

KNOWING THE ELECTORAL PREFERENCE THROUGH POPULARITY ON FACEBOOK

CONOCIENDO LA PREFERENCIA ELECTORAL A TRAVÉS DE LA POPULARIDAD EN FACEBOOK

Rafael Martínez Pelaez

Universidad De La Salle Bajío, Mexico
rmartinezp@delasalle.edu.mx

Diego Toto Jiménez

Universidad de la Sierra Sur, México
dtoto@unsis.edu.mx

Noe A. Castro Sanchez

Centro Nacional de Investigación y Desarrollo Tecnológico, Mexico
ncastro@cenidet.edu.mx

Leobardo A. Ceja Bravo

Universidad De La Salle Bajío, México
laceja@delasalle.edu.mx

Adalberto Iriarte Solis

Universidad Autonoma de Nayarit, Mexico
adalberto.iriarte@uan.edu.mx

Sandra A. Olivares Bautista

TecNM / Instituto Tecnológico José Mario Molina Pasquel y Henríquez, Mexico
sanda.olivares@lagos.tecmm.edu.mx

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Abstract

This study examines the possibility of identifying the political-electoral trend of a presidential election based on the popularity of candidates on Facebook. We collected data from Facebook accounts of the four candidates to Mexico's Presidential in 2012, and we analyzed the data against the election result of July 1, 2012. We found a positive relationship between the number of friends and votes, corroborating previous research. Moreover, we introduced the number of times the Facebook like button was clicked by friends as a variable to measure the voting trends, finding that it has a stronger correlation with votes.

Keywords: Elections, political electoral trend, political participation, popularity, social network sites.

Resumen

Este estudio examina la posibilidad de identificar la tendencia político-electoral de una elección presidencial a partir de la popularidad de los candidatos en Facebook. Se recolectaron datos de las cuentas en Facebook de los cuatro candidatos a la Presidencial de México en 2012 y se analizaron contra los resultados electorales del primero de Julio del 2012. Se encontró una relación positiva entre el número de amigos y los votos conseguidos en la elección, corroborando investigaciones previas. Además, se introdujo la cantidad de veces que los amigos hicieron clic en el botón me gusta de Facebook como una variable para medir la tendencia electoral, obteniendo una mayor correlación con los votos.

Palabras Claves: Elecciones, participación política, popularidad, sitio de redes sociales, tendencia político-electoral.

1. Introduction

Social Network Sites (SNS) have rapidly accepted by Internet users due to the possibility to keep in touch with family, friends and others [Boyd, 2007]. In this scenario, Internet users have the option to share ideas, comments, and feelings with others, without consider barriers of time and space. Moreover, the messages published in SNS travel through the cyberspace faster than traditional media such as television, radio, and print advertising.

Therefore, politics and their teamwork are using the Internet and SNS to spread their political message and to establish communication with citizens in electoral times. The first case study of the adoption of the Internet in electoral campaigns dates back to the year of 1992, with Bill Clinton [Perlmutter, 2008], when Bill Clinton used the superhighway of information to spread his political discourse. Since then, the evolution of the media through the Internet and its adoption in an electoral campaign has been of great interest to the scientific community.

In recent years, many researches were done to understand how the Internet and SNS are used in campaigns [Abejon, 2011], [Aparaschivei, 2011], [Baumgartner, 2010], [Bekafigo, 2013], [Bimber, 2003], [Ceron, 2014], [Lawson, 2005], [Romeo, 2016], [Tumasjan, 2010], [Vergeer, 2013], demonstrating that Internet and SNS are a communication channel where candidates can share their political message using text, video and photos. Moreover, the political message transcends the barriers of time and space allowing citizens to know and analyse it. In this way, citizens contribute to spreading the message of their favourite candidate.

In parallel, many researchers were done to identify the relationship between electoral campaigns, through Internet and SNS, and citizen's participation [Donath, 2004], [Ellison, 2007], [Tong, 2008], [Zywica, 2008], identifying that Internet and SNS create new possibilities and opportunities to citizens for sharing their opinions and comments about a specific topic. Moreover, SNS promotes the citizen's participation and SNS create a direct communication channel with politicians.

Likewise, few researchers have studied the impact of SNS in the election results [Ceron, 2014], [Tumasjan, 2010], [Gayo, 2013], [Hanson, 2010], [Hutto, 2013], [Larsson, 2012], finding that SNS promote voter participation and engagement. However, SNS are still not decisive in the election results.

Among all the SNS in Mexico, we decided to focus on Facebook for the following reasons:

- At the time of the study, Facebook was the most popular SNS in Mexico.
- Candidates and Mexican citizens used Facebook to share text, photo, and video related with the electoral campaigns.
- The Facebook like button is useful to quantify the number of friends who like any message.

The purpose of the research is to explore if it is possible to identify the political-electoral trend by means of the candidates' popularity on Facebook. According to [Tong, 2008] and [Zywica, 2008], popularity is related with the number of friends and the length of the wall in Facebook. For that reason, we quantify the number of messages published by each candidate in her/his wall and number of friends to

measure the popularity of candidates on Facebook during the Mexico's 2012 presidential elections. In addition, we propose the use of Facebook like button to measure users' popularity, considering the Facebook like button was clicked by friends,

Literature Review

According to [Perlmutter, 2008], Bill Clinton was the first candidate who used the Internet during an election campaign, in 1992. At that time, the Internet was used to spread his political speech [Gibson, 2004]. Eight years later, the Internet became a key element during the electoral campaigns of George W. Bush and Al Gore, thanks to the ease of sending messages via email and raising funds through donations using a Web page [Bimber, 2003].

In 2004, during the primary elections of the Democratic Party, Howard Dean took advantage of the Web-blog in an electoral campaign [Kerbel, 2005]. The main contribution of the Web-blog, during an electoral campaign, is a close and personal communication channel between the candidate and citizens [Lawson, 2005]. For the first time, the citizens could get a certain level of access to ideas, thoughts, and words of a candidate.

Since 2004, some researchers have studied the impact of Web-blogs in electoral campaigns. Firstly, [Kaye, 2004] reveal that Web-blogs encourage political information in a clear and direct way. Three years later, [Meraz, 2007] explains that Web-blogs offer a high level of control and confidence in the election campaign. In this way, [Sweetser, 2007] demonstrates that Web-blogs have the greatest impact among young citizens, involving them in the electoral process. In the next year, [Coleman, 2008] find that Web-blogs is an important tool for political communication. Finally, [Farrell, 2008] point out that Web-blogs can be the means for a public and open debate. Then, during the election campaign of George W. Bush and John Kerry to the Presidency of the United States of America, researchers found that a message sent by email can create a multiplier effect, if it comes from a friend or acquaintance, instead of a candidate or political party, due to the credibility and trust that was previously established [Williams, 2005].

Parallel to the rise of Web-blogs in the political environment, a new way of communication on the Internet emerged, called Social Network Sites. In this emerging topic, [Baumgartner, 2010] studied the use that young people, between 18 and 24 years of age, gave to social network sites during the 2008 Presidential Election in the United States of America. The study finds that young people used social network sites to get updated information. Moreover, the results demonstrate an increase in the adoption and the use of Facebook, YouTube, and Twitter - by candidates, political parties and interest groups. Then, [Aparaschivei, 2011] performs an analysis of the use of social network sites as a communication and electoral promotion tool for the 2009 presidential elections, in Romania. Two years later, [Gulati, 2013] performs an analysis of the adoption and non-adoption of Facebook, by Republican and Democratic candidates in 2012, through the theory of diffusion and innovation introduced by [Rogers, 2003]. The results demonstrate that candidates who are not Facebook users have low funding and are older, compared to candidates who use Facebook.

Regarding the study of Twitter in electoral campaigns, the work done by [Tumasjan, 2010], during the Federal elections of Germany in 2009, demonstrate that Twitter provides a direct and an open communication channel between politicians and citizens, considering a free expression of opinions. Moreover, they found that the number of publications may reflect the election result. In the same sense, [Ceron, 2014] shows that in 140 characters is possible reflect the political preferences of citizens. No less important is the role of YouTube in election campaigns. [Carlson, 2008] explore the impact of YouTube on the Parliamentary elections in Finland. They found that candidates had low interest in the adoption of social network sites; however, it is clear that YouTube allows citizens to express their opinions. Another result to take into account is the observation made by [Gibson, 2011] in which smaller political parties make greater use of YouTube.

Facebook

Since its launch in 2004, Facebook has the attention of researchers who have an interest in its adoption in electoral campaigns because Facebook offers a

communication channel between politicians and citizens. As a consequence, the message can flow among a network of friends without considering the limitations of borders, time, and space.

In this scenario, each user has the possibility to create personalized profiles with general information, such as education, work history, place of residence, and preferred interests [Caers, 2013]. Therefore, a politician or candidate for popular election can create and personalize a profile based on its image and political ideology, fostering greater empathy among its followers, and getting closer to the citizenry. Another advantage is the possibility to expand the list of friends. The Facebook profile gives the opportunity to expand their social network, among users with common interests due to the following advantages [Dader, 2011]:

- Low cost compared to the traditional mass media.
- Number of users who join Facebook every day.
- Rapid multiplication of each message.

Popularity Indicators on Facebook

According to [Tong, 2008] and [Cillessen, 2011], sociometric popularity is associated with the number of social evaluations which each person receive from peers. Likewise, [Cillessen, 2000] defined popularity as follows: “popularity has typically referred to the rank ordering of children or adolescents in their peer groups according to a criterion of status.

Those at the top of the rank ordering have been labelled popular”. So, popularity is the sum of perceptions from people about a particular one, and it is quantified from who they like most or like least. As a consequence of those theories, the main indicators of popularity on Facebook are the number of friends and the length of the wall.

Conforming to [Cillessen, 2000], person’s popularity implies acceptance, preference and impact on the activities of others. Therefore, we propose the use of Facebook like button as a variable to measure the candidates’ popularity. In this case, we quantified the Facebook likes button on messages published by candidates.

3. Method

Empirical Goals

This study examines evidence linking the popularity of four candidates on Facebook to 2012 Mexican Presidential Election Results. The research reported here also investigates the relationship between votes and candidates' popularity on Facebook. Is it possible to know the electoral results from the candidates' popularity on social network sites?, recollecting data from each candidate's Facebook profile, the authors analyse and identify the variables which can be used to know the electoral results.

Research Questions and Hypothesis

With the existing literature on the use of social network sites on political campaigns and the popularity indicators on Facebook in mind, this study uses the data collected from the candidate's Facebook profile during the Mexico's 2012 Presidential Elections to test the relationship between Presidential Election Results and candidates' popularity on Facebook. Formally, the research questions are as follows:

- Q1: Does the relationship between 2012 Mexican Presidential Election Results and candidates' popularity on Facebook vary according to the number of messages, the number of friends, and the number of time the friends clicked the Facebook like button?
- Q2: Does it possible to know the 2012 Mexican Presidential Election Results considering the candidates' popularity on Facebook?

From the research questions, we propose the following hypotheses:

- H1: 2012 Mexican Presidential Election Results are positively associated with the number of messages published by each candidate.
- H2: 2012 Mexican Presidential Election Results are positively associated with the number of friends of each candidate.
- H3: 2012 Mexican Presidential Election Results are positively associated with the number of time the friends clicked the Facebook like button on messages published by a candidate.

Sample

From March 30 to June 27, we followed the candidates' Facebook profile, collecting the data created by each candidate and their friends. We collect general information of each profile and specific information:

- The number of messages published.
- The number of time the friends clicked the Facebook like button.
- The number of friends.

Mexico's 2012 Presidential Elections

In the last week of the Presidential Election Campaign, several surveys were conducted to know the electoral preference of Mexican citizens. All the polls positioned candidate Enrique Peña Nieto as the favourite to win the presidency of Mexico. In table 1 is show the electoral preference of Mexican citizens according to the pre-election polls conducted by Consulta Mitofsky, GEA-ISA, BGC, Reforma, and Buendía & Laredo.

Table 1 Pre-election poll one week before July 1, 2012.

Company	Enrique Peña Nieto	Andrés M. López Obrador	Josefina Vázquez Mota	Gabriel Quadri de la Torre
GEA-ISA	47%	28%	22%	2.6%
BGC	44%	28%	25%	3.0%
Reforma	41%	31%	24%	4.0%
Consulta Mitofsky	45%	29%	24%	2.0%
Buendía & Laredo	45%	28%	24%	3.0%

Presidential Election Results

On Sunday, July 1, 2012, Mexican citizens experienced the largest electoral process ever seen. Mexicans elected the President of the Republic, 500 members to serve in the Chamber of Deputies, 128 members to serve in the Mexican Senate, 6 gubernatorial elections, 579 local deputies, 876 councillors, 16 heads of delegations, 20 municipal boards, and the head of the government of the Federal District, for a total of 2,127 positions of popular election [IFE, 2012].

Undoubtedly a highlight of the elections held on July 1, 2012, was the high participation of citizens in the urns with 63.34% which represents that 50 million 523,153 of Mexican citizens voted [IFE, 2012]. In table 2 is show the Presidential Election Results. The winner of the Presidential Election was Enrique Peña Nieto with 39.19% of votes, followed by Andres M. López Obrador with 32.40%, Josefina Vázquez Mota with 26.06%, and Gabriel Quadri de la Torre with 2.35%.

Table 2 Mexico's 2012 Presidential results.

Political Parties	Candidate	Votes
PRI, PVEM	Enrique Peña Nieto	19,226,784
PRD, PT, PMC	Andrés M. López Obrador	15,896,999
PAN	Josefina Vázquez Mota	12,786,647
PNA	Gabriel Quadri de la Torre	1,150,662
Total votes:		49,061,092

Candidates' Facebook Profile

According to the information published by Internet World Stats in 2012, 42 millions of Mexican citizens had Internet access, and 38 million 463,860 had an account on Facebook. As a consequence, 36.52% of the Mexican population had Internet Access, and 33.45% had a Facebook profile. In this scenario, the electoral campaign teams took advantage of the most popular social network site in Mexico. In table 3 is show the name of the Facebook profile of each candidate, and the date when each one joined Facebook.

Table 3 Information about the candidates' Facebook profile.

Candidate	Facebook profile	Joined Facebook in
Enrique Peña Nieto	EnriquePN	September 5, 2008
Andrés M. López Obrador	amlo2012	July 21, 2009
Josefina Vázquez Mota	Josefinamx	February 8, 2010
Gabriel Quadri de la Torre	GabrielQuadri	February 16. 2012

Candidates' Friends on Facebook

At the beginning of the electoral campaign, the total number of friends was 3,342,903 distributed as follows. The number of friends of Enrique Peña Nieto was

1,839,197 or 55.02%, followed by Josefina Vázquez Mota with 1,350,881 or 40.41%, Andrés M. López Obrador with 151,837 or 4.54%, and Gabriel Quadri de la Torre with 988 or 0.03%. On April 30, 2012, the number of friends of Gabriel Quadri de la Torre increased around 92.12% compared with the initial list on March 30, 2012, followed by Andrés M. López Obrador with 41.80%, Enrique Peña Nieto with 25.49%, and Josefina Vázquez Mota with 16.02%.

On June 30, 2012, the number of friends of Andrés M. López Obrador increased around 28.41% compared with the data collected on May 30, 2012, followed by Gabriel Quadri de la Torre with 18.49%, Enrique Peña Nieto with 12.50%, and Josefina Vázquez Mota with 12.49%. The final number of friends was 5,922,140.

In table 4 is show the total number of friends by candidate and specific date of the electoral campaign.

Table 4 Information about candidates' friends on Facebook.

Candidate	March 30	April 30	May 30	June 30
Enrique Peña Nieto	1,839,197	2,468,494	2,916,957	3,333,609
Andrés M. López Obrador	151,837	260,876	420,271	587,012
Josefina Vázquez Mota	1,350,881	1,608,598	1,654,695	1,890,901
Gabriel Quadri de la Torre	988	12,542	90,160	110,618

Messages Published by Candidate on Facebook

The total number of messages published by candidates during the electoral campaign was 282, which represents an average of 3.13 messages per day. In table 5 is show that Enrique Peña Nieto published 32.97% of messages, followed by Gabriel Quadri Vázquez with 28.72%, Josefina Vázquez Mota with 23.75%, and Andres M. López Obrador with 14.53%.

Table 5 Total messages published by candidate.

Candidate	Number of messages
Enrique Peña Nieto	93
Andrés M. López Obrador	41
Josefina Vázquez Mota	67
Gabriel Quadri de la Torre	81
Total	282

At this point, we can corroborate that minor parties use social network sites more than major parties to share their political messages due to their low budget. In table 5 is show that Gabriel Quadri de la Torre used Facebook more than other candidates to share his political message, corroborating the conclusion by [Rogers, 2003] and [Gibson, 2011].

Facebook Like Button Clicked by Friends

In table 6 is show the total number of times friends clicked the Facebook like button on messages published by candidates during the election campaign.

Table 6 Total number of times friends clicked the Facebook like button.

Candidate	Facebook likes
Enrique Peña Nieto	2,099,785
Andrés M. López Obrador	1,009,404
Josefina Vázquez Mota	858,277
Gabriel Quadri de la Torre	66,111
Total	4,033,577

3. Results

In order to test whether there was a relationship between votes and candidates' popularity on Facebook, correlation coefficient – $r_{Pearson}$ and $r_{Spearman}$ – were run to measure its statistical relationship. Equation 1 shows the Pearson's correlation coefficient and equation 2 shows the Spearman's correlation coefficient.

$$r_{Pearson} = 1 - \frac{\sum XY - \frac{\sum X \sum Y}{N}}{\sqrt{\left(\sum X^2 - \frac{(\sum X)^2}{N}\right) \left(\sum Y^2 - \frac{(\sum Y)^2}{N}\right)}} \quad (1)$$

Where, vectors X and Y contain N elements.

$$r_{Spearman} = 1 - \frac{6 \sum (D_x - D_y)^2}{N(N^2 - 1)} \quad (2)$$

Where, D_x and D_y are the rank matrices of X and Y , respectively.

We can expect a positive linear relationship between votes and number of friends because the number of friends increases every month, according with table 4, but

we cannot predict the strength of the association. Also, we expect a positive linear relationship between votes and number of times friends clicked the Facebook like button on messages published by candidates because it represents the acceptability, influence, interest, and impact on others through each message.

In figure 1 is show a visual comparative among votes received by each candidate and candidates' popularity, demonstrating that two variables have similar behaviour with the votes of each candidate. It is clear that the number of messages published by each candidate in her/his wall does not provide information about the political-electoral trend.

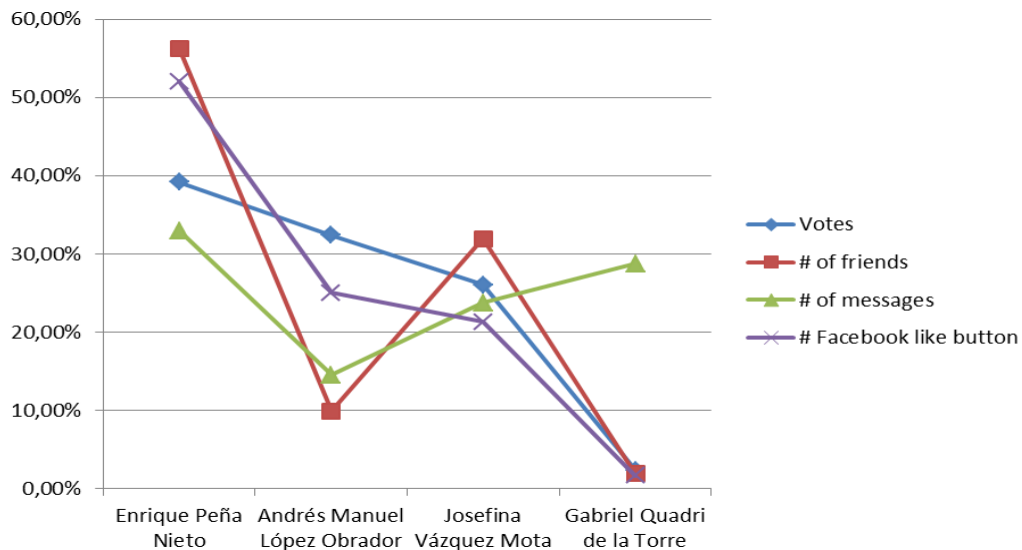


Figure 1 Comparison between real votes and candidate's popularity.

Due to the scales of measurement for the data, the appropriate correlation coefficient to use is Spearman. However, we decided to compute Pearson's and Spearman's correlation coefficient in order to corroborate the strength of relationships. In table 7 is show the correlation coefficient of each relationship.

Table 7 Summary.

Relationship	r_{Spearman}	r_{Pearson}	r^2
1	0.8000	0.736	0.540
2	0.200	-0.131	0.017
3	1	0.912	0.831

The first relationship is between number of friends and votes where the Spearman's coefficient is .800. In this case, the number of friends is strongly correlated with votes. The Pearson's correlation coefficient for this relationship is 0.736. Then, the two correlation coefficients are similar and lead to the same conclusion.

The second relationship is between number of messages published by candidates and votes where the Spearman's coefficient is .200. In this case, the variable number of messages published by candidates is negligible correlation. The Pearson's correlation coefficient for this relationship is -0.131, corroborating the previous result.

The third relationship is between number of times friends clicked the Facebook like button on messages published by candidates and votes where the Spearman's coefficient is 1. In this particular case, the variable is strongly correlated with the votes. The Pearson's correlation coefficient for this relationship is .912. Therefore, the two correlation coefficients are similar and lead to the same conclusion.

Moreover, table 7 shows the R-square result of each relationship, corroborating that the stronger relationship is between number of times friends clicked the Facebook like button and votes with a value of 0.831.

In figure 2 is show a visual comparative among number of votes received by each candidate, number of times friends clicked the Facebook like button, and pre-election polls presented in table 1. It is clear that the candidates' popularity on Facebook is useful to identify the political-electoral trend.

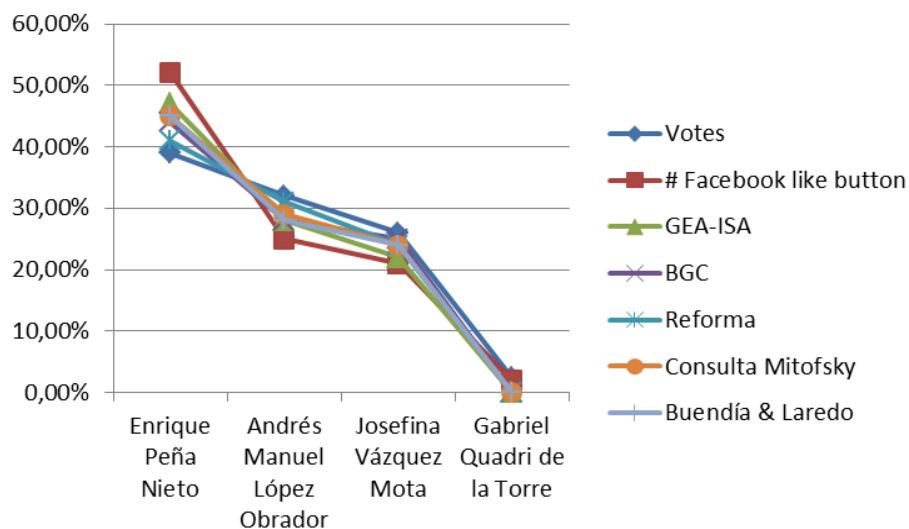


Figure 2 Comparison between real votes and pre-election polls.

4. Discussion

Social network sites are more and more popular in election campaigns due to the possibility of sharing political messages and establishing a direct connection between candidates and citizens. Mexico's 2012 presidential elections were unique in the sense of the adoption and use of social network sites by each candidate. This phenomenon was new for everybody in Mexico, including the National Electoral Institute of Mexico. For the first time, in an electoral campaign, a simple person could ask some information to her/his favourite candidate at any time and from anywhere giving the possibility to interact with physical restrictions.

In this way, citizens could express their preference voting by sharing the candidate's message in her/his Facebook wall, following a candidate on Facebook, and giving her/his like to some messages. In this study, we found that the most relevant correlation between popularity on Facebook and votes is the number of times the follower click the like button on messages published by a candidate.

In this particular case, Enrique Peña Nieto was the most popular on Facebook since the beginning due to his Facebook account was created on September 5, 2008, more than one year compared with Andrés M. López Obrador. This affirmation is evident in tables 3 to 6, where the friends of Enrique Peña Nieto still growing month by month and participating very active all the electoral campaign.

In figure 1 it is clear that Facebook popularity has close behaviour than final votes per candidate. In particular, the Facebook likes on messages published by candidates. This finding is corroborated in figure 2, where the behaviour of clicked the Facebook like button is similar to the pre-election polls.

These results could be useful for candidates and their teamwork to identify opportunities based on citizen's opinion and comments on Social Network Sites. Further, candidates and their teamwork can know the impact of the electoral campaign among citizens at very low cost compared with traditional polls.

5. Conclusions

The purpose of this study was to explore if it is possible to identify the political-electoral trend from candidates' popularity on Facebook. We used data collected

from candidates' Facebook profile of the Mexico's 2012 Presidential elections, finding that two variables have strongly correlated with votes. Our results provide evidence that these positive associations exist. The stronger association is between the Facebook likes on messages published by candidates and votes.

In addition, we proposed the Facebook likes as a variable to measure voting trends. This variable complements previous work on political-electoral trend, providing additional information.

Nowadays, we are analysing the electoral results of Mexico's 2018 election results in order to corroborate the benefits of our proposal.

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