Ji Young Kim[1], Hyung-Deok Shin[2]
IMPACTS OF SOCIAL MEDIA COMMUNICATION STRATEGIES ON PRODUCT PERFORMANCE: FOCUSING ON KOREAN ANDROID GAME INDUSTRY

The purpose of this study is to investigate the impacts of the types of social media communication strategies on product performance. We categorize communication types into information release and information sharing, and tested if these two types of strategy would affect the sales of individual products in the mobile game industry. Using data on 150 Android mobile games, which was collected and published by survey company "App Annie" we perform a binary logit analysis. The result shows that both information release and information sharing strategies have positive and significant impacts on the sales of game products, but information sharing has much stronger effect than information release.

Keywords: information release; information sharing; social media; mobile games.

Чі Юнь Кім, Хун-Деок Шін
ВПЛИВ КОМУНІКАЦІЙНИХ СТРАТЕГІЙ ДЛЯ СОЦІАЛЬНИХ МЕРЕЖ НА ПОКАЗНИКИ ПРОДАЖІВ: ЗА ДАНИМИ ПІВДЕННОКОРЕЙСЬКОГО РИНКУ МОБІЛЬНИХ ІГОР НА АНДРОЇДІ

У статті досліджено вплив різноманітних комунікаційних стратегій, що використовуються в соціальних мережах, на показники продажів продукту. Типи комунікацій для аналізу поділено на: інформаційний реліз компанії та неформальний обмін інформацією. Протестовано, яким чином ці два головні типи стратегій впливають на продажі мобільних ігор. Бінарний логіт-аналіз застосовано до даних рейтингу топ-150 ігор на андроїді, що розміщено на сайті "App Annie". Результати доводять, що і інформаційні релізи, і неформальний обмін інформацією суттєво та позитивно впливають на обсяги продажів, однак неформальні комунікації, зокрема між користувачами, мають значно більший вплив.

Ключові слова: інформаційний реліз; неформальний обмін інформацією; соціальні мережі; мобільні ігри.
Табл. 3. Літ. 16.

Чи Юнь Ким, Хун-Деок Шин
ВЛИЯНИЕ КОММУНИКАЦИОННЫХ СТРАТЕГИЙ ДЛЯ СОЦИАЛЬНЫХ СЕТЕЙ НА ПОКАЗАТЕЛИ ПРОДАЖ: ПО ДАННЫМ ЮЖНОКОРЕЙСКОГО РЫНКА МОБИЛЬНЫХ ИГР НА АНДРОИДЕ

В статье исследовано влияние различных коммуникационных стратегий, используемых в социальных сетях, на показатели продаж продукта. Типы коммуникации для анализа разделены на: информационный релиз компании и неформальный обмен информацией. Протестировано, каким образом эти два главных типа стратегий влияют на продажи мобильных игр. Бинарный логит-анализ применён к данным рейтинга топ-150 игр на андроиде, размещённого на сайте "App Annie". Результаты доказывают, что и информационные релизы, и неформальный обмен информацией существенно и позитивно влияют на объёмы продаж, однако неформальные коммуникации, в частности, между пользователями, имеют значительно большее влияние.

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Introduction. Since mobile communication devices have become more and more popular, people are using them in various ways including social relationship (Choi et al., 2013). People can overcome obstacles of time and space to communicate with other people and eventually build up social capital (Quan-Haase and Wellman, 2004; Ellison et al., 2007; Lee, 2013). In addition, social media communication has a positive role by increasing consumption of mobile contents and activating the related industries (Lee, 2012).

While prior research has generally explained positive impacts of social media activities on individuals, firms, or society as a whole, few studies have empirically investigated the impacts in detail except (e.g., Lee, 2013; Lee, 2012). This study follows and expands S. Lee (2013) and H.-S. Lee (2012) analyzing how different types of social media communication strategies would affect individual firm performance.

This study overviews the concepts of communication and social media, and explains what information release and information sharing strategies mean in the context of social media communication. This study suggests hypotheses on the relationships between those strategies and firm performance. Using 150 game performance data collected from a mobile game survey company, this study shows the test results and explains their implications, explained limitations then follow.

Computer-mediated communication. The word "communication" came from the Latin word "communis" which means "common" or "share". It generally means transferring and sharing information with others. The advance of IT and the use of high-speed Internet increased the importance of computer-mediated communication, which means sending messages from one computer to other computers to communicate (Walther, 1992). It takes shorter time and less costs to create and transfer messages using computer-mediated communication as compared to using traditional communication means.

Computer-mediated communication has some unique features. First, anonymity allows people communicate with others while hiding their identities. People do not need to reveal who and what they are, which may lead to more effective communication free from social status. However, anonymity sometimes leads to hostility to others so easily and directly. Second, computer-mediated communication allows people overcome physical barriers to effectively communicate in time and space. Computer-mediated communication environments create virtual space where people meet electronically long distance, and create time buffer where people can communicate whenever they are available. Lastly, the main communication method is mostly letters which may carry less information than face-to-face communication with facial expression, gestures or voice tones. Emoticons or symbols are often used to complement these limitations (Kim, 2004).

Advent of social media. At the early stages of social media, communication was based on personal computers connected through the Internet. As wireless data transfer infrastructure was built up over time, people could gain access to the web using mobile devices whenever and wherever they want. This changed the nature of the contents that people transfer or share through social media. People mostly sent texts and small pic-

tures when PC-based social media was available, now people can send instantly various types of data including texts, pictures, audios, and videos using mobile-based social media. Also people use social media not only for personal purposes but for various purposes including academic activities, entertainments, business etc.

Types of social media communication activities. Social media communication activities can be broadly grouped into two categories: information release activities and information sharing activities (Ki and Cha, 2012). The main purpose of information release is to provide useful information to whoever needs it, while the main purpose of information sharing is to make and strengthen personal connections and relationships.

Information release is performed by information senders who want to provide information to one or many, known or unknown receivers. Blogs, contents communities, wikis are the examples of the tools used for information release. Information senders post contents on social media for information receivers, and information receivers can repost or share those contents within their own social media if they think this information is worth to do so. If posting and reposting continues, this information can spread out quickly and widely.

Information release activity can be divided again into information release among media and users and that among one user to other users (Lee et al., 2013). Blogging is an example for information release among media and users, with some exceptions that people can post new information in comments. Wikis would be a good example for information release among users. Even though a media operator posts definitions and related facts of things, people can always revise the contents. In any case, information flows basically one-way.

On the other hand, information sharing pursues two-way information transfer among multiple senders and receivers in a communication network. Social network services such as Facebook or Instagram are food examples of the tools for information sharing. Similar to information release, information sharing also transfers contents to others and it does not have to be two-way in some cases, but the basic purpose is not to send contents to others but share what one experienced in the relationship with others. Information release and sharing can be used to affect others' buying behaviors by providing product information as well as by persuading others.

Social media communication and mobile games. Mobile games are different from traditional computer-installed games in the sense that players can quickly and easily download games into their mobile devices. Moreover, people can play online without downloading. As long as mobile devices are connected to an online network, mobile games can be instantly updated and instantly played anywhere and anytime. The limitation of mobile games would be that mobile devices have generally smaller monitors than desktop computers. With the increasing use of mobile devices, mobile games are getting more and more popular as compared to traditional games.

At the early stage of mobile game industry, the level of both hardware and software technologies were not very high and only simple games, such as puzzles, could be played. Over time, however, as high speed data transfer and high resolution devices became popular, and more data storage in devises became available, various types such as role playing games (RPG) and 3D games led the popularity of mobile games among game players.

Korean mobile game industry had so far 3 stages in its evolution (Kim, 2014). At the first stage, game platforms were created and domestic mobile game market just emerged. At the second, based on more mobile game players, mobile game companies began to go global. At the third stage, from 2012 to present, social network game emerged as a major game type and sales went up dramatically.

When a new mobile game is released, the launching company usually provides information on the game through its official blog or social networks as well as mass media. Since mass media, such as magazines for game players, have limited space and are very expensive to advertise in, social media communications would be a very economic tool to communicate with potential buyers. In addition, important game updates can be released through social networks. Game players can get information about game characters, tips, and special events that the production company hosts, and also can download patches and updates that help playing the game more actively. Also, game players can post their strategies to crack stages and share other information. In some games, players can invite their friends to a game if the game has competition or cooperation functions.

The performance of games can be measured in various ways. Popularity of the game by the number of connected people at a peak moment could be one measure, which can be converted into income by advertisement. Other measures include technological completeness, market orientation etc. (Na and Na, 2010). However, financial performance such as income or revenue is a direct measure for a game producers' financial performance. The revenue of mobile games comes from various sources, including initial purchase of the game, time-based charge, advertisement in the game and purchase of pay items. Most mobile games are free to download and play, so revenue comes mostly from pay items people buy and advertisement. Thus, game providers are very interested in how they make people get indulged in the game to buy items to speed up the stages or play more easily.

Hypotheses. This study investigated the impacts of social media communication strategies on financial performance of individual products. As reviewed in the prior research, social media communication activities can be grouped into information release and information sharing. Following this categorization, this study tests if information release and sharing strategies have different impacts on product performance.

Firms' social media communication strategies aim to advertise products or services and increase customer royalty by various marketing activities through online channels. Firms provide information on how their products or services are different from competitors and how customers can effectively use their products or services. Also firms get feedback from their customers' comments in social media space and even from the number of comments as such. Using this feedback, firms can further improve the quality of their products or services.

On the other hand, customer satisfaction may increase even with the same level of product quality when firms have active social media communication strategies (Choi et al., 2008). When people know what kind of functions they can find in a product and how to use a product better, they can maximize the use of functions a product provides. Thus, with or without enhancing products' quality, a firm can enhance product's sales performance by implementing information release in social media communication strategies.

H1. Information release in social media will increase product performance.

A recommendation from a close friend or even a celebrity can enhance purchase intention (Kwon et al., 2011). Word-of-mouth may be more effective than mass advertising when people prefer having personal information on a product. Advances of Internet allow firms to make people recommend other to use a product they provide more easily. In some cases, products themselves have functions so that users can invite others to use it.

For example, some mobile games have functions to invite other players to compete or cooperate playing together. When a game provides score rankings of players for a certain period, players may have more incentives to get higher scores. Also, when a game provides present-giving functions that a player can give items to other players, it could be used as a small present among friends. All these functions can be performed online, so all information on competition and cooperation will be shared instantly.

These information sharing activities can stimulate customers use a product more intensively than the case where no competition or cooperation among them exist. Thus, customers may have incentives to purchase the related products to the product they already purchased, thus increasing sales.

H2. Information sharing via social media will increase product performance.

Empirical tests.

Data and variables. We collected data for this study from the mobile game ranking website "App Annie". This site was established in 2009 and hass the list of top 500 games published at Google Play and Apple Store every month. We retrieved Android game data on September 20, 2013, and used top 150 games among 500.

The unit for analysis in this study is therefore a game published in South Korea by mobile game publishers. The dependent variable was sales ranking in terms of total sales from the game, dichotomized by "high" which was top 30 games (upper 20% of the sample) and "low" which was below 30 down to 150 (lower 80% of the sample). High group was coded "1" and low group was coded "0".

The first independent variable of this study was whether a game publisher is pursuing information release social media communication strategy. "App Annie" provided company website for this and if we found that a publisher was running a social media community for games, it was coded "1", otherwise — "0". The second independent variable was whether a game publisher is pursuing information sharing social media communication strategy and we examined each game one by one to see if the game had a function of inviting friends to compete or cooperate with. If so, it was coded "1", otherwise — "0".

Control variables were selected for the factors that may affect mobile game sales or preferences, including *company experience, category, game rating, in-app purchase and installs. Company experience* was measured by the number of previous games the company did for Android. *Category* for sports games was coded "1" since sports games are especially popular and are believed to affect game performance. For *game rating*, games for all ages were coded "1" and games with some age restriction — "0". If a game provides functions that players can buy pay items, it was coded "1" for "*in-app purchase*". Lastly, if a game was downloaded more than 1 mln times, it was coded "1" for "*installs*".

We perform a binary logistics regression analysis in "SPSS 18". The descriptive statistics and correlation tables are Tables 1 and 2 accordingly.

Table 1. **Descriptive statistics,** *authors'*

Variable names	Minimum	Maximum	Average	Standard Deviation
Product Sales	0	1	.20	.40
Company Experience	1	123	27.75	31.99
Category	0	1	.23	.42
Game Rating	0	1	.43	.50
In-App Purchase	0	1	.88	.33
Installs	0	1	.51	.50
Information Release	0	1	.57	.50
Information Sharing	0	1	.48	.50

Table 2. **Correlation table,** *authors'*

	1	2	3	4	5	6	7	8
1	1							
2	-.06	1						
3	.09	.30**	1					
4	.01	.09	.02	1				
5	-.02	.03	.15	.11	1			
6	.20*	.17*	-.01	-.04	.02*	1		
7	.14	.05	.09	.07	-.03	-.11	1	
8	.39**	-.07	-.04	.09	.11	.12	-.02	1

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$.
1 – Product Sales; 2 – Company Experience; 3 – Category; 4 – Game Rating; 5 – In-App Purchase; 6 – Installs; 7 – Information Release; 8 – Information Sharing.

Test results. Table 3 shows the result of binary logistics regressions to test our hypotheses. The base model, M0, shows the significance of control variables before independent variables were included. *Category* and *installs* were positively significant for mobile game sales. Nagelkerke R^2 was 0.108 and Classification accuracy was 80%, both of which are acceptably high. In the model M1, the first independent variable, information release, was positively significant at the 0.1 level. Thus, hypothesis one was supported. Nagelkerke R^2 rose up to 0.144. In the model M2, the second independent variable, information sharing, is also positively significant at 0.01. Thus, hypothesis two is also supported. Nagelkerke R^2 rose up to 0.339. in the full model, M3, the significance of information release disappeared, which means the impact of this variable is quite weak and may be affected by information sharing variable, even though the correlation between the two variables are not significant in Table 2.

Conclusion. This study empirically investigated the relationship between social media communication strategy and product performance in Korean mobile industry which is growing very quickly. Based on 150 Android mobile game sales data, we found the results below.

First, social media communication's information release and information sharing functions have positive and significant impacts on sales. We confirmed that when a firm actively provides product information online, and a firm actively makes connections among users online, the sales can be increased. Also we confirmed that

social media positively affects the consumption of cultural contents (Lee, 2012) and expands social relationship among users (Lee, 2013).

Table 3. **Binary logistics analysis,** *authors'*

	M0	M1	M2	M3
Constant	-1.524* (.650)	-2.073** (.724)	-2.722** (.769)	-3.614** (.858)
Company Experience	-.012 (.008)	-.013+ (.008)	-.014 (.009)	-.014 (.339)
Category	.887+ (.516)	.779 (.523)	1.312* (.597)	1.082+ (.606)
Game Rating	.203 (.434)	.127 (.441)	.120 (.480)	.003 (.491)
In-App Purchase	-.671 (.664)	-.654 (.669)	-1.501+ (.774)	-1.399+ (.791)
Installs	1.268** (.469)	1.397** (.484)	1.477** (.558)	1.492** (.562)
Information Release		.875+ (.469)		.840 (.512)
Information Sharing			2.624** (.796)	2.579** (.627)
Chi-squared	10.574	14.282	36.140	38.939
Classification Accuracy	80%	78.7%	81.3%	85.3%
Nagelkerke R^2	.108	.144	.339	.362

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$.

Second, among information release and information sharing, this study found that information sharing strategy could be more powerful and effective in increasing sales. This complements W. Ki and H. Cha (2012) who categorized social media communication activities into informative release and relationship sharing dimensions. We went further by comparing the impacts of these two dimensions empirically.

There are several implications of this study. First, firms should design marketing campaigns considering that smart devices actually affect customers' buying behavior. Social network service may be a two-sided sword. If a product is providing useful information and a good venue to meet friends, social network service can be a powerful tool to attract customers. If not, bad reputation of the product may spread very quickly. Second, firms should use social media communication not only to advertise their products but also to give a chance to networks among customers. The volume of information that a firm can provide would be limited as compared to the information customers can share among themselves. Customers can be more satisfied with such availability of limitless information. The result of this study that information sharing is more effective than information release proves this.

There are also some **limitations of this study**. First, since this study used data from a private company which deals only with Android games, we unintentionally excluded Apple game players' preferences assuming though that two types of games are not very different. If more comprehensive data is available, more precise result could be obtained. Second, we counted top 20% as successful performance games among 150 games since only ranking information is available, which may show some restrict-

ed dimension of performance measures. Continuous measures such as sales or download numbers could be used to verify if the result remains the same. Third, cross-sectional data that this study used may overlook the dynamic nature of performance. If longitudinal data is used to see the performance changes following the events related to social media communication strategies, we can get a better picture about how firms can make the best of social media communication.

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