

Analysis of political communication on social media using computational social science method

Masanori Ajito, Akira Ishii and Yasuko Kawahata
Tottori Univ and Gunma Univ

1. INTRODUCTION

As public networks spread, devices and social media that foster simultaneity and interactivity have developed too. The history of people’s behavior and communication online is digitally recorded and accumulated, and it is being utilized in various research fields and industries. In this research, we use mathematical models of hit phenomena to quantitatively and qualitatively analyze online and offline human behavior and social phenomena related to politics that determine the social framework. Political parties in Japan frequently take turns in top, further disassociation, and party. In the cabinet about 10 years, 6 tops have been replaced [1]. Recently, a party changed the name of the political party, further disassociation, the constitutional Millennium Democratic Party, the Hope Party gathered. On social network systems (SNS), this topic has led to an increase in the number of submissions and high interest among people. We use social media data (Twitter, blogs, net news number, and TV exposure time) as online data.

2.THEORY

In the model we use only the time distribution of advertisement budget as an input, and word-of-month(WOM) represented by posts on SNS is used as observed data to compare with the calculated results. The unit of time is a day.

$$\frac{dl_i}{dt} = \sum_{\xi} C_{\xi} A_{\xi}(t) + \sum_j D_{ij} I_j(t) + \sum_j \sum_k P_{ijk} I_j(t)$$

Intention of Human is Modeled as Physics

• advertisement • direct communication • indirect communication

In the election, direct communication considere to represent satisfaction with the supporting party. And indirect communication is a numerical value that affects floating vote acquisition.

A.Ishii, H.Araiki, N.Matsuda, S.Umemura, T.Urushidani, N.Yamagata and N.Yoshida; The ‘hit’ phenomena : a model of human dynamics interactions as stochastic, New Journal of Physics 14(2012)063018

3.RESULT

This considers society as a simple world and expresses the information propagation of people against a topic. The first term on the right is strength C of the advertisement's advertisement, the second term is strength D of the influence of the conversation, and the third term is strength P of the influence spread indirectly. A pseudo-motivation of Twitter and blog posts is made, with the help of a mathematical model, and parameters are extracted. A moving topic is considered as motivation for posting on Twitter and blogs. In other words, one can quantitatively understand by setting up a mathematical model from the number of contributions to SNS and analyzing factors by using parameters. As seen in the figure, the support rate of the Abe cabinet and strength D of the conversation show a weak positive correlation.

4.DISCUSSION AND CONCLUSION

Similar research results in the past indicate that indirect communication is a numerical value affecting floating vote acquisition.

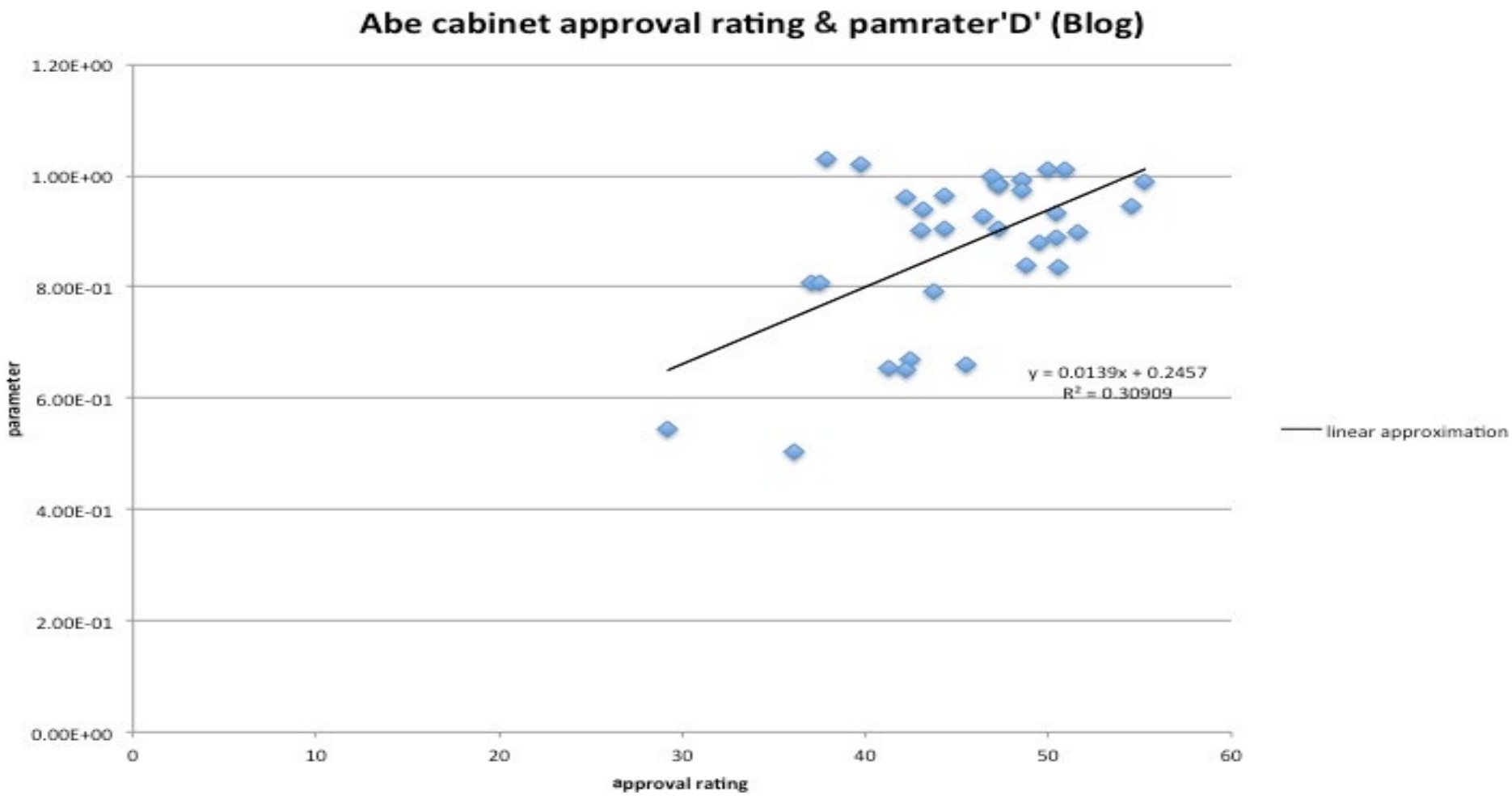


Fig.1 Support rate and parameter D of the Abe administration during each period

Political Party	Nunber of posts in a month	Number of RTs	inpressions per Tweet	Total impressions	Number of seats
LDP	144	111060	17847	2569985	66
CDP	1358	783356	1213	1647362	37
POH	425	20935	744	316341	32

Table 1. Twitter information and number of seats for proportional representation acquired of each political party

In this research, we aim to interpret the reputation analysis and election prediction of the Cabinet and parties using the parameters of the mathematical model of the hit phenomenon. Future prospects include measuring the strength of the impact of street speech from location information data and analyzing contents posted to SNS.

[1]TV Asahi, <http://www.tv-asahi.co.jp/hst/poll/> (09.28.2017 access)
[2]A Ishii, H Arakaki, N Matsuda, S Umemura, T Urushidani, N Yamagata, and N Yoshida, “The ‘hit’ phenomenon: a mathematical model of human dynamics interactions as a stochastic process” New journal of Physics 14 (2012)