

What Makes a Candidate Win? Examining the Effect of Different Topics of Election Promises on Councilor Election Results in Taiwan

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As one of the most popular topics within political communication research, elections have been paid a lot of attention to, especially the predictors of election result. Previous literature has proposed and adequately verified the effect of demographics (e.g. age, gender, and education), party effect (e.g. liberal and conservative), personal image (e.g. clothing and smile), political party funding, media strategy, and some other factors of candidates through the process of election. While, as an important tool for voters to evaluate candidates, form prospective beliefs about them, and make a voting decision (Born, vanEck, & Johannesson, 2018), the election promise made by candidates through their campaigns has received less scholarly attention. Generally, voters have their own policy preferences, and candidates who can implement the preference in their election promises will maximize the chances of winning the election (Jasim Alsamydai & Hamdi Al Khasawneh, 2013). Meanwhile, online political information provider like voter guidance website has improved the openness and transparency in organizing and carrying out election, which can improve the engagement of public (Xenos and Moy, 2007) and make the relationship between the election promise and result more observable. And the online political information is the data source of this study.

In order to identify the different policy focuses of candidates, one feasible way is to extract the topics from election promises of each candidate and quantify them. Compared with traditional quantitative methods of processing text data (e.g. content analysis), computational quantitative methods such as text mining could save both manpower and time and avoid the subjective bias of coders to a certain degree. In the current study, the data of candidates of the 2018 local councilor election in Taiwan were used to answer the following questions:

1. How can researchers extract and quantify topics computationally from election promises of candidates?

2. Do policy preferences exist in the local councilor election in Taiwan? If it exists, which topic of election promises could predict a successful election result?

Topic Extracting and Quantifying

The data were scraped from *Vote Taiwan* (<https://votetaiwan.tw>), a voter guidance website with a high popularity in Taiwan where election promises, demographics, party, and other political information of each candidate ($N = 1753$) of the 2018 Taiwan local councilor election are publicly available. For the topic extracting, previously, supervised methods (e.g., Giraudy, 2015) were commonly used in machine-based political text mining but found to require high-quality training sample and had lack of efficiency (Hillard, Purpura, & Wilkerson, 2008). Unsupervised methods, such as LSA and LDA (e.g., Ryoo & Bendle, 2017) were also criticized as they focused exclusively on word co-occurrence without accounting for the word context. Here in this study, we employed word2vec (Mikolov, Chen, Corrado, & Dean, 2013), a context-awareness method for distributed representation of words and phrases, and K-means Clustering to extract meaningful topics from election promises. Skip-gram model of word2vec was used due to the capacity of accurate representation of infrequent words for a small training sample size (Giatsoglou et al., 2017). Finally, 33 clusters of words were extracted and identified as topics based on 6,665 distinctive vectorized words with 300 dimensions which are partly shown in Table 1.

Table 1 *The clustering result of election promises*

Number of words	Cluster of words (English translation)	Topic
64	公宅, 租屋, 樂業, 廣建, 居住公寓, 電梯, 住戶, 房屋, 修繕..... (public house, house renting, live in peace, build more, apartment, elevator...)	#housing
33	動物, 收容, 寵物, 疫苗, 毛小孩, 領養, 犬貓, 結紮..... (animal, animal shelter, pet, vaccine, fur-kid, adopt, dog and cat, ligate...)	#animal protection
108	幼教, 托育, 育兒, 托兒所, 幼稚園, 學前, 褓母..... (early edu, daycare, baby care, nursery, kindergarten, preschool, babysitter...)	#child care
59	農業, 行銷, 產銷, 生產, 精緻化, 農民, 農漁 (agriculture, sale, produce and sale, produce, delicate agriculture, farmer, fisherman...)	#agricultural product sales

To quantify the topic, weighted term frequency of each topic of one certain candidate was calculated according to the election promise of this candidate. Thus, for each candidate, there would be 33 new variables as the “topic index” and are the form of percentage.

Topics of Election Promises and Policy Preferences

To compare elected ($N = 912$) and non-elected candidates ($N = 841$), logistic regression was employed in this study, where independent variables were topic index of election promise, the party, demographics, and some other factors, while the dependent variable was the election result. The result of logistic regression is shown in Table 2.

Table 2 *The result of logistic regression*

<i>Predictor</i>	<i>Coefficient</i>	<i>Standard error</i>
<i>Topic index</i>		
#finance	.25*	.13
#gender equality	.06	.12
#anti-drug and violence	.19	.12
#public security	.15	.10
#entrepreneurship	.13	.10
#tourism	.32**	.10
#taxation	0.16	.09
#disadvantaged group	.49**	.19
#smart city	.40**	.13
#animal protection	.24*	.10
#administrative transparency	.26**	.09
#internationalization	.02	.10
#serving the people	.62**	.20
#streamline administration	.75**	.25
#land planning	.20	.12
#technology industry	.34**	.11
#agricultural product sales	.54***	.16
#resource allocation	.54**	.18
#transportation	.20*	.09
#public facility	.39**	.13
#housing	.31*	.12
#elderly care	.24*	.11
#culture and art	.21*	.10
#environment protection	.28*	.12
#subsidy	.21	.13
#medical	.19*	.10
#legal advice	.22*	.09
#partisanship	-.23	.15
#education	.33***	.10
#national affairs	.22	.12
#child care	.24*	.11
#aborigines	.41	.22
#labor issue	.29**	.10
<i>Personal features</i>		
Age	-.52***	.08
Gender	-.07	.07
Highest education	.13	.07

Previous councillorship	1.15***	.09
Number of proposals	-.03	.09
Smile index	.12	.07
Community support	-.15*	.07
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<i>Parties</i>		
KMT	.52	\
DPP	-.10	\
IP	-.23	\
Other	-.28	\

Missing values of the highest education and age were replaced by mode value and mean value respectively; Constant = .15, Pseudo $R^2 = .29$, $-1 \times \text{Log Likelihood} = 863.18$; $*p < .05$; $**p < .01$; $***p < .001$.

Logistic regression revealed that, in the context of Taiwan democratic politics, successful election results were positively associated with a certain group of topics of election promises, indicating that the policy preference indeed exists in the process of the 2018 Taiwan local councilor election. Specifically, candidates who put more emphasis on #agricultural product sales, #education, #tourism, #smart city, #labor issue, and 17 other topics are more likely to be elected, in addition to previous councillorship.

Discussion and Conclusion

This study verifies the existence of policy preference in the 2018 Taiwan local councilor election by examining the relationship between the election promise and the election result, and findings resonate with the literature on the election promise. First, the topic of election promise plays a significant role in the election. The topic distribution of the election promise of one candidate can present his or her policy focuses, and if the policy focus of the candidate is consistent with the policy preference of voters, the candidate is more likely to be elected. Second, the topic of election promise is an important tool to observe what voters care about the most when they give their votes. Different from the presidential election of Taiwan whose candidates focus more on international and military topics, candidates of the local councilor election focus more on economy, education, and development of the city, which are closely related to the daily life of local residents. Third,

the empirical evidence is consistent with the perspective of “home style” proposed by Yang and Chen (2017). The strength of connection with the voters plays a more important role in local councilor election than presidential election. On one hand, the discourse strategies in election promises of candidates are the reflection of their intention to appeal to target voters, which are based on their knowledge of the local public opinion. On the other hand, the election promise information in this study is supposed to be accessed mainly through website, which might facilitate the selective exposure, memory and sharing procedures of voters, and thereby lead to voting decisions identical to their initial concerns on public issues.

Finally, for the methodology, this study verified the applicability and the feasibility of the innovative idea for extracting topics from text, from word2vec to K-means clustering (Guan, Zhang, & Zhu, 2016), and applied it to the Chinese natural language processing.

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Appendix

Data Set

<https://github.com/xjincomm/Data/raw/master/Taiwan%20Data.xlsx>

Source Code

<https://nbviewer.jupyter.org/gist/xjincomm/775fd949ec65a701108be7c09e24269f>