

Social Media as Firm's Network and Its Influence on the Corporate Performance

Jeongwoo Oh

Supervised by

Pramuan Bunkanwanicha

ESCP Europe

Paris, France

jeongwoo.oh@edu.escpeurope.eu

ABSTRACT

Social media or social network service has attracted a great amount of interest from applied studies, because we can see how people connect, behave, and interact each other through it even at a glance. Individual usage of social media can be viewed from corporate level in the market. This paper starts from such interest as well, trying to verify the applicability of social media in the corporate finance study. The basic question is whether social media interaction of the firm or firm's executive can affect the performance of the corresponding firm.

In the study of economics and finance, firm level network has been studied in different contexts, mainly involved with economic benefit. However, the online network has not been enough studied regarding its effect on the corporate performance. In general, firm's decision making process has been regarded as exclusive and confidential, rather than publicly observable, which resulted in focusing more on the closed network in person or between related firms. But we observe that many top executives are already active or even stars on the social media. Therefore, we take a close look at this to determine if networking on social media is personal activity or corporate behavior. In other words, we are interested in whether the internet-based life style with social media can possibly influence on the corporate performance in the market or firm-level decision making process.

We investigate this question by using both social media and market data with firm information. First of all, we identify the determinants of social network behavior of the firms' executives. And next, we estimate the value of social media network on the corporate performance, calculating abnormal returns and analyzing its dynamics in the long term. Finally, we also verify the value of social media network in the context of executives' personal compensation.

We expect that this research will provide a new insight about the social network on the corporate performance by adopting online social media as a network variable. It is also expected to broaden the applicability of the online network data to the academic question in finance research.

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1. INTRODUCTION

This study investigates firm level network behavior on social media which can influence on the corporate performance. While firms' network behavior has been studied in the field of economics and finance, with respect to the economic benefit that is usually embedded within the network, social media is a new type of network in the internet-based lifestyle and market environment. Many firms have its own accounts on the social media as a means of connection to customers and investors, not only as a marketing tool. Also many top executives have their personal accounts and keep communicating with public. Even though this new phenomenon has become more discussed in academic literatures, the relationship between online network and the consequent influence on the firm value has not been enough discovered in finance research. We may conjecture the reasons as following:

First of all, internet log data was veiled whether it could answer the complex economic questions in depth, since it seemed too broad and coarse to utilize for specific topics of finance research. But internet search data has been more adopted in recent literatures of economics and its prediction power have brightened the new scope of economic research. Consequently, online network data can also be more utilized. Secondly, firms' decision making process or performance has been considered in more exclusive context with various market variables, which results in relatively less interest in social media, except for public relation or marketing. But we test if social media has potential to explain the firm's behavior and resulting consequences. Rather than remaining as online relation, social media is increasing its influence even in the real world network.

As the internet log data proved its predictability and online network enlarged its influence in the real world, we are more

interested in using online social media data to explain the corporate behavior and performance. While search data reflects mass interest of the public, social media provides network information on top of mass interest. Therefore we focus more on how people share and deliver their interests in the network, which can influence economic consequences, rather than their interests itself.

Compared to other channels of firm information, online social media is less formal, not legally mandatory, but more accessible to public with more instant market response. Therefore, social media may have limitation to dig into a very minute firm-specific question, but it can provide a total new perspective in the corporate study, as a new source of direct communication channel to the investors and customers.

We collect the data from the official accounts of the firms and the executives from twitter. By combining the social media activity with various firm specific information, we try to identify the determinants of social media activity of firms and firms' executives. From this knowledge, we estimate the value of social media on the corporate performance, which includes abnormal returns on the short term event, the firm value on the longer time span, and the executives' individual benefit.

2. RELATED WORK

This study is grounded on the research interest in firm-level social network. Considering that the recent market environment has become highly connected and complicated, social network can accordingly be one element in explaining corporate performance in the market.

Network in organizational behavior In the literatures of organizational behavior, such network has been discussed mainly regarding the inter-organizational relationship. Especially, alliances by firms has been explained as social capital [1] and examined in a different context like repeated partnership [2]. Dyer and Singh propose the importance of the relationship between firms in terms of competitive advantage [3]. Gulati also developed the network perspective in the research of strategic alliances, by analyzing the role of network resources in network formation [4] [5]. The attractions of studying network in corporate finance can be explained by that it is not necessary nor mandatory for a better performance in economic perspective, but is accompanied by economic consequences.

Network in corporate finance Recent corporate finance studies has become of interest in the individual social network, not only in the alliances between firms. Regarding this, researchers' interest has remained to following questions. One is the factors of network development, and the other is the economic benefits that firms can derive from their networks. The first question has been studied mainly on the political connections [6], [7], which include from marriage [8] to classmate [9]. However, these factors are intrinsically related to the economic benefit through those networks, which refers to the second question. Even though the role of network can also be explained with other reason, for instance reducing technical uncertainty [10], economic benefit is fundamental in any circumstances. The above literatures show the positive relations between the network and the firm value. For example, Faccio's study [6] on the politically connected firms shows that the announcement of a new political connection results in a significant increase in firm value. Park et al. also shows that

strategic alliances in e-commerce market positively influence the firm value [11].

Utilization of internet log data in social sciences Meanwhile, using the internet data is widely accepted in many academic disciplines. Especially internet search data for the prediction of the real world has become easier and hence more boomed, as the Google provides the "Google Trends" service. It has been employed in the different areas, to predict unemployment rates and retail sales [12, 13], consumer behavior [14] and influenza epidemics [15]. In finance, search data has been used to predict stock market. Market volatility [16], stock market volume [17], and earnings [18] were investigated and predictability of search data on these variables was verified as result.

Utilization of internet social media data in corporate finance and information disclosure Among studies of using internet data, social media research has been implemented in the field of engineering and web science. Above all, twitter research has been taking a big stake in recent years with huge volume and the depth. However, finance study is now starting to consider social media as a channel of information. Social media attracts corporate finance study mainly in terms of information disclosure and network behavior. In general, low disclosure level about corporate information is known as increasing information asymmetries, related to market inefficiency [19]. Network behavior is in line with strategic advantages which are discussed in economic and organizational behavior literatures.

Based on the theoretical perspectives of corporate finance, we question how firms' information through social media are perceived and responded in the market, in addition to the mandatory corporate disclosure such as SEC filing or earning announcement. We also question if social media can play as firm's network which may influence on the corporate performance in the market. In that sense, social media activities by firms and their executives can be interpreted as a strategic behavior.

Recently, Chen et al. show that the CEOs' active social media activity yield reduced bid-ask spreads, increased daily turnover, and consequently more trading for the corresponding firms [20]. We also try to examine if firm-side social media activity can bring any economic consequences by looking at such market properties of a firm's equity, as well as abnormal return on the stock. However, we try to analyze the dynamics of firm value in the longer period as well, to see how it changes the general trend of firm value. Moreover we explain how it affects the behavior of individual executive and the incentive system of the company in the end. Through the sequence of each study, we aim to verify social media as a new type of firm's network and measure its influence on the market performance.

3. PROPOSED APPROACH

3.1 Determinants of Social Network Activity

First of all, we identify the determinants of social media activity of the firms and executives by using both corporate and individual information. Firm attributes include the industry, market capitalization, market share, revenue, and firm specific variables, while personal attributes includes demographic variables and publicly known career-related variables, such as contract years, job duration, title, and salary level. We analyze the social network activity in the context of such attributes to understand the corporate-level network behavior in depth.

3.2 Value of Social Media on the Corporate Performance

3.2.1 Abnormal Returns

We determine whether the firm's social media activity affect the performance in the market. To know this, we measure firms' abnormal returns on the date of their twitter mentions that contain firm-specific information. Since firms' official accounts or individual executives' accounts already represent their firms, their shared information with public can be interpreted as the firms' perspectives. So, we are interested in how certain information on the top executive's timeline would be perceived to the public or investors who are following the executive, which will result in the market returns.

And then, we develop the previous knowledge about the determinants of social media activity to measure this corporate performance more in detail. Determinants of being social can affect the returns in different levels as well.

3.2.2 Long term firm value

Active networking on the social media can imply more than the abnormal returns. From the firm's point of view, long term firm value can be influenced by the accumulated reputation from the public, not only by a couple of important events of their business.

Hence, it may suggest a new insight on the corporate governance, since the public or loose investors can now control some part of the firm value in the market dynamics, only by maintaining casual network with companies' executives. In the long run, this online network can become positive, negative or neutral. So we analyze the return in a longer period, as well as their temporal returns on the snap shot of specific event. By analyzing this, we intend to measure the cost and benefit of maintaining the online network, which will provide a managerial implication.

Again, we try to relate the attributes of being social with the long term value of the firm.

3.2.3 Executives' compensation

Furthermore, we are interested in the strategic behavior which are embedded in their social media activities.

From the executive's perspective, being a celebrity on the social media can be one important ability these days, like managerial skills or expertise. Accordingly, their network skill on the social media can be a potential resource for their own benefits, such as job compensation. It is interesting in terms that it may affect the incentive system of the company. We try to test if the social media activity can act as an element of the negotiation power of the individual executive.

Determinants	Social Media Activity	Corporate Performance
Firm Attributes Personal Attributes		Abnormal Returns Firm Value Individual Compensation

Figure 3.1. Research Layout

4. REMARKS

We expect that this study will be positive in the PhD symposium of WWW 2015 for the following reasons.

Perspective of corporate finance

This study addresses social media as firm's network in recent market environment and investigates its economic consequences on the corporate performance. We embrace the world phenomenon of social media in developing a long time question of firm's network in corporate finance. Considering social media in corporate finance is not just a matter of new media by virtue of recent technology, but also a matter of new means of communication to the firms.

In this respect, social media is more attractive, because it is not directly delivering firm-specific information, but also can be even powerful only with such casual communication. Through social media study, we now consider unknown public, customers and investors altogether, instead of only firm-related network. Online social media is now a channel of information disclosure, in addition to the formal information let-outs. Therefore, this effort will bring a different insight and practical result in the study of network in corporate finance.

Perspective of web science

We study social media with theory and methodology of corporate finance. Therefore it will broaden the dimension of web science into a practical level in the study of finance. As the value of maintaining social relationship is also a great interest to industry in practical level, this study can also add managerial and industrial value.

In addition, methodology of both web science and finance can be better discussed through this interdisciplinary study in the PhD symposium of WWW2015. Therefore, the symposium will act as a good stimulus and a guidance to this study, by providing a main motive and practical knowledge especially in its beginning stage.

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