family’s political tradition for 33.3% of the respondents, knowledge for 86.7% of the respondents and honesty for the 88.3% of the respondents.

The results of our data showed that political parties should ameliorate their morality (70%), modernization (61.7%), meritocracy (65%), honesty (68.3%), disengagement from financial interests (68.4%), and the reduction of favors for personal purposes (50%).

For 56.4% of the respondents Greece is not treated as an equal member in the European Union, 69.2% support that Greece did not use the European financial aid in a correct way and 71.8% say that Greek Economy is not at the right direction.

On the other hand for 59% of respondents there is no Greek political party that gives solutions to these problems.
3.3. Principal Components Analysis (PCA)

Using Principal Components Analysis (PCA) eight main factors, were extracted out of 64, which explain 34% of the total variability. In the table below the variables with significant loadings for each factor are presented.

<table>
<thead>
<tr>
<th>Questions/Factors</th>
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<tbody>
<tr>
<td>Political persons by name</td>
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<td>Political role in the government</td>
<td>0.44818</td>
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<td>Media content or Preferences on Media programs</td>
<td>0.73755</td>
<td>0.39259</td>
<td>0.58402</td>
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<td>Interest towards media</td>
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<td>0.38688</td>
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<td>Town - country problems</td>
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<td>Voting behavior</td>
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<td>-0.36920</td>
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<td>Evaluation of political persons</td>
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<td>Criteria for media preferences</td>
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<td>Interest in politics</td>
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<td>Changes and Modernization of political parties</td>
<td>0.33882</td>
<td>0.43231</td>
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<td>Political perceptions-preferences about parties</td>
<td>0.42413</td>
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<td>Political action</td>
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<td>The medias’ reliability</td>
<td>0.75247</td>
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<td>Demographics</td>
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<td>0.37459</td>
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<td>Political issues</td>
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<td>0.35743</td>
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In the first factor we see that the extent of knowing political personnel it is connected with the knowledge of their political role in the government or in the political party. Thus, it is evident that people relate politicians with the political action or the political role that they undertake (Cowen & Stutter 1997).

In the second factor we see that questions referring to the media are connected. In this questionnaire questions about media content or media preferences are combined with choice criteria and media’s reliability. That happens because Media’s influence is closely connected with trust and validity (Kaid, 2004).

In the third factor we see that questions concerning the town or country problems such as traffic are closely connected with questions that concern voting behavior and the political personnel’s evaluation. That means that the evaluation of these problems may be connected with the abilities and the action of political persons. People evaluate political persons via their political interventions and effective action (Mayer, 2000).

The fourth factor combines questions that show the connection among the interest in politics, the political action and the political preference as well as the voting behavior. It is evident that when people feel close to the sources of information develop a sense of involvement, which makes them more active (Glenn & Crimes, 1968).

The fifth factor combines the questions concerning the image and the necessary changes in political parties with the demographic characteristics. People belong to different demographical groups. Thus, they perceive differently the reputation or the image of political persons or parties as well as their symbols (Butler & Collins, 1994). It is also mentioned that people form their political preferences based or their needs for change and innovation (Netemeyer & Burton, 2006).
The sixth factor combines the questions concerning the media preferences with political preferences. People choose media and are influenced by them taking into account their validity and reliability (Demertzis, 2002).

The seventh factor combines the questions for changes in the political parties with those about essential political issues. This factor combines the evaluation of the political reality with the personal and social needs about change and innovation (Davies, 1965).

Finally, the eighth factor combines questions concerning the media content with these referring to the interest towards media. Media form their content based on their “personality” as well as on the people to whom they address (Papathanasopoulos, 1997).

4. Discussion – Future Research Analysis

The data were gathered 16 years before and it is evident that reality is different today. There are also means of mass media such as internet that the present study does not examine because at that period internet was not widely used.

The descriptive statistics give only the primary context of a research but the luck of the total of the data did not permit us to use complicated statistical tools. That means that with the data that exist we cannot realize any other analysis and it is not possible to add coefficients or significances at the results.

Because of questions’ wording respondents were influenced by phenomena of social bias. That means respondents answer with such way in the questions so as to appear politically correct to researchers. This happens because researchers make “sensitive” or “dangerous” questions (Fisher & Tellis 1998; Vinten, 1995).

On the other hand the above results, even though constitute a simple form of descriptive analysis give us interesting hints of how people think, evaluate political reality, and political personnel and what is important for them in order to form their political preferences. They also give us a useful context of thinking putting essential values at the center of the new political marketing tools and of social networking.

It is interesting to see how the results are connected with recent studies. We used two studies. The first one was realized in the city of Athens on 2006 by the Athens University of Economics and Business. The quantitative data were selected through telephone questionnaires administered in a random sample of 900 Athenians who voted in the municipal election of September 2006; the data collection took place on October 2006 and the response rate was 33% (Markaki, 2007).

In this research 38.89% of the respondents evaluate high the environmental town problems as well as problems with garbage collection (59.43%). As we see unemployment (23.73%) and health services (23.81%) remain major issues of the everyday life. Criminality (27.97%) and immigrants (20.83%) emerge also as new priorities.

As far as it concerns criteria of voting choice 43.6% of the respondents evaluate primarily the political personality, 35.4% of the respondents evaluate primarily the experience and the political positions of a politician and 29.7% of the respondents evaluate primarily the leaders. Criterion of voting choice remains the satisfaction of personal purposes (16%) and the familial party identification (26%). Political marketing tools seem to have low influential penetration to voters. Only 6.4% of the respondents evaluate these tools primarily.

Data about political information showed that 77.8% of the respondents do not use internet for their political information but 22.4% use it as a mean of political information.

Finally, as far as it concerns the skills and the competencies of politicians 16.6% of the respondents say that they trust political persons, 28.1% believe they are able to solve crucial problems and 24.9% of the respondents believe they have honest intentions.

The second research took place in Greece, in Athens on 2010. The data were selected through telephone questionnaires with the BELLVIEW 6/ CATI (computer aided telephone interviews) process and administered in a random sample of 1000 Athenians. The research was administered before the elections of 2010. People were asked to evaluate candidates and political parties. They were also asked to focus on their priorities and evaluate daily problems. Via the research people depicted the characteristics of the appropriate political personality (Sefertzis, 2010 personal contact).

As far as it concerns the importance of political persons 72.2% of the respondents said that they will focus primarily on political personalities before they vote rather than on political parties where the 15.2% of the respondents primarily focus.

As far as it concerns the criteria for voting political persons: 69.4% of the respondents said they will vote those
who believe as more competent and honest, 13% of the respondents say they will vote those who are supported by
the political party they support, 8.5% of the respondents will vote those who are against the hard measures taken
by the government against the Greek financial crisis.

As far as it concerns the use of media 79.5% of respondents read the press, 92.7% watch television for political
information, 51.5% of respondents listen to the radio as source of political information and 80.2% of the
respondents watch informational programs on TV.

Finally 49.5% of the respondents do not trust their friends or colleagues for forming their voting behavior and
almost 40% of the respondents do not trust their family members.

Comparing the findings of the 1995 research with the recent ones we see that diachronically people’s needs and
values do not change. People focus primary on social and financial problems such as unemployment and income as
did at the past.

New priorities emerge such as criminality. Contrary to the past, today people decide less ideologically oriented
but with more pragmatic way taking into account the general everyday life. Economy remains one of the most
important issues in everyday life. People want politicians to have skills, competencies, honesty and morality.
Political program and effective teamwork emerge as leading forces. Mistrust and disappointment remain a crucial
problem of the Greek political reality. Although it is not clear enough if this disappointment is connected with
personal purposes, result of the clientelistic system or result of a general dissatisfaction about social, political, and
financial situation (Markaki & Apospori, 2008).

People report as less important sources of information and influence their family, their friends, or their
professional environment. They use media and press as source of everyday information believing that these are
reliable and valid (Arthur and Weber 1983). Internet use for political information is not as extended. But new
forms of social networking via internet base their design on the interactive information and push people to take but
at the same time to produce information (Kaplan & Haenlein, 2010). This motivates the extended internet
development in politics (Sanjeev et al., 2002).

Political personnel gain more and more political importance as they are evaluated for their skills and
competencies, their political experience and knowledge. The new social networking media are organized with a
person – centered strategy replacing the natural presence with the visual one. The person – centered social
networking disconnect politics from interests and let people take responsibilities and action (Kaplan & Haenlein,
2010). For future research it is necessary to investigate the way these new forms of social networking can
influence voting behavior. In Greece social networking via social media are not yet directly connected to politics.
The first design started and most politicians created accounts on Facebook and Tweeter. These accounts must have
strategic axes, targeted content and oriented action. Political marketing can use people’s needs, priorities and
evaluations to participate in order to create effective political marketing tools via social networking. The present
study offers the material for their content and design.

5. References
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