Value ecosystem models for social media services

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ABSTRACT

This study presents the architecture as well as the SDPs (Service Delivery Processes) of two ecosystems—CVE (Collaborative Value Ecosystem) and LVE (Leadership Value Ecosystem)—for social media services, and analyzes and compares these two ecosystems. CVE and LVE respectively represent the traditional social media service ecosystem and a new (future) ecosystem governed by service platforms. In our stylized model, the architecture of the social media platform ecosystem (to be briefly referred as the 'value ecosystem') is composed of user group, SP (Service Platform) and CP (Contents Provider). Specifically, users are uniformly populated over $[0, \Delta]$, where Δ represents the span of users' preference for the social media services. We also emphasize the differences in the SDP and resulting service provisioning of the value ecosystems. Accordingly, the roles of players are different in two ecosystems. Multi-stage game models are employed for analyses and comparisons of players' optimal behaviors and the value-creation capability in each value ecosystem. In particular, the latter is measured by the amount of information created in the respective ecosystem. Our first analysis indicates that the user group is segmentized differently across the value ecosystems. Subsequently, following analysis presents equilibrium strategies of SP and CP. According to our analyses and experiments, it is more likely that the overall level of the social media services in LVE is higher than that in CVE. However, the total amount of information created throughout CVE is larger than that in LVE. These findings imply that the leadership of SP may boost or constrain the value ecosystem. We also demonstrate that the user diversity measured by Δ is another key parameter for value creation in these ecosystems.

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1. Introduction

The worldwide popularity of SNS (Social Network Service) clearly indicates that the social media services have become a major driver for the evolution of the Internet industries. YouTube, GoogleMaps, Wikipedia, Facebook, Twitter, LinkedIn, and Pinterest are just a few examples of social media services. They share a common property that these services are provided on the basis of the platform-based technologies. Furthermore, they are organizing their own business ecosystems, where a wide variety of participants join and make transactions with each other by the way of a loosely coupled connection with a platform.[1]

The social media services are rapidly changing the way of using ICT (Information and Communication Technologies), not only in usual businesses but also in our everyday life. Many organizations are able to take advantage of these new technologies to design and support new ways of communication, collaboration, coordination and learning. Employing these services, organizations expect to make existing managerial administrations more effective and efficient, and even open up completely new ways of conducting their businesses. At the same time, these new

emerging practices and technologies pose a challenge to the existing theories and approaches employed in research on the ICT industries.

A new research framework should be able to capture and reflect these changes in the competitive landscape of the ICT industries. For example, the competition to dominate the contents distribution using platforms is becoming increasingly fierce. As the number SNS users sharply increases and third party providers incorporate various services into SNS with related APIs (Application Program Interfaces), the attempts to utilize SNS as a platform are picking up steam. Facebook and Twitter have already become a great platform; as of the 3rd quarter of 2014, the number of monthly active users of Facebook reached more than 1.2 billion and Twitter more than 280 million (The Statistics Portal, 2014). Driven by the pace of growth, SNS providers are about to run a full-scale business as a service platform. Other best examples are Pinterest and Tencent's WeChat (Wu, 2014) which generate diverse contents using external resources and naturally builds its own ecosystem at the same time.

The primary concern of this study is to develop systematic framework to capture and compare different types of service production processes for the social media services. Due to the complicated nature in the current practice,[2] however, effective analysis of this phenomenon

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[1] More clear definitions about the notions such as the platform and the ecosystem will be given in Sections 2.1 and 2.2, respectively.

[2] For an example of complications regarding the social media services and their platforms, see footnote 8 and Section 2.2.

requires a conceptual abstraction, which will produce a simplified model representing some essential features of the practice. In particular, since we focus on the nature of social media services provisioned through the platforms like Facebook and Twitter (sometimes to be called 'service platform' in our study), we designate a notion of the 'ecosystem (Adner, 2006; Basole and Karla, 2011; Ceccagnoli et al., 2012; El Sawy et al., 2010; Gawer and Cusumano, 2014; Iansiti and Levien, 2004; Kim et al., 2010; etc.)' as our research subject.

In this context, this study provides stylized models of two ecosystems for social media services. We will call these ecosystems CVE (Collaborative Value Ecosystem) and LVE (Leadership Value Ecosystem).[3] CVE and LVE respectively represent the traditional social media service architecture and a new possible platform of these services, each of which will be dealt with under the notion of ecosystem. In our stylized models, the basic architecture of the social media service ecosystems (to be briefly called the 'value ecosystems' later) is composed of three elements: that is, user group, SP (Social Media Service Provider) and CP (Contents Provider). We also emphasize the differences in SDP (Service Delivery Process) and resulting configuration across the value ecosystems.[4] Accordingly, the roles of players and the amount of information created will vary between two ecosystems. We employ the amount of information generated throughout an ecosystem as the measure of the value-creation capability of the corresponding ecosystem.

Throughout this paper, we are trying to answer the following questions:

■ Is the level of social media services in the future ecosystem such as LVE higher than that in the current ecosystem represented by CVE?
■ Is the value-creation capability (i.e., the amount of information created) of the future ecosystem such as LVE greater than that in CVE?

To find answers to these questions, we need to address the interactions among the main players of the corresponding ecosystem, each of which has its own decision variable(s) and moves in order to optimize its payoff. As a result, modeling and analyzing players' behaviors and ecosystem's performance incorporate the game theory for effectively dealing with the strategic interactions. We will also identify the key parameters and/or components that determine the service level and the amount of information created. For example, it is a wide-spread belief that the wider the user spectrum is, the more likely the ecosystem succeeds and grows. We will test this hypothesis through a series of experiments based on our models.

This paper is organized as follows. We first briefly describe the evolution of social media services in the next section. Some key elements and ingredients to construct a value ecosystem are also introduced in this section. Section 3 presents the demand model as well as the supply models, and describes two architectures of the value ecosystems, focusing on the structural differences in their SDP configurations. At the end of this section, we also introduce stage game models to analyze and evaluate the two value ecosystems. In Section 4, main analytical results of game models are provided. In the following section, we present some examples and experiments to supplement our analysis, and discuss the implications of our findings. The last section concludes this article with suggesting future research directions.

2. Social media services: evolution, scenarios and ecosystems

This section describes the evolution path of social media services and compares the current status with a possible scenario reflecting a new trend. In the course of our discussion, one can figure out the core elements and the basic architecture of the ecosystems, which will be employed as building blocks of the stylized models referred as the 'value ecosystems' in Section 3. Our approach, in particular, focuses on the SDP (Service Delivery Process), which determines configuration and service operations of the ecosystems.[5]

2.1. Brief overview of social media services

YouTube, GooglePlus, Twitter, Facebook, LinkedIn, Pinterest, Sina Weibo, and Tencent QQ are just a few examples of so-called social media services based on web2.0 technologies (Anderson and Wolff, 2010; O'Reilly, 2005). Social media services are rapidly changing the way we use ICT, not only in our work but also in our everyday life (Anderson and Wolff, 2010; Kim and Ko, 2012; van Noort et al., 2012). Many organizations are able to take advantage of these new technologies to design and support new ways of communication, collaboration, coordination and learning. Using these new social media services, organizations expect to make existing process more effective and efficient, and even open up completely new ways of conducting their businesses (Berthon et al., 2012; Kumar and Mirchandani, 2012; Michaelidou et al., 2011; Soares et al., 2012).

In particular, the platform-based service provision has formed a mainstream in the social media services. Here, the platform means a 'service platform (Cusumano, 2011; Evans et al., 2005; Gawer and Cusumano, 2014; Yoo, 2011),' which provides infrastructure and technological environment that accommodate multiple services in a constantly reusable fashion.[6] More specifically, since this study deals with the social media services, the platform (provider) represents a 'social media service platform' or SP as its abbreviation.

Such a trend is bringing change to the competitive landscape of the ICT service industry. As the smart device environment starts to take shape, the competition to dominate the contents distribution channels by utilizing the service platforms is becoming increasingly fierce. Service providers recognized the need to turn their asset into a platform. For example, open API was the first step they tried. As web2.0 gained the spotlight and successful cases of mash-up started to appear, open API drew much attention from developers (Kwak, 2001). The interest in the open API remains strong but in fact it has not been as activated as expected except for the map API like GoogleMap. While developers point out that there is no useful API, service providers complain it's getting harder to find proper developers. The resulting vicious cycle significantly reduced the attractiveness of open API.

On the contrary, as the number of SNS users sharply increases and third party providers incorporate various services into SNS with APIs invented for SNS, the attempts to utilize SNS as a platform pick up steam. Facebook and Twitter have already become a great platform. Furthermore, new social media services like social network games, social commerce, mobile advertising, mobile payment, etc., accelerate this power shift.

Driven by the pace of growth, SNS providers are about to run a full-scale business as a service platform. You can find the best cases in Pinterest, LinkedIn and Instagram. The growth of these platforms deserve attention not just because of the size of its installed-base

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[3] The continuously evolving nature of the ICT industries and services makes it harder to develop a conceptual and stylized model that perfectly captures the reality. Thus, we admit that our stylized approach based on an abstraction of reality might be likely to miss some aspects of practical cases.

[4] The concepts of the architecture and the SDP will be explained soon (refer to footnotes 5 and 6 in Section 2).

[5] The architecture means a structural configuration of a complex body. Here, the architecture means a set of structural relations that the major elements of an ecosystem form. The SDP, on the other hand, means the supply procedures which describe service flows going through entities in a system. Here, the SDP represents the way that the social media services are provisioned and the associated service flows go through SP and CPs in an ecosystem. Therefore, the architecture presents a snapshot including both supply and demand in an ecosystem; meanwhile, the SDP focuses on the supply side of the ecosystem.

[6] For various points of view on the platform, refer to Evans et al. (2006); Gawer (2011) and Gawer and Cusumano (2002); Parker and van Alstyne (2014). Since this study focuses on the service platform, other types of platform such as smart phone (a platform for various apps) and network (a platform for various communication services), will be excluded in the following modeling and discussions.