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

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As the public network spreads, devices and social media that can communicate with simultaneity and interactivity have recently been developed. 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 determines 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 SNS, this topic has led to an increase in the number of submissions and high interest in people. We use social media data (Twitter, blog, net news number, TV exposure time) as online data.

The mathematical model used this time is $\frac{dI(t)}{dt} = \sum_{\varepsilon} C_{adv\varepsilon} A_{\varepsilon}(t) + DI(t) + PI(t)^2$ [2] . This considers society as a simple world and mathematically expresses information propagation of people against a topic. The first term on the right side is the strength C of the advertisement's advertisement, the second term is the strength D of the influence of the conversation, and the third term is the strength P of the influence spread indirectly. Pseudo-motivation of Twitter and blog posts is made, fitting by mathematical model and parameters are extracted. As a motivation for posting on Twitter and blogs, it is thought that a heart was moved to a topic. In other words, you can quantitatively understand by fitting a mathematical model from the number of contributions to SNS and analyzing factors by using parameters. As shown in the figure, the support rate of the Abe cabinet and the influence D of the conversation show a weak positive correlation.

In this research, we aim to interpret the reputation analysis and election prediction about the Cabinet and each party from 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.

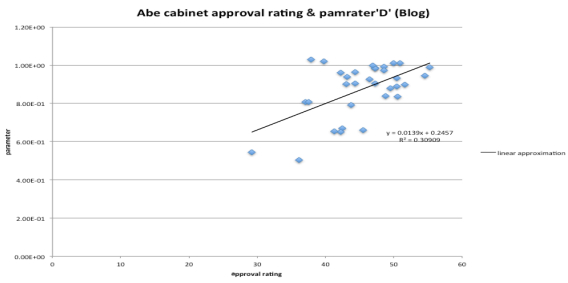

Fig.1 The support rate and the parameter D of the Abe administration during each period

[1]TV Asahi <http://www.tv-asahi.co.jp/hst/poll/>(2017.9.28access)
[2]A Ishii, H Arakaki, N matsuda, S Umemura, T Urushidani, N Yamagata and N Yoshida,"The'hit' phenomenon a mathmathical model of human dhinamics interactions as a stochastic process" New journal of Physics 14(2012)