What Makes the Platform Network Effects Unsustainable?
Winner-Take-All Strategies and Unpaid Complementors

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INTRODUCTION

A large number of business transactions via electronic commerce (ecommerce) have been increasingly organized around platforms. Platforms for such transactions include PC operating systems, digital PDAs, Web-based systems, and video game consoles. Ecommerce on video game consoles operates in transactions among application developers (e.g., game producer) and consumers (e.g., game player). Sony, Nintendo, and Microsoft provide their respective incompatible platform that not only mediates transactions between video game consumers and developers of complementary applications and content but also creates connections among game consumers. Platforms are thus two-sided or multisided, functioning as an interface between multiple groups of users and facilitating value creation exchanges (Boudreau, 2010).

Competition in platform-based markets is often characterized by indirect network effects (Chen & Xie, 2007). In particular, more applications available on a platform lead to greater consumer demands for that platform. Meanwhile, a larger installed base of such consumers leads to a larger supply of such applications. Because of such network dynamics, a platform with the largest number of users could tip the market in its favor and result in the winner-take-all (WTA) outcome (Caillaud & Jullien, 2003). Therefore, an established platform with a large installed base via its first-mover advantages tends to monopolize the market (Lieberman & Montgomery, 1988). Consumers and developers of such platform believe that everyone else will adopt such platform.

To attain WTA outcome, platforms aggressively expand both installed base of users and application providers to create mutually reinforcing benefits on each side of the market (Eocman, Jeho, & Jongseok, 2006). For example, platforms may set low price to grow their installed base of users and charge developers of applications that access the platform to reach these potential customers (Clements & Ohashi, 2005). Platforms may also use attractive licensing deals to attract a larger number of application developers or use exclusive contractual agreements to limit the supply of similar applications to rival platforms (Mantena, Sankaranarayanan, & Viswanathan, 2008).

In addition to such pricing mechanisms, platforms have increasingly expanded through attracting unpaid complementors, who receive no monetary benefits from their contributions to the platform (Boudreau & Jeppesen, 2014). Most content contributors to YouTube, for example, pursue neither direct sales nor advertising revenues. Members of the public contributors to CNN iReports provide free offerings to users of commercial news platforms. With Apple's iPhone, jailbreaking developers of complementary software applications, which are not available on the official AppStore, also work outside of a traditional price system. The investments made by these complementors in the platform are motivated by factors other than usual monetary incentives from sales of their contributions.

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Building on the network economics in the context of these emerging phenomena with the focus on video game markets, this study examines three important challenges in the growth strategies of a platform. First, given that the incumbent platforms possess first-mover advantages, whether and how could a late entrant be successful in taking over market leadership of the incumbent? Second, as platforms aggressively pursue multiple expansion strategies on both or multiple sides of the market (e.g., application developers and consumers), would there be trade-offs in concurrently implementing these strategies? Third, could platforms sustainably expand through increasing number of unpaid complementors?

NETWORK ECONOMICS OF VIDEO GAME PLATFORM

Network economics theory on multi-sided platform markets asserts that the growth of installed user base and the availability of complementary products are the main drivers of value and growth of a platform (Caillaud & Jullien, 2003; Rochet & Tirole, 2006). Such indirect network effects of complementary products, along with penetration pricing importantly contributes to a platform's success (Clements & Ohashi, 2005). Among the strategies to achieve WTA outcome are discounting charges of platform access, subsidizing development and marketing activities of complementors, shaping beliefs and expectations of platform users on platform preferences through marketing campaigns, and investing in tools that facilitate the production of complementary goods (Clements & Ohashi, 2005; Katz & Shapiro, 1994).

Platform owners also foster innovation and variety of products, and expansion of platform usage by encouraging competition among complementors (Boudreau, 2010), entering the market early to capture customers ahead of rival platforms (Schilling, 2002), and using exclusivity contracts to prevent rivals from obtaining valuable products (Mantena et al., 2008). These strategies are based on the boundary conditions that subsequent indirect network effects can be derived from stickiness or switching costs of the installed-base users (Farrell & Klemperer, 2007), and low or declining costs of adding more complementors to the platform. Importantly, the returns from attracting additional complementors must outweigh the respective costs of attracting additional users (Eisenmann & Hagiu, 2008) and the costs of creating additional platform functionality and benefits (Zhu & Iansiti, 2012).

Because these expansion strategies potentially provide a first-mover or an installed-base advantage for the incumbent platform, the following sections first discuss whether and how an entrant platform (e.g., the challenger) can gain and retain market share from the incumbent platform. The strategy of entrant platform is illustrated through the competition between the Microsoft Xbox console (Xbox), an entrant with a small quality advantage, and the Sony PlayStation 2 (PS2) console, an incumbent with a large installed-base advantage.

Instead of discussing platform expansion strategies in isolation, the next section examines their combinative effects on the growth and market success of a platform in terms of stimulating innovation of complementary applications and also in terms of positioning the system in the map of consumer preferences (Cennamo & Santalo, 2013). The subsequent section also discusses the positioning of platform by implementing the blue ocean strategy (Kim & Mauborgne, 2005). Such blue ocean strategy is illustrated by the competition among the current generations of video game console including Sony PlayStation, Microsoft Xbox, and Nintendo Wii (Kittilaksanawong & Gillet, 2015).

As a large number of complementors have increasingly worked outside of the price systems, being unpaid and competing in a variety of competitive and collaborative arrangements to independently develop complementary goods for users of the platform, the final section thus investigates the implications of such non-sales and non-profit motivations on the network effects of a platform (Boudreau & Jeppesen, 2014).