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Platform selection by software developers: Theory and evidence



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ABSTRACT

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This paper analyzes platform selection (affiliation) by game developers in the Japanese home video game industry. We develop an elementary model of affiliation by software developers and propose the hypothesis that wider availability of game titles for a platform positively inclines game developers to affiliate with that platform when releasing new game titles. Then, using data for Japan, we estimate a multinomial logit model that includes both the attributes of game developers and the characteristics of platforms, and find evidence supporting this hypothesis. Overall, the findings suggest that game developers expect the indirect network effect to apply, and the prospect of future growth matters to them when deciding with which platform to affiliate. *J. Japanese Int. Economies* **38** (2015) 282–303. Kobe University, Graduate School of Business Administration, 2-1 Rokkodai, Nada, Kobe 657-8501, Japan; Ritsumeikan University, Faculty of Economics, Noji Higashi 1 chome, 1-1 Kusatsu, Shiga 525-8577, Japan; Nanzan University, Department of Business Administration, 18 Yamazato, Showa, Nagoya 466-8673, Japan; Kagawa University,

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1. Introduction

We use a multinomial logit model including both the characteristics of platforms and attributes of game developers, to examine Japanese home video game developers' choices of platforms on which to release new game titles. Our main result is that an increase in a platform's share of existing game titles (increase in platform dominance) has a direct positive effect on the probability that a developer would choose to release a new game on that platform. This network effect of platform dominance is statistically significant, large and robust to alternative specifications.

Our empirical analysis focusses on platform selection (affiliation) by game developers in the Japanese home video game market from December 1994 to March 1996.¹ During this pivotal period, the Super Famicom—a ROM cassette-based 16-bit video game platform launched in November 1990 and marketed as the Super Nintendo outside Japan—entered its late maturity and decline in the product cycle. Furthermore, the video game industry launched a multitude of competing platforms during this same period and in the two years leading up to the introduction of the Nintendo 64 in June 1996. This period also saw rapidly increasing competition surrounding subsequent industry standards.

Recently, there has been a significant increase in research interest in two-sided markets consisting of platforms and complementary products (e.g., video game consoles and video games, and digital devices and content).² In this, platform providers attempt to convince complementary product developers to develop products for their platforms, at the same time as convincing consumers to purchase their platforms. An interesting feature is the two-sided network effect in which the market exhibits two indirect network effects, one between consumers and platform providers, and the other between developers and platform providers (Rochet and Tirole, 2003). All other things being equal, consumers tend to prefer platforms with a greater availability of complementary products, leading to increased platform sales and a larger installed base of consumers. This larger installed consumer base then creates a potentially larger market, which in turn appeals to complementary product developers (Stremersch et al., 2007).

In high-tech markets, there is a higher risk of failure without the support of a complementary network (Katz and Shapiro, 1994; Shapiro and Varian, 1998). The effect on platform sales of the availability of complementary products, has been the subject of several studies. For example, Gandal and Kende (2000), Nair et al. (2004), and Clements and Ohashi (2005) empirically analyzed the indirect network effects of complementary products by examining various markets in the US. In terms of specific context, Gandal and Kende (2000) examined the compact disc (CD) player market from 1985 to 1992, Nair et al. (2004) the personal digital assistant (PDA) market from 1999 to 2002, and Clements and Ohashi (2005) the home video game market from 1994 to 2002. All of these studies found that complementary products are an important contributing factor in the success of a platform.

Clements and Ohashi (2005) estimated two simultaneous equations, one representing hardware adoption, and the other, software entry (software supply) decisions. This same approach was also followed by Prieger and Hu (2006, 2012) and Corts and Lederman (2009). On software supply, these various studies focused on the total number of game titles supplied to each platform. The analysis in

¹ While software firms can be classified into two types, namely, developers that undertake software development and publishers that handle marketing, this distinction is not necessarily clear in the home video game industry (see, for example, Lee, 2012). Consequently, in this paper we do not distinguish between these types, and represent both as “game developers.”

² See Peitz and Waldfogel (2012, Part I) for additional details on software and home video game platforms, and McIntyre and Subramaniam (2009) for a review of network effects and strategy.

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