Difference and similarity between Twitter posting and access of web application coupled with television program

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Reputation on social media has been investigated to predict dynamical behavior of reputation for a certain topic on social media using the mathematical model for hit phenomana[1]. This model can be considered as an extension of Bass model [2] for diffusion of information in society. The one of the main extension from the Bass model is to include "indirect communication" which corresponds to rumor in the society. This theory has been presented first as analysis tool for box office business of Japanese film market, but, later, this theory has been applied to many fields as global music tours [3], Facebook impressions[4,5], local events[6], online music[7], election[8], population of stage actor[9] and social scandals[10].

In this work, we focus our attention to the difference between Twitter access and access of a web application which connect to a Japanese televison program. The web application is an application on smart phone (both iPhone and android phones) and is related to broadcasting television program on time. We obtain access log data on this web application under the collaboration with the Television station. Typical data is shown in figure 1. On Twitter platform, tweets affect many peoples who follow the account and it works as source of indirect communication in ref.1. However, for web application on television program, this type of access is no public, so that the access to the web application has no part of indirect communication. The purpose of our work is to compare Tweet posting and the web application access for same certain topics on the same television program.

According to ref.1, equation of reputation dynamics in the mathematical model for hit phenomena has the following form,

$$\frac{dI(t)}{dt} = CA(t) - (a - D)I(t) + PI^2(t)$$

where the first term is effect of mass media as an external force, the second term is the decay of attention and direct communication D, and the third term corresponds to the indirect communication. For analysis of reputation on sodial media, the third term, the indirect communication term is very important. However, for web application access, the third term, indirect communication term is considered to be lacking.

In this investigation, we obtain difference between count number per minutes for tweet posting and for access log on this web application for the same topic in the same television program.
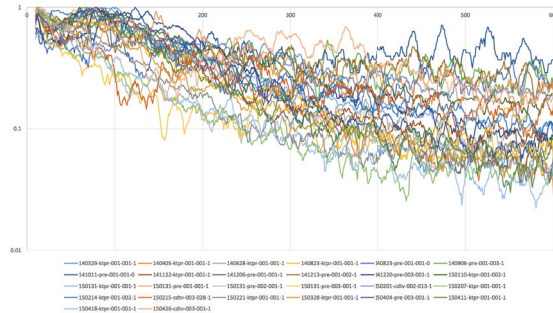

Figure 1

Typical access log data on a web application in 5 seconds. The vertical scale is logarithmic scale.

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